East Cleveland Road Solar Energy Project

Administrative Draft Initial Study/ Mitigated Negative Declaration

NOVEMBER 2022

PREPARED FOR

Merced County Community and Economic Development Department

PREPARED BY

SWCA Environmental Consultants

EAST CLEVELAND ROAD SOLAR ENERGY PROJECT
ADMINISTRATIVE DRAFT INITIAL STUDY/ MITIGATED NEGATIVE DECLARATION

Prepared for

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SWCA Project No. 69859

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Acronyms and Abbreviations

AB	Assembly Bill
AFY	acre-feet per year
APE	Area of Potential Effects
APN	Assessor's Parcel Number
Applicant	Renewable Properties, LLC
BESS	battery energy storage system
BMP	best management practice
BRA	*East Cleveland Road Solar Project Biological Resources Assessment*
CalARP	California Accidental Release Prevention
CalEEMod	California Emissions Estimator Model
CAL FIRE	California Department of Forestry and Fire Protection
CALGreen	California Green Building Standards Code
California Water Boards	State Water Resources Control Board
Caltrans	California Department of Transportation
CAP	Climate Action Plan
CARB	California Air Resources Board
CCIC	Central California Information Center
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CDOC	California Department of Conservation
CEQA	California Environmental Quality Act
CGS	California Geological Survey
CNDDB	California Natural Diversity Database
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
County	County of Merced
CRPR	California Rare Plant Rank
CUP	Conditional Use Permit
dB	decibels
DPW	County of Merced Department of Public Works
DTSC	California Department of Toxics Substances Control
DWR	California Department of Water Resources
FAA	Federal Aviation Administration
FHSZ	Fire Hazard Severity Zone
FMMP	Farmland Mapping and Monitoring Program
GAMAQI	*Guidance for Assessing and Mitigating Air Quality Impacts*
GHG	greenhouse gas
GSAs	Groundwater Sustainability Agencies
GSP	Groundwater Sustainability Plan

I-	Interstate
IRWMP	Merced Integrated Regional Water Management Plan
lbs/day	pounds per day
Ldn	day-night average noise level
LRA	Local Responsibility Area
LUST	Leaking Underground Storage Tank
MCDEH	Merced County Department of Public Health, Division of Environmental Health
MID	Merced Irrigation District
MRZ	Mineral Resource Zone
MW	megawatt
NO_X	nitrogen oxides
NPDES	National Pollution Discharge Elimination System
OES	Merced Office of Emergency Services
PG&E	Pacific Gas and Electric
Phase 1 ESA	*Phase 1 Environmental Site Assessment: Former Pasture Land, 1945 East Cleveland Road, El Nido, California*
$PM_{2.5}$	particulate matter 2.5 microns or less in diameter
PM_{10}	particulate matter 10 microns or less in diameter
PPA	Power Purchase Agreement
PRC	Public Resources Code
project	East Cleveland Road Solar Project
PV	photovoltaic
ROG	reactive organic gases
ROW	right-of-way
RPS	Renewable Portfolio Standard
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCP	Sediment Control Plan
SJKF	San Joaquin kit fox
SJKF Evaluation	RPCA Solar 7, LLC East Cleveland Road Solar Project – SJKF Early Evaluation
SJVAPCD	San Joaquin Valley Air Pollution Control District
SO_2	sulfur dioxides
SO_X	sulfur oxides
SR	State Route
SRA	State Responsibility Area
SSC	Species of Special Concern
SWPPP	Stormwater Pollution Prevention Plan
THPOs	Tribal Historic Preservation Officers (THPOs)
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
VMT	vehicle miles traveled
WUI	wildland–urban interface

CALIFORNIA ENVIRONMENTAL QUALITY ACT
INITIAL STUDY AND CHECKLIST

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 impact" as indicated by the checklist on the following pages.

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

DETERMINATION (To be completed by the Lead Agency)

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.

☒ 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 project 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 (a) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (b) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENT 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 analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature **Date**

Printed Name

CHAPTER 1. PROJECT DESCRIPTION

1.1 INTRODUCTION

Project Title:	East Cleveland Road Solar Project Initial Study/Mitigated Negative Declaration
Lead Agency:	County of Merced Community and Economic Development Department 2222 M Street, 2nd Floor, Merced, CA 95340
Lead Agency Staff Contact:	Tiffany Ho Planner III (209) 385-7654 x4407
Project Applicants:	RPCA Solar 7, LLC

RPCA Solar 7, LLC (Applicant) is proposing to construct and operate the proposed East Cleveland Road Solar Project (project), a solar energy facility located on an approximately 40-acre parcel in Merced County, California.

1.2 CEQA STATUTE AND GUIDELINES

According to California Environmental Quality Act (CEQA) Statute Section 21064.5:

> MITIGATED NEGATIVE DECLARATION
>
> "Mitigated negative declaration" means a negative declaration prepared for a project when the initial study has identified potentially significant effects on the environment, but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed negative declaration and initial study are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment.

According to State CEQA Guidelines Article 6. Negative Declaration Process:

> 15070. DECISION TO PREPARE A NEGATIVE OR MITIGATED NEGATIVE DECLARATION
>
> A public agency shall prepare or have prepared a proposed negative declaration or mitigated negative declaration for a project subject to CEQA when:
>
> (a) The initial study shows that there is no substantial evidence, in light of the whole record before the agency, that the project may have a significant effect on the environment, or
>
> (b) The initial study identifies potentially significant effects, but:
>
> (1) Revisions in the project plans or proposals made by, or agreed to by the applicant before a proposed mitigated negative declaration and initial study are 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 project as revised may have a significant effect on the environment.

15071. CONTENTS

A Negative Declaration circulated for public review shall include:

(a) A brief description of the project, including a commonly used name for the project, if any;

(b) The location of the project, preferably shown on a map, and the name of the project proponent;

(c) A proposed finding that the project will not have a significant effect on the environment;

(d) An attached copy of the Initial Study documenting reasons to support the finding; and

(e) Mitigation measures, if any, included in the project to avoid potentially significant effects.

1.3 PROJECT LOCATION

The project encompasses approximately 18 acres of a 40-acre parcel located on Assessor's Parcel Number (APN) 075-072-008 on East Cleveland Road and South Arbor Way in the El Nido area of Merced County (Figure 1). The project site is approximately 12 miles south of the city of Merced and in a heavily agricultural area (Figure 2). The project site is located approximately 3 miles north of State Route (SR) 152, 2 miles east of SR 59, and approximately 30 miles east of Interstate (I-) 5. The center of the project site is approximately 37°07'31" north latitude and 120°27'28" west longitude.

1.4 EXISTING CONDITIONS

The project site is located on the southwest corner of East Cleveland Road and Arbor Way, and is bounded by East Cleveland Road to the north, South Arbor Way to the east, a dirt farm road and agricultural operations (primarily row crops) to the west, and an irrigation canal and agricultural operations to the south. The irrigation canal crosses the property in a north/south then east/west direction and goes underground near the northern residence. The canal resurfaces on the other side of South Arbor Way. The site is also bounded by existing Pacific Gas and Electric Company (PG&E) electrical lines to the north, east, and west. The majority of the site is being dry farmed for hay production. In addition, two residences, various accessory structures such as barns and sheds for livestock, ornamental trees, and a paddock for goats are located on the eastern portion of the parcel. The site is located at approximately 150 feet above sea level and contains flat, rural farmland (see Figure 2). Existing access is from a residential driveway and a farm gate on East Cleveland Road.

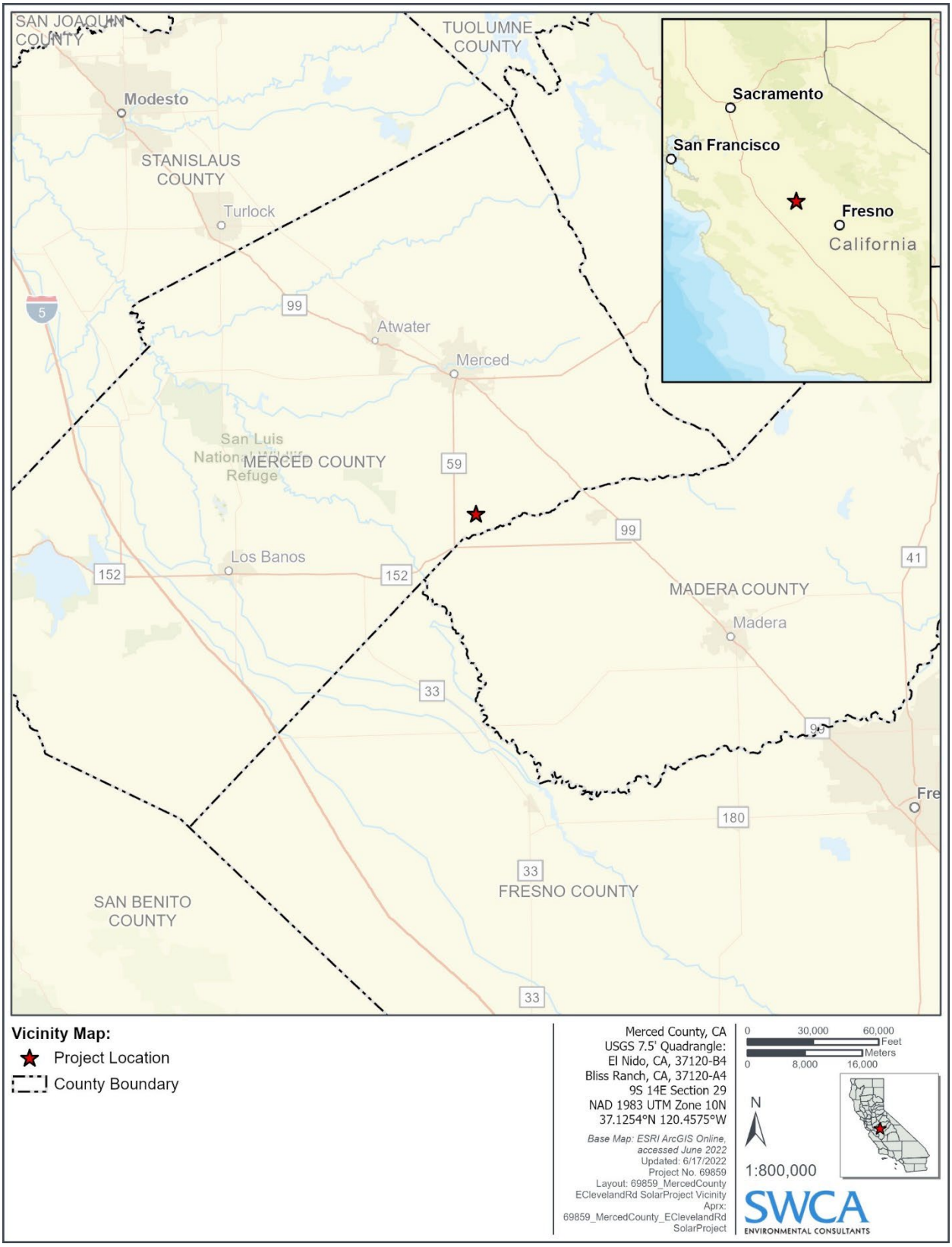

Figure 1. Project Vicinity.

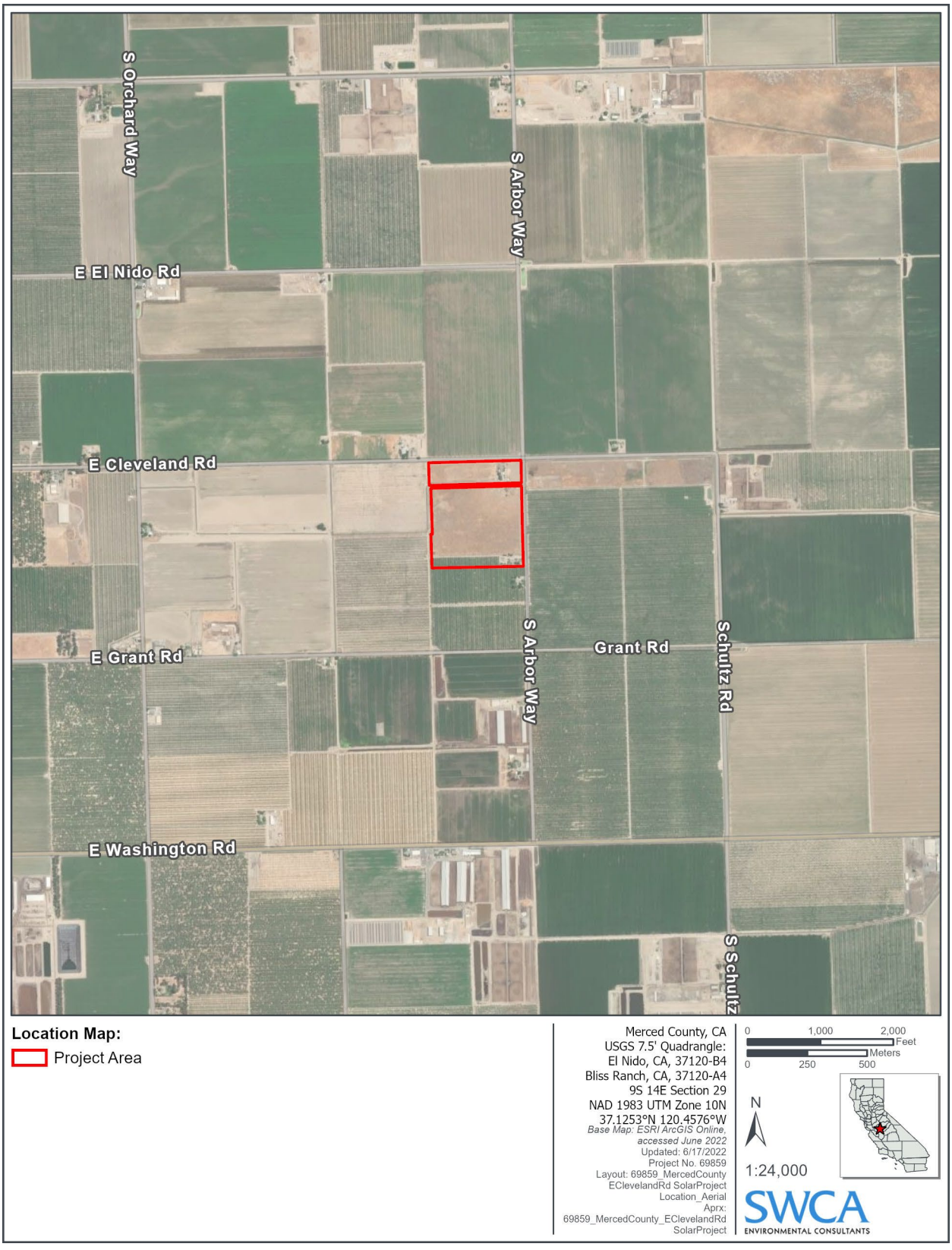

Figure 2. Project Location.

Figure 3. Project Site Plan.

Surrounding Land Uses

The surrounding area is characterized by agricultural operations (orchards, row crops, and dairies) and scattered rural residences. Merced County agriculture commodities grossed over 3 billion dollars in 2018,[1] and the following commodities are grown and/or produced in the project vicinity: almonds, pistachios, milk, cheese, sweet potatoes, figs, cantaloupes, tomatoes, honey, almonds, cotton, sugar beets, poultry, silage, corn, and hay. Rural two-lane roads provide regional access to the surrounding areas.

Zoning and General Plan Land Use

The project site is currently zoned by the County of Merced (County) as A-1 (General Agriculture), and in the *2030 Merced County General Plan* is classified as Agricultural Land.[2,3] As outlined in Merced County Municipal Code Section 18.10.010 ("Purpose of Agricultural Zones"), the zoning district is to provide for areas for intensive farming operations dependent on higher quality soils, water availability, relatively flat topography, and agricultural commercial and/or industrial uses dependent on proximity to urban areas or location in sparsely populated low traffic areas. Section 18.10.010 of the County Code identifies "Energy Generation Facilities, Wind Farms, Biomass Fuel Manufacturing (off-site energy use) as uses that would require a Conditional Use Permit (CUP) on General Agriculture zoned land.

Section 9.30.020 of the County Code notes that "Productive Agricultural Land" means land designated "Prime Farmland," "Farmland of Statewide Importance," and "Unique Farmland" by the State Department of Conservation as shown on their latest Important Farmland Map, prepared in accordance with the Farmland Mapping and Monitoring Program (FMMP).[4] The project site is mapped as Farmland of Local Importance by the California Department of Conservation (CDOC) and would not be considered "Productive Agricultural Land."

1.5 PROJECT DESCRIPTION

The project would construct a 3-megawatt (MW) solar photovoltaic (PV) electric generating facility on approximately 18.3 acres of the 40-acre parcel, south of the existing on-site residences with access via South Arbor Way. There are two project areas bisected by the irrigation canal (which would be avoided with a 40-foot setback). The facilities would consist of a ground-mounted, single-axis tracking system featuring 8,316 PV panels and 24 string inverters. Additionally, the project would be equipped with energy storage technology (battery energy storage system [BESS]) that would allow on-site renewable energy generation to be stored and dispatched onto the grid when needed. The BESS would be located in the southeast corner of the parcel, along a proposed access road. The facility would have a 20-year lease term with an option to extend for three additional 5-year terms (potential for a total lease term of 35 years). At the end of the lease term, the facility would be decommissioned, and the site would be returned to existing conditions. The project would connect to existing PG&E distribution lines on the southeastern boundary of the site. Other proposed site improvements include perimeter fencing, signage, construction

[1] Merced County Department of Agriculture. 2018. *2018 Report on Agriculture*. https://www.countyofmerced.com/ArchiveCenter/ViewFile/Item/810. Accessed June 15, 2022.

[2] Merced County. 2009. Merced County General Plan Designation Map. Available at: https://mercedcounty.maps.arcgis.com/apps/webappviewer/index.html?id=31a7197f80cc4c729c0c559ca08150a5. Accessed June 15, 2022.

[3] Merced County. 2022. Merced County Zoning Designation Map with Parcel Look Up. Available at: https://mercedcounty.maps.arcgis.com/apps/webappviewer/index.html?id=8c1725dd20594ea4b7129c9d097c048a. Accessed June 15, 2022.

[4] California Department of Conservation. 2022. Important Farmland Finder. https://maps.conservation.ca.gov/DLRP/CIFF/. Accessed June 27, 2022

of a 20-foot-wide access driveway on-site, and a 12-foot-wide access point on South Arbor Way. The project does not propose to remove any buildings or trees.

The following sections describe the proposed project, including information on the project layout, surrounding land uses, anticipated permitting and approval process, and preliminary plans for construction.

Site Access, Parking, and Circulation

The project site would be accessed via a 12-foot-wide gravel access point on South Arbor Way (refer to Appendix A). Transportation and construction contractors would obtain all necessary permits for transportation-related elements of the proposed project from the County and the California Department of Transportation (Caltrans). Site plans are provided in Appendix A.

Access to the project site would be provided by a 12-foot-wide gravel access point off of South Arbor Way, and a 20-foot-wide access driveway would provide access throughout the site. Parking is proposed on-site along the gravel access road in the southern portion of the parcel.

Utilities

The project proposes to connect to an existing PG&E electrical distribution system located on the southeast side of the parcel. The power generated from this facility would be sold to PG&E through a long-term Power Purchase Agreement (PPA).

The site would operate autonomously and would not require water or sewer service. On-site electricity would be provided by PG&E.

Lighting

The source, intensity, and type of exterior lighting for the project site would be typical for industrial and safety needs. The proposed project would include minimal high-efficiency lighting features near the proposed energy storage equipment and inverters. All on-site lighting would meet County regulations, be low-level illumination, and be shielded with hoods to reduce light spill or glare.

Construction

The construction of the proposed project is anticipated to take place over a period of approximately 6 months. The temporary construction staging areas would be located on the project site. Planned earthwork and grading activities would be balanced on-site. Utility trenches are required for the sun-tracking panels and remote monitoring cameras. Approximately 10 to 12 round-trip truck trips per day are anticipated during peak construction activities.

Construction of the project, from mobilization of the site to final completion, is expected to last approximately 6 months. No construction phasing is proposed. Construction would proceed following receipt of all permits and agency approvals and would include the following activities, listed in approximate sequential order (some construction activities would occur simultaneously):

1. Surveying, staking, and installation of erosion control measures;
2. Access road construction within the site;
3. Site grading/grubbing;
4. Assembling array foundation;

5. Testing and commissioning; and,
6. Restoring any temporarily disturbed areas.

Construction would generally occur between 7:00 a.m. and 6:00 p.m., as required by Section 18.40.050, Noise, of the Merced County Zoning Code.[5] Additional hours could be necessary to make up schedule deficiencies or to complete critical construction activities. During construction, workers would park in the temporary staging area on-site. Construction vehicles and equipment would be stored in the temporary staging area when not in use.

Operation

Once operational, the project would connect to PG&E's system located on the southeastern corner of the parcel. The power generated from this facility would be sold to PG&E through a PPA. The project would operate autonomously during daytime hours. The facility would require remote monitoring and occasional visits from one to two technicians for maintenance purposes. Six routine inspections throughout the year are anticipated.

Maintenance would include vegetation management that could temporarily interfere with solar panel movement. Panel washing is proposed to occur approximately twice per year. The proposed project would be designed for an operational life of up to 35 years. At the end of the project life, the facility would be decommissioned over 1- to 2-month period.

Employment

The on-site construction workforce would consist of laborers, craftsmen, supervisory personnel, support personnel, and construction management personnel. The construction workforce is expected to be a maximum of 40 workers.

The proposed facility is autonomous but would require routine maintenance, including vegetation management that could interfere with panel movement. There would be two full-time operational employees associated with the project and conduct routine inspections throughout the year.

At the end of the lease term, the facility would be decommissioned, and the site would be returned to existing conditions. Decommissioning would involve up to approximately 10 construction workers and between 7 and 10 round trips per day.

1.6 DISCRETIONARY APPROVALS

The potential authorizations, permits, reviews, and approvals from federal, state, and local agencies that would be required for the project are listed in Table 1.

[5] County of Merced. 2019. Merced County Zoning Code, Noise. Available at: http://www.qcode.us/codes/mercedcounty/view.php?topic=18-3-18_40-18_40_050&frames=on. Accessed June 21, 2022.

Table 1. Potential Authorizations, Permits, Reviews, and Approvals

Permit / Approval / Consultation	Authorizing Agency
State	
CEQA Environmental Compliance	County of Merced Community and Economic Development Department
Native American Consultation	County of Merced Community and Economic Development Department
National Pollutant Discharge System Storm Water Permit for Construction Activities	Regional Water Quality Control Board
Authority to Construct and Permit to Operate	County of Merced Community and Economic Development Department
Oversized/Heavy Load Permit	California Department of Transportation
California Endangered Species Act Compliance	California Department of Fish and Wildlife
Authority to Construct Compliance with District Rules & Regulations	San Joaquin Valley Air Pollution Control District
Local	
Hazardous Materials Business Plan	County of Merced Community and Economic Development Department
Use Permit	County of Merced Community and Economic Development Department
Building Permit	County of Merced Department and Economic Development Department
Encroachment Permit	County of Merced Department of Public Works

CHAPTER 2. ENVIRONMENTAL CHECKLIST AND RESPONSES

2.1 AESTHETICS

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Except as provided in Public Resources Code Section 21099, would the project:				
(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 points.) 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?	☐	☐	☒	☐

Environmental Evaluation

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

A scenic vista generally provides focal views of objects, settings, or features of visual interest, or panoramic views of large geographic areas of scenic quality, from a fixed vantage point or linear corridor, such as a roadway or trail. A significant impact would occur if a project introduced incompatible scenic elements within a field of view containing a scenic vista or substantially block views of an existing scenic vista.

The *2030 Merced County General Plan Natural Resources Element* lists scenic vistas, including the Coastal and Sierra Nevada Mountain ranges, Los Banos Creek, and Merced, San Joaquin, and Bear Creek River corridors.[6] There are no scenic vistas located on or near the project site. Therefore, the project would not have a substantial adverse effect on a scenic vista and impacts 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 scenic highway?

The Natural Resources Element designates the rural and agricultural landscapes as the primary scenic resources in Merced County.[7] Areas of high scenic value are mapped in the *2030 Merced County General Plan Aesthetics and Visual Resources Element* in Figure 5-1 along the intersection of SR 152 and I-5, in

[6] Merced County. 2013. *2030 Merced County General Plan*. December 10. Available at: https://www.countyofmerced.com/DocumentCenter/View/6766/2030-Merced-County-General-Plan?bidId=. Accessed September 14, 2022.

[7] Ibid.

the western portion of Merced County approximately 30 miles west of the project site.[8] Given the distance of scenic areas to the project site, project facilities would not result in substantial changes to identified areas of high scenic value. Changes to visual character would include the introduction of a low and dark horizontally displayed rows of solar panels. There are several solar panel developments in the project area, including a solar array approximately 5,000 feet south of the project site, south of the intersection of East Washington Road and Anchor Street. Another solar development is located on East Grant Road between Orchard Way and Los Banos Highway one mile east of the project site. The project area is located in an area with lots of industrial agriculture, including several dairies and feed lots. Due to the nature of the development of the proposed project, there would be little impact on scenery as the project is compatible with the existing built features in the project vicinity, compatible with the zoning and land use designations. Impacts would be *less than significant*.

(c) In non-urbanized areas, would the project 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?

The project site is located in a rural area of Merced County. Primary changes to the visual character of the site and its surroundings would be related to the addition of rows of solar panels, which would be visible from public views along East Cleveland Road and South Arbor Way. However, because the overall appearance of the project site would remain consistent with the surrounding area (see section 2.1.b, above) and would be compliant with the land use and zoning designations. Impacts 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 proposed project would involve installation of sun-tracking solar panels. Reflected light can cause glint (a quick reflection) and glare (reflections that last for longer durations), which can create hazards for pilots, air-traffic control personnel, motorists, and other potential receptors.

The project would increase light and glare in the vicinity during the day. However, the project would adhere to County Zoning Code Section 18.40.080 ("Vibration, Heat, Electrical Disturbance, and Glare"), which states, "No use shall create any disturbing ground vibration, heat, glare, and electrical disturbances based on typical human reaction beyond the boundaries of the subject parcel."[9] There are no County policies regarding dark sky or nighttime views in the area, nor are there policies regarding glare in the General Plan. However, County Code requires all new exterior lighting to be hooded or shielded to minimize glare and light spillage. Onsite lighting would meet safety requirements and would not be substantially different from surrounding lighting of similar facilities (e.g., dairy farms) and rural residences. Therefore, project impacts regarding new source of light or glare that would adversely affect day or nighttime views would result in impacts that are *less than significant*.

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[8] Merced County. 2013. *2030 Merced County General Plan Aesthetics and Visual Resources Element*. December. Available at: https://www.countyofmerced.com/DocumentCenter/View/6766/2030-Merced-County-General-Plan?bidId=. Accessed September 14, 2022.

[9] Merced County. 2019. *Merced County Unified Development Ordinance, Title 18: Zoning Code*. Available at: http://online.encodeplus.com/regs/mercedcounty-ca/doc-viewer.aspx?secid=1277&keywords=glare#secid-1277. Accessed September 14, 2022.

Mitigation Measures

No mitigation is required.

2.2 AGRICULTURE AND FORESTRY RESOURCES

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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 Department 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 regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
(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 or conversion of forest land to non-forest use?	☐	☐	☒	☐

Environmental Evaluation

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

A significant impact may occur if a project were to result in the conversion of State of California-designated agricultural land from agricultural use to another non-agricultural use. The CDOC Division of Land Resource Protection lists Prime Farmland, Unique Farmland, and Farmland of Statewide Importance under the general category of "Important Farmland".

Section 9.30.020 of the County Code further notes that "Productive Agricultural Land" means land designated "Prime Farmland," "Farmland of Statewide Importance," and "Unique Farmland" by the CDOC, as shown on their latest Important Farmland Map, prepared in accordance with the FMMP.[10] The

[10] California Department of Conservation (CDOC). 2022. Important Farmland Finder. Available at: https://maps.conservation.ca.gov/DLRP/CIFF/. Accessed June 27, 2022

project site is mapped as Farmland of Local Importance by the CDOC and is not considered "Important Farmland" or "Productive Agricultural Land" per CDOC and County designations; therefore, impacts would be *less than significant*.

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

The Williamson Act, also known as the California Land Conservation Act of 1965, allows local governments to enter into agreements with local landowners with the purpose of limiting specific parcels of land to agricultural or other related open space use. Per the County Code, Energy Generation facilities like the proposed project are an allowed use in the zoning district and does not conflict with zoning.

The project site is not subject to a Williamson Act contract.[11] As stated above in 2.2(a), the project site is mapped as Farmland of Local Importance by the CDOC and is not considered "Important Farmland" or "Productive Agricultural Land." Therefore, *a less than significant impact* would occur with respect to land zoned for agricultural use or under a Williamson Act contract.

(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))?

"Forest land" is defined as land that "can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits." "Timberland" is defined as land "which is available for, and capable of, growing a crop of trees of a commercial species used to produce lumber and other forest products, including Christmas trees." Timberland zoned for Timber Production is defined as land that "is devoted to and used for growing and harvesting timber."[12] The project site does not contain any trees and is not zoned for management of forest or timberland resources; therefore, the project would not conflict with zoning for, or cause the rezoning of, forest land, timberland, or timberland zoned Timberland Production, and *no impacts* would occur.

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

The project site is surrounded by agricultural operations (orchards, row crops, and dairies) and scattered rural residences. As discussed in Impact Discussion 2.2(c), the project site is not located on forest land; therefore, *no impacts* related to the loss of forest land or conversion of forest land would occur.

[11] County of Merced. 2022. Williamson Act Land. Available at: https://www.countyofmerced.com/DocumentCenter/View/2339/Williamson-Act?bidId=. Accessed June 30, 2022.

[12] California Legislative Information. 2007. *Public Resources Code, Division 10.5 California Forest Legacy Program Act of 2007, Chapter 1, Article 3, Section 12220*. Available at: https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=PRC&division=10.5.&title=&part=&chapter=1.&article=3. Accessed June 29, 2022.

(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 or conversion of forest land to non-forest use?

The project site and surrounding parcels are used for agriculture and ranching. The proposed project would not involve other changes in the environment that would result in the conversion of farmland or surrounding farmland to a non-agricultural use or conversion of forest land to non-forest use would occur. There would be no substantial increased demand on agricultural water supplies and no impact to adjacent agricultural operations or transport. Therefore, impacts would be *less than significant*.

Mitigation Measures

No mitigation is required.

2.3 AIR QUALITY

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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:				
(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?	☐	☐	☒	☐

Environmental Evaluation

This section relies on the *East Cleveland Solar Project Air Quality & Greenhouse Gas Emissions Calculations Technical Memorandum*[13] prepared for the project (Appendix B).

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

The project is located within the San Joaquin Air Basin under the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD).[14] The SJVAPCD regulates air pollutant emissions, enforces regulations, administers permits governing stationary sources, inspects stationary sources, monitors air quality and meteorological conditions, and assists local governments in addressing climate change.

[13] AMBIENT Air Quality & Noise Consulting. 2022. *East Cleveland Solar Project Air Quality & Greenhouse Gas Emissions Calculations Technical Memorandum*. October 4.

[14] Ibid.

To assist local jurisdictions in the evaluation of air quality impacts, the SJVAPCD has published the *Guidance for Assessing and Mitigating Air Quality Impacts* (GAMAQI), dated March 2015.[15] This guidance document includes recommended thresholds of significance to be used for the evaluation of short-term construction and long-term operational air quality impacts. SJVAPCD's recommended mass-emissions thresholds of significance for short-term construction and long-term operational emissions of criteria air pollutants (reactive organic gases [ROG], nitrogen oxides [NO_X], carbon monoxide [CO], sulfur oxides [SO_X], particulate matter 10 microns or less in diameter [PM_{10}], particulate matter 2.5 microns or less in diameter [$PM_{2.5}$]) are summarized in Table 2.[16]

Table 2. SJVAPCD Significance Thresholds for Criteria Air Pollutants and Precursors

Pollutant/Precursor	Construction Emissions (Tons/Year)	Operational Annual Emissions (Permitted and Non-Permitted Equipment) (Tons/Year)
CO	100	100
NO_X	10	10
ROG	10	10
SO_X	27	27
$PM_{2.5}$	15	15
PM_{10}	15	15

In addition to the above mass-emissions thresholds, the SJVAPCD also recommends the use of average daily emissions thresholds for the evaluation of project impacts on localized ambient air quality conditions. Accordingly, the project would also be considered to result in a significant contribution to localized ambient air quality if on-site emissions of ROG, NO_X, PM_{10}, $PM_{2.5}$, CO, or SO_X associated with either short-term construction or long-term operational activities would exceed a daily average of 100 pounds per day for each of the pollutants evaluated. It is important to note that the SJVAPCD's recommended thresholds of significance were developed taking into account the achievement and maintenance of applicable ambient air quality standards. As previously noted, these standards represent the upper limits deemed necessary to adequately protect public health and welfare. Therefore, projects that do not exceed SJVAPCD's recommended significance thresholds would also be considered to have a less-than-significant impact with regard to potential health-related impacts.

The project would generate temporary emissions from the use of construction vehicles and equipment. Project construction activities are required to be conducted in compliance with applicable SJVAPCD rules and regulations.[17] SJVAPCD *Regulation VIII Control Measures for Construction Emissions of PM10* provides mitigation measures to reduce emissions of fugitive dust. [18] The SJVAPCD standard mitigation measures pertaining to PM_{10} includes:

[15] San Joaquin Valley Air Pollution Control District (SJVAPCD). 2015. *Guidance for Assessing and Mitigating Air Quality Impacts*. Available at: https://www.valleyair.org/transportation/GAMAQI.pdf. Accessed September 30, 2022.

[16] San Joaquin Valley Air Pollution Control District (SJVAPCD). 2015. *Guidance for Assessing and Mitigating Air Quality Impacts*. Available at: https://www.valleyair.org/transportation/GAMAQI.pdf. Accessed September 30, 2022.

[17] San Joaquin Valley Air Pollution Control District (SJVAPCD). 2006–2012. *Current District Rules and Regulations*. Available at: https://www.valleyair.org/rules/1ruleslist.htm. Accessed September 30, 2022.

[18] SJVAPCD. 2002. *San Joaquin Valley Air Pollution Control District Mitigation Measures.* Available at: http://www.valleyair.org/transportation/GAMAQI-Mitigation-Measures.pdf. Accessed September 30, 2022.

- All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover.
- All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.
- All land clearing, grubbing, scraping, excavation, land leveling, grading, cut & fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.
- With the demolition of buildings up to six stories in height, all exterior surfaces of the building shall be wetted during demolition.
- When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained.
- All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions.) (Use of blower devices is expressly forbidden.)
- Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant.
- Within urban areas, trackout shall be immediately removed when it extends 50 or more feet from the site and at the end of each workday.
- An owner/operator of any site with 150 or more vehicle trips per day, or 20 or more vehicle trips per day by vehicles with three or more axles shall implement measures to prevent carryout and trackout.

A project is conforming with applicable adopted plans if it complies with the applicable SJVAPCD rules and regulations and emission control strategies in the applicable air quality attainment plans. The project would comply with the applicable rules and regulations, including the use of standard mitigation measures for construction equipment and fugitive dust.

Construction and operational emissions of criteria air pollutants and GHG emissions associated with the proposed project were calculated using the California Emissions Estimator Model (CalEEMod), version 2020.4.0. The project implementation would generate emissions of criteria air pollutants during construction, operation, and decommissioning. The project-generated annual and daily construction emissions are summarized in Tables 3 and 4. The detailed assumptions and calculations, as well as CalEEMod outputs, are provided in Appendix B of this report.

Table 3. Annual Construction Emissions Summary

Construction Phase	Pollutant Emission (Tons per Year)					
	ROG	NO_X	CO	PM_{10}[1]	$PM_{2.5}$[1]	SO_X
2022	0.08	0.73	0.59	0.15	0.07	0.002
2023	0.09	0.76	0.77	0.13	0.03	0.002

Construction Phase	Pollutant Emission (Tons per Year)					
	ROG	**NO_X**	**CO**	**PM_{10}[1]**	**$PM_{2.5}$[1]**	**SO_X**
SJVAPCD Significance Thresholds	*10*	*10*	*100*	*15*	*15*	*27*
Threshold Exceeded?	*No*	*No*	*No*	*No*	*No*	*No*

[1] Particulate matter emissions assume compliance with SJVAPCD Regulation VIII for the control of fugitive dust.

Table 4. Daily Construction Emissions Summary

Construction Phase Maximum Daily Emissions	Pollutant Emission (Pounds per Day)					
	ROG	**NO_X**	**CO**	**PM_{10}[4]**	**$PM_{2.5}$[4]**	**SO_X**
Grading/Excavation/Road Improvements[1]	5.03	50.49	30.46	9.14	4.56	0.095
Trenching/Solar PV/BESS Facility[1]	4.4	24.24	37.21	5.74	2.39	0.084
Total Maximum Daily Emissions[2, 3]	**9.43**	**74.73**	**67.67**	**14.88**	**6.95**	**0.179**
SJVAPCD Significance Thresholds	*100*	*100*	*100*	*100*	*100*	*100*
Threshold Exceeded?	*No*	*No*	*No*	*No*	*No*	*No*

[1] Breakdown of each construction phase is provided in Appendix B.

[2] Maximum daily emissions assume multiple activities could occur simultaneously.

[3] Totals may not sum due to rounding.

[4] Particulate matter emissions assume compliance with SJVAPCD Regulation VIII for the control of fugitive dust.

As Tables 3 and 4 show, estimated annual and daily maximum construction emissions for all pollutants are below SJVAPCD significance thresholds. Construction-generated emissions were quantified for initial project staging, site preparation/clearing, grading/excavation, road improvements, trenching/solar PV cell installation, and installation of the BESS. In CalEEMod, particulate matter emissions assume compliance with SJVAPCD Regulation VIII for fugitive dust control. Additionally, maximum daily emissions assume some construction activities (e.g., grading/excavation, road improvements) could occur simultaneously on any given day based on the applicant-provided construction schedule. Emissions modeling assumptions and CalEEMod output files are included in Appendix B.

Project-generated annual and daily operational emissions are summarized in Tables 5 and 6. As shown, the project emissions during operations of the facility would be well below the SJVAPCD significance thresholds.

Table 5. Annual Operations Emissions Summary

Construction Phase	Pollutant Emission (Tons per Year)					
	ROG	**NO_X**	**CO**	**PM_{10}[1]**	**$PM_{2.5}$[1]**	**SO_X**
Routine Maintenance	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Panel Washing	<0.01	<0.01	<0.01	<0.01	<0.01	0
Total	**<0.01**	**<0.01**	**<0.01**	**<0.01**	**<0.01**	**0**

Construction Phase	Pollutant Emission (Tons per Year)					
	ROG	**NO_X**	**CO**	**PM_{10}[1]**	**$PM_{2.5}$[1]**	**SO_X**
SJVAPCD Significance Thresholds	*10*	*10*	*100*	*15*	*15*	*27*
Threshold Exceeded?	*No*	*No*	*No*	*No*	*No*	*No*

[1] Particulate matter emissions assume compliance with SJVAPCD Regulation VIII for the control of fugitive dust.

Table 6. Daily Operational Emissions Summary

Operation Maximum Daily Emissions[1]	Pollutant Emission (Pounds per Day)					
	ROG	**NOx**	**CO**	**PM_{10}[2]**	**$PM_{2.5}$[2]**	**SOx**
Routine Maintenance	0.02	0.02	0.17	0.05	<0.01	<0.01
Panel Washing	0.03	0.07	0.26	0.08	0.02	<0.01
Total[3]	**0.05**	**0.09**	**0.43**	**0.13**	**0.02**	**0**
SJVAPCD Significance Thresholds	*100*	*100*	*100*	*100*	*100*	*100*
Threshold Exceeded?	*No*	*No*	*No*	*No*	*No*	*No*

Note: Breakdown of each construction phase is provided in Appendix B.

[1] Maximum daily emissions assume multiple activities could occur simultaneously.

[2] Particulate matter emissions assume compliance with SJVAPCD Regulation VIII for the control of fugitive dust.

[3] Totals may not sum due to rounding.

Operational emissions included routine maintenance and solar panel washing activities. Decommissioning activities are assumed to require similar construction requirements as those identified for trenching/solar PV panel installation. As a result, emissions associated with the trenching/solar PV panel installation activities are also anticipated to be reflective of emissions associated with project decommissioning.

Project emissions were calculated and are below all SJVAPCD significance thresholds, and, as stated above, would not conflict with implementation of any air quality plan. In addition, project construction and operations are required to be conducted in compliance with applicable SJVAPCD rules and regulations. Therefore, impacts would be *less than significant*.

(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?

The proposed project is located in an air basin that is nonattainment for ozone, $PM_{2.5}$, and state PM_{10}. Concurrent construction of other projects in close proximity to project activities could result in increased local air quality impacts for the duration of simultaneous construction activities; however, this would be limited to the circumstances of an approved or proposed project occurring in the same timeframe and location as the project. Simultaneous construction activities occurring in close proximity to the proposed work sites would also need to comply with SJVAPCD rules regarding dust control. Construction-related ozone precursors would not be at a cumulatively considerable level. Mandatory compliance with

SJVAPCD Regulation VIII for fugitive dust control, would ensure the project would not result in a cumulatively considerable net increase of any criteria pollutants for which the project region in is nonattainment. Operational emissions would result from vehicle use related to workers, maintenance, repair, and inspection of the project components. The associated emission levels (see Tables 5 and 6) would be below all SJVAPCD thresholds, and these emissions would not result in a cumulatively considerable net increase of any criteria pollutant. Therefore, impacts would be *less than significant*.

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

Some population groups, such as children, the elderly, and acutely and chronically ill persons are considered more sensitive to air pollution than others. Sensitive receptor locations typically include residential areas, hospitals, elder-care facilities, rehabilitation centers, daycare centers, and parks. The project site is in a rural area surrounded by agricultural land with sparse rural residences. The closest sensitive receptor is a residence approximately 100 feet south of the project site.

Implementation of the proposed project would not result in the long-term operation of any emission sources that would adversely affect nearby sensitive receptors. Short-term construction activities, lasting approximately 6 months would result in temporary increases in pollutant concentrations. The construction-related emissions would be short term and dispersed throughout the 18-acre proposed development area. Due to the limited duration, nature, and quantities of construction emissions, no individual receptor would be exposed to substantial pollutant concentrations.

The SJVAPCD's thresholds of significance for toxic air contaminant emissions from the operations of both permitted and non-permitted sources are included in Table 7.[19]

Table 7. SJVAPCD Significance Thresholds for Toxic Air Contaminants

Contaminant	Threshold
Carcinogens	Maximally Exposed Individual risk equals or exceeds 20 in one million
Non-Carcinogens	Acute: Hazard Index equals or exceeds 1 for the Maximally Exposed Individual
	Chronic: Hazard Index equals or exceeds 1 for the Maximally Exposed Individual

During construction, emissions of all criteria pollutants would be below the SJVAPCD thresholds and would not have any significant impact. The project's emissions of toxic air pollutants would be minimal and consist of diesel particulate matter (DPM) emissions during construction activities. The employees commuting to the site during project construction or operation would use gasoline-fueled vehicles.

During project operations, emissions would result from use of vehicles for workers, routine maintenance, repair, and inspection that would not expose sensitive receptors to substantial concentrations of air pollutants.

During construction and operation activities, the applicant would be required to comply with SJVAPCD Regulation VIII for fugitive dust control as a uniformly applied development standard. This standard ensures receptors in the project vicinity would not be impacted by the project's dust emissions during construction. Impacts would be less than significant.

[19] San Joaquin Valley Air Pollution Control District (SJVAPCD). 2015. *San Joaquin Valley Air Pollution Control District Air Quality Thresholds of Significance – Toxic Air Contaminants*. Available at: http://www.valleyair.org/transportation/0714-GAMAQI-TACs-Thresholds-of-Significance.pdf Accessed September 3, 2022.

Airborne asbestos is classified as a known human carcinogen and was identified as a toxic air contaminant by the California Air Resources Board (CARB) in 1986. The California Geological Survey (CGS) prepared maps and lists of the naturally occurring asbestos (NOA) areas within California counties. According to the 2011 report, NOA is known to exist in Merced County near the Mariposa County border; however, the proposed project location is not within an area of NOA.[20] Therefore, impacts would be *less than significant*.

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

During construction, some odors and hazardous pollutants could result from vehicles and equipment using diesel fuels. Construction vehicles would be required to limit idling time compliant with the CARB guidelines. Short-term project construction would occur approximately 100 feet the nearest sensitive receptor in a suburban agricultural setting. Because the level of overall emissions would be low, and the duration of emissions would be limited to an approximately 6-month construction period, odors from diesel exhaust during construction would be less than significant. Operation of the project does not include any component with the potential to generate odorous emissions that could affect a substantial number of people. Therefore, impacts would be *less than significant*.

Mitigation Measures

No mitigation is required.

2.4 BIOLOGICAL RESOURCES

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project:				
(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 Wildlife 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, or regulations, or by the California Department of Fish and Wildlife 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?	☐	☐	☒	☐

[20] Van Gosen, B.S., and J. P. Clinkenbeard. 2011. *Reported Historic Asbestos Mines, Historic Asbestos Prospects, and Other Natural Occurrences of Asbestos in California*. U.S. Geological Survey Open-File Report 2011-1188. Available at: https://pubs.usgs.gov/of/2011/1188/pdf/Pamphlet.pdf. Accessed September 3, 2022.

	Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
(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?	☐	☐	☐	☒

Environmental Evaluation

This section relies on the *East Cleveland Road Solar Project Biological Resources Assessment* (BRA)[21] (Appendix C) and the *RPCA Solar 7, LLC East Cleveland Road Solar Project – SJKF Early Evaluation* (SJKF Evaluation)[22] (Appendix D) prepared for the project.

(a) Would the project have a substantial adverse effect, either directly or through habitat modification, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

The project site contains habitat that was identified as potentially suitable for 12 special-status plant species and 23 special-status wildlife species (see Appendix C). A field survey was conducted by a Kleinfelder biologist on January 26, 2022, in support of the BRA to evaluate botanical and wildlife resources within the project area, including habitat suitability for special-status species.

Special-status plant species that were identified in a desktop review as potentially occurring include hearstscale (*Atriplex cordulata* var. *cordulata*; California Rare Plant Rank [CRPR] 1B.2), lesser saltscale (*Atriplex minuscula*; CRPR 1B.1), vernal pool smallscale (*Atriplex persistens*; CRPR 1B.2), subtle orache (*Atriplex subtilis*; CRPR 1B.2), palmate-bracted salty bird's-beak (*Chloropyron palmatum*; CRPR 1B.1), Hoover's cryptantha (*Cryptantha hooveri*; CRPR 1A), recurved larkspur (*Delphinium recurvatum*; CRPR 1B.2), delta button-celery (*Eryngium racemosum*; CRPR 1B.1), spiny-sepaled buttoncelery (*Eryngium spinosepalum*; CRPR 1B.2), alkali-sink goldfields (*Lasthenia chrysantha*; CRPR 1B.1), Colusa grass (*Neostapfia colusana*; CRPR 1B.1), and California alkali grass (*Puccinellia simplex*; CRPR 1B.2). No special-status plant species were identified within the project boundary, and none of these species are expected to occur within or adjacent to the project site due to a lack of suitable habitat, a lack of occurrences in the vicinity of the project site, or the project's location outside of the known range of the species.

Special-status wildlife species that were determined to have the potential to occur within the project site include Swainson's hawk (*Buteo swainsoni*; state threatened), northern harrier (*Circus hudsonius*; California Species of Special Concern [SSC]), and San Joaquin kit fox (SJKF) (*Vulpes macrotis mutica*; federally endangered, state threatened).

[21] Kleinfelder. 2022. *East Cleveland Road Solar Project Biological Resources Assessment*. Prepared for Renewable Properties, RPCA Solar 7, LLC. May.

[22] McCormick Biological, Inc. 2022. *RPCA Solar 7, LLC East Cleveland Road Solar Project – SJKF Early Evaluation*. Prepared for Kleinfelder. August 1.

Swainson's hawk spends the breeding season in the Central Valley of California and is commonly found in agricultural areas or open grasslands containing solitary trees for nesting. Their diet consists of insects, small mammals, and reptiles, and they have been known to forage up to 10 miles from nest sites.[23] No large stick nests or Swainson's hawk were observed during the field survey; however, large trees in the vicinity of the project area and the eucalyptus trees in the southwestern portion of the annual grassland habitat on the site could provide suitable nesting habitat for this species, and the project site and agricultural fields adjacent to the site could provide foraging habitat for this species.

Northern harrier utilizes marshes, fields, and prairies for nesting and foraging and is found in many kinds of open terrain, in both wet and dry habitats where there is ample ground cover. This species is often found in marshes, especially in nesting season, but sometimes it will nest in dry open fields. Northern harrier, which usually hunts by flying low over fields and scanning the ground, was observed flying over the pasture and annual grassland within the project site during the field survey.

SJKF occurs in grasslands and agricultural areas along the edges of the San Joaquin Valley. As noted in the SJKF Evaluation,[24] Merced County is within the portion of SJKF range considered as the "northern range," requiring implementation of *U.S. Fish and Wildlife Service San Joaquin Kit Fox Survey Protocol for the Northern Range*.[25] A review of the California Natural Diversity Database (CNDDB) SJKF records in the vicinity of the proposed project was conducted on June 10, 2022. A pedestrian survey was conducted on June 18, 2022. No sign of SJKF or SJKF dens (potential, known, or natal) were observed during the survey. If present within the project site, construction related disturbance could adversely affect special-status wildlife species as a result of grading activities, heavy equipment operation, and construction related generation of dust and noise. Perimeter fencing would reduce the potential for impacts to wildlife during project operations. In addition to the species listed above, at least two barn owls (*Tyto alba*) were observed in a nest box on the western boundary of the project area, and several pellets were observed on the ground below the nest box during the field survey. Although barn owls are not considered a special status species by the U.S. Fish and Wildlife Service (USFWS) or California Department of Fish and Wildlife (CDFW), they are protected under Section 3503.5 of the California Fish and Game Code. Birds protected under the federal Migratory Bird Treaty Act (MBTA) of 1918 may nest or forage within the project site.

All native birds in California are protected by the federal MBTA, and Section 3503.5 of the California Fish and Game Code specifically protects raptors. Ground disturbance, noise, or removal of vegetation that would result in destruction of active bird nests or disruption of breeding/nesting activity could be a violation of the MBTA and the California Fish and Game Code, as well as a significant impact under CEQA. The project has the potential to impact birds that are nesting at the project site by causing active nests to fail.

With the implementation of Mitigation Measures **MM BIO-1** through **MM BIO-4**, impacts to special-status wildlife would be *less than significant with mitigation*.

[23] California Department of Fish and Game (CDFG). 1994. *Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (*Buteo Swainsoni*) in the Central Valley of California*. Sacramento, CA: California Department of Fish and Game.

[24] McCormick Biological, Inc. 2022. *RPCA Solar 7, LLC East Cleveland Road Solar Project – SJKF Early Evaluation*. Prepared for Kleinfelder. August 1.

[25] U.S. Fish and Wildlife Service (USFWS). 1999. *U.S. Fish and Wildlife Service San Joaquin Kit Fox Survey Protocol for the Northern Range*. Sacramento, CA: U.S. Fish and Wildlife Service. 12 pp.

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

Using the classifications described in *A Manual of California Vegetation*,[26] one vegetation community and three land cover types were mapped within the project site:

- **Non-Native Annual Grassland (26.46 acres):** This vegetation community occurs throughout the entirety of the project site and is dominated by non-native annual grasses, such as wild oat (*Avena* sp.) and brome (*Bromus* sp.). Non-native forbs, such as yellow star thistle (*Centaurea solstitialis*) and narrowleaf plantain (*Plantago lanceolata*), are also present in this vegetation community. All of these grass species are dormant during the dry summer months. Three eucalyptus (*Eucalyptus* sp.) trees were observed in the southwestern corner of this vegetation community.
- **Pasture (7.82 acres):** This land cover type occurs in the northwestern and northeastern portions of the project site and is like the non-native annual grassland described above; however, the grasses and forbs are grazed regularly and therefore sparser and shorter. There are several bee boxes located in the western portion of the northwestern pasture area.
- **Developed/Disturbed (4.52 acres):** The residences, driveways, storage areas, and areas with ornamental plantings comprise this landcover type within the project site. The residences in the parcel and the areas surrounding them contain gravel or bare ground, or are dominated by sparse non-native grasses and forbs, which provide little habitat that would support special-status or common plant or wildlife species.

There is no sensitive natural community nor riparian habitat onsite. None of the communities listed above are identified by CDFW or USFWS as sensitive. Impacts to sensitive natural communities would be *less than significant*.

(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?

No wetlands or other waters that could be considered jurisdictional by the U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWCQB), or CDFW were observed within the project site during the survey. An agricultural ditch runs in a north–south direction outside of the western edge of the parcel, and then curves in an east–west direction and travels through the center of the parcel. The ditch then terminates into a culvert near the western boundary of the northern residence and appears again on the east side of South Arbor Way where it continues north to El Nido Reservoir. This ditch is mapped as a riverine feature in the USFWS National Wetlands Inventory (NWI), likely because it connects to El Nido Reservoir. However, the feature is an irrigation ditch and does not exhibit typical characteristics of riverine habitat which can include vegetated banks and floodplains. Although this ditch runs through the parcel, it is excluded from the project site (disturbance area) by a 40-foot setback on either side. Plant species observed in the ditch included mostly non-native species such as crabgrass (*Digitaria* sp.), Italian ryegrass (*Festuca perennis*), dandelion (*Taraxacum* sp.), and bull thistle (*Cirsium vulgare*), except for native rush (*Juncus* sp.).

[26] Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. *A Manual of California Vegetation, Second Edition*. Sacramento, CA: California Native Plant Society. 1,300 pp.

Impacts to wetlands and waters under jurisdiction of the USACE, RWQCB and CDFW in the form of increased sedimentation and potential spills from construction equipment could be considered significant in the context of CEQA. Although no potentially jurisdictional wetlands or other waters were observed within the project site during the field survey, impacts to the agricultural ditch in the form of siltation or runoff should be avoided, as this ditch connects to El Nido Reservoir northeast of the site, which could be considered jurisdictional by the USACE and RWQCB.

The project would be required to prepare a Stormwater Pollution Prevention Plan (SWPPP), which would prescribe best management practices (BMPs) to control sediment and other pollutants during construction from possibly entering stormwater. The SWPPP must address grading and erosion impacts, as well as non-point source pollution impacts from the proposed project, including post-construction operations. See **MM GEO-1,** which requires preparation of a SWPPP. These BMPs may include, but are not limited to, biodegradable straw wattles free from weed seed, silt fencing, hydroseeding, or biodegradable erosion control mats/blankets. Specific BMPs shall be defined prior to construction to protect the ditch, and spill kits shall be available to all workers on the site during construction activities

No federal riparian habitat, sensitive natural community, aquatic habitats, or potentially jurisdictional wetlands were observed in or adjacent to the project site. Therefore, the impact 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?

The project site is not within any mapped wildlife movement corridor, and there are no terrain features present that would concentrate wildlife movement into and through the project. Migratory birds may use the project site for breeding, nesting, foraging, or transient rest sites; however there are no riparian habitats or bodies of water that would attract large numbers of birds.

Temporary effects due to noise and increased human activity during project activities would not interfere with these local movement patterns over time or affect the ability of these species to forage or reproduce; therefore, impacts 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?

The project site is undeveloped and contains two residences and various accessory structures such as barns and sheds for livestock, ornamental trees, and a paddock for goats are located on the eastern portion of the parcel. The site is located at approximately 150 feet above sea level and contains flat, rural farmland. The surrounding area is characterized by agricultural operations (orchards, row crops, and dairies) and scattered rural residences.

The following policies contained in the General Plan are applicable to the proposed use:[27]

- **Policy NR-2.1: Renewable Energy Use.** Promote the development and use of renewable energy resources to reduce dependency on petroleum-based energy sources.

[27] Merced County. 2013. *2030 Merced County General Plan*. December 10. Available at: https://www.countyofmerced.com/DocumentCenter/View/6766/2030-Merced-County-General-Plan?bidId=. Accessed September 14, 2022.

- **Policy NR-2.4: Solar Power.** Encourage on-site solar power use in residential, commercial, and industrial buildings, and solar power facilities in rural locations that do not harm long-term agricultural productivity and habitat values.

- **Policy NR-3.2: Soil Erosion and Contamination**. Require minimal disturbance of vegetation during construction to improve soil stability, reduce erosion, and improve stormwater quality.

The project does not conflict with the General Plan and is not subject to any tree preservation policies or ordinances; therefore, the impact is *less than significant*.

(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?

The project does not conflict with any HCPs, Natural Conservation Plans, or other approved local, regional, or state habitat conservation plan; therefore, there would be *no impact*.

Mitigation Measures

The project shall comply with all measures listed below.

MM BIO-1: **Preconstruction Nesting Bird Survey.** If construction or vegetation removal activities must occur during the bird breeding season (February 1–August 31), surveys for active nests shall be conducted by a qualified biologist no more than 30 days prior to the start of construction. For raptors, an initial no-disturbance buffer of 500 feet shall be established around active nests and demarcated with fencing or flagging. This buffer shall be increased to 0.5-mile for Swainson's hawk. For non-raptors, an initial no-disturbance buffer of 250 feet shall be established around active nests and demarcated with fencing or flagging. No project-related activities shall occur within the buffer zone until a qualified biologist has determined that the birds have fledged and are no longer reliant on the nest or parental care for survival. The buffer distance for species not listed under the CESA or ESA may be reduced at the discretion of a biologist who has extensive experience observing bird behavior and monitoring nests, if the biologist observes that the birds' behavior is not disturbed by activity closer to the nest, depending on the sensitivity of the species and nest location. Buffer sizes for species listed under the CESA and/or ESA may be reduced in consultation with the responsible state and/or federal agency: CDFW and/or USFWS.

If a historic nest site of barn owl (*Tyto alba*) or other species not listed under CESA, FESA, or having Fully Protected status is identified in or adjacent to the work area, the biologist may passively evict the historic nest site, provided that the biologist can verify that the historic nest does not support active nesting. If eggs, chicks, or fledglings are present, the nest site shall not be disturbed, and the no-work buffers as described above apply. Passive eviction methods may include modifications to the nesting substrate (owl box, structure ledges, etc), use of netting to exclude individuals from entering the nest site, or use of pyrotechnics (bangers or screamers). The historic nest sites of any Fully Protected Species shall not be disturbed.

MM BIO-2: **Trash Receptacles**. All trash and waste items generated by construction or crew activities shall be properly contained in a covered trash receptacle and removed from the project site daily. This includes biodegradable items, such as apple cores and banana

peels, that attract predators such as raccoons and American crows that could prey upon sensitive wildlife species.

MM BIO-3: **San Joaquin Kit Fox.** A qualified biologist (approved by the USFWS) shall perform early evaluation surveys in accordance with the current USFWS-approved protocol for SJKF prior to ground- or vegetation-disturbing activities associated with preconstruction, geotechnical, or soils investigations; construction; operations; or maintenance. Upon completion of early evaluation surveys, informal consultation with the USFWS shall be initiated to determine proper techniques to employ to avoid impacts to this species during project construction, which would be considered significant under CEQA.

Security fences installed on the project site shall be designed to enable passage of SJKF and their prey, while impeding the passage of larger predators, such as coyotes (*Canis latrans*) and larger domestic dogs. All fencing shall leave a 4- to 6-inch opening between the fence mesh and the ground. The bottom of the fence fabric shall be knuckled (wrapped back to form a smooth edge) to protect wildlife that pass under the fence. Fences shall be monitored quarterly to ensure that any damage or vandalism is quickly repaired.

MM BIO-4: **Special-Status and Common Wildlife Awareness**. All project personnel will visually check for animals in any pipes, culverts, or other open-ended materials and equipment stored on-site for one or more overnight periods prior to moving, burying, or capping to ensure that no animals are present within the materials and equipment. To prevent accidental entrapment of wildlife during construction, all excavated holes, ditches, or trenches greater than 6 inches deep shall be covered at the end of each workday by suitable materials that cannot be displaced or escape ramps will be placed in excavations. After opening and before filling, such holes, ditches, and trenches shall be thoroughly inspected for trapped animals. If a special-status species is discovered in the project site, the qualified biologist shall contact and notify the appropriate natural resource agency(ies) (e.g., USFWS, CDFW, etc.) within 24 hours where appropriate. The animal shall be allowed to move off-site on its own and shall not be harmed or harassed.

2.5 CULTURAL RESOURCES

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project:				
(a) Cause a substantial adverse change in the significance of a historical resource pursuant to State CEQA Guidelines 15064.5?	☐	☐	☒	☐
(b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to State CEQA Guidelines 15064.5?	☐	☒	☐	☐
(c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☒	☐	☐

Environmental Evaluation

This section relies on the *Cultural Resources Inventory Report: East Cleveland Road Solar Project, Merced County, California* prepared for the project.[28] The Area of Potential Effects (APE) included the area of proposed project improvements/disturbance. The project site is within territory ethnographically attributed to the Northern Valley Yokuts, which were comprised of approximately 60 tribelets, each with a few hundred to several thousand members, living throughout the San Joaquin Valley. The site is vacant and flat and has historically been used for livestock grazing.

(a) Would the project cause a substantial adverse change in the significance of a historical resource as defined in State CEQA Guidelines 15064.5?

A records search of the APE and a 0.5-mile buffer around the APE was conducted by the Central California Information Center (CCIC) at California State University, Stanislaus. The purpose of the records search was to identify if any prehistory and/or historic-period cultural resources or studies had been previously documented in the APE in order to better understand the archaeological sensitivity of the area. The CCIC records search indicated that no previously recorded historic resources or historic resources studies were identified within the APE.

Historic properties associated with agriculture in the San Joaquin Valley include ranches and farms and agricultural irrigation and water conveyance systems. Ranches are comprised of buildings and structures for the raising of livestock for domestic and commercial uses, and can include irrigation features such as canals, laterals, ditches, dams, pumps, and culverts. Historic maps and aerial photography show that the vicinity around the project site was vacant until 1942, when two structures were shown east the project site and two unlabeled roads were shown in the current alignments of East Cleveland Road and Arbor Way. In 1963 a lateral canal is shown in its current alignment, which passes through the project parcel but is located outside of the cultural report's APE due to the project's avoidance of this area. A well is also depicted in the southwestern corner of the APE.

On January 26, 2022, Kleinfelder archaeologists, completed an intensive pedestrian survey of the APE; no historic resources were identified as part of the survey. Therefore, impacts to historic resources would be *less than significant*.

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

Background research and archaeological surveys were conducted in support of the Cultural Resources Inventory to identify cultural resources that could be affected by ground-disturbing activities associated with the proposed project and to provide the data necessary to ensure that the project avoids impacts to any potentially significant resources during implementation.

As stated above, the CCIC records search indicated that no previously recorded archaeological resources exist within the APE. Similarly, the pedestrian survey did not identify any archaeological resources within the project site.

Despite the low sensitivity for cultural resources in the APE, there is always a potential to encounter unknown subsurface cultural materials. With implementation of **MM CUL-1**, impacts associated with the inadvertent discovery of historic archaeological resources would be *less than significant with mitigation*.

[28] Kleinfelder. 2022. *Cultural Resources Inventory Report: East Cleveland Road Solar Project, Merced County, California*. Prepared for RPCA Solar 7, LLC, Renewable Properties, LLC. July.

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

No formal cemeteries or other places of human interment are known to exist within the APE, and no evidence of human remains was observed on the surface during the archaeological survey. While the results of the Sacred Lands File search were negative, there is always a possibility that human remains could be encountered during construction. If human remains or related funerary resources are discovered, appropriate state law would be followed.

In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, existing state law requires that there be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the County Coroner has determined, in accordance with California Government Code Title 3, Division 2, Part 3, Chapter 10 (commencing with Section 27460), that the remains are not subject to the provisions of California Government Code Section 27491 or any other related provisions of law concerning investigation of the circumstances, manner, and cause of any death, and the recommendations concerning the treatment and disposition of the human remains have been made to the person responsible for the excavation, or their authorized representative, in the manner provided in Public Resources Code (PRC) Section 5097.98. The County Coroner must be notified of the find immediately. If the human remains are determined to be prehistoric, the Coroner will notify the NAHC, which will determine and notify a most likely descendant (MLD). The MLD shall complete the inspection of the site within 48 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

Despite the low sensitivity for cultural resources in the APE, there is always a potential to encounter unknown subsurface cultural materials, including human remains. With implementation of **MM CUL-1**, impacts associated with the inadvertent discovery of historic archaeological resources would be *less than significant with mitigation*.

Mitigation Measures

MM CUL-1: Cease Ground-Disturbing Activities and Implement Treatment Plan if Archaeological Resources are Encountered. If archaeological resources are exposed during construction, work in the immediate vicinity of the find shall stop until a qualified archaeologist can evaluate the significance of the find. Construction activities may continue in other areas. If the discovery proves significant under CEQA (14 California Code of Regulations [CCR] 15064.5(f); PRC Section 21082), additional work such as project relocation, excavation plan, and/or protective cover, in consultation with culturally affiliated tribes or other descendant groups, may be warranted.

2.6 ENERGY

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project:				
(a) Result in a 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?	☐	☐	☒	☐

Environmental Evaluation

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

CONSTRUCTION-RELATED ENERGY CONSUMPTION

Project construction would consume energy in two general forms: fuel energy consumed by construction vehicles and equipment, and bound energy in construction materials, such as asphalt, steel, concrete, pipes, and manufactured or processed materials, such as lumber and glass.

Construction of the project would involve on-site energy demand and consumption related to the use of gasoline and diesel fuel for construction worker vehicle trips, hauling and materials delivery truck trips, and operation of off-road construction equipment. In addition, diesel-fueled portable generators may be necessary to provide additional electricity demands for temporary on-site lighting and welding, and for supplying energy to areas of the sites where energy supply cannot be met through a hookup to the existing electricity grid. Project construction would not involve the use of natural gas appliances or equipment. Project construction methods would be typical of current construction practices and would not require the use of more energy intensive machinery or higher than normal volumes of trucks and worker vehicle trips.

Construction of the project would occur over a 6-month duration, and would include site preparation (site grubbing, staking, and installation of erosion control measures); grading (to establish access roads and pads for electrical equipment); assembling array foundation/installation of solar array and associated facilities, testing, and commissioning; and restoring temporarily disturbed areas. All construction equipment and operation thereof would be regulated per the In-Use Off-Road Diesel Vehicle Regulation administered by the CARB. The In-Use Off-Road Diesel Vehicle Regulation is intended to reduce emissions from in-use, off-road, heavy-duty diesel vehicles in California by imposing limits on idling, requiring all vehicles to be reported to the CARB, restricting the addition of older vehicles into fleets, and requiring fleets to reduce emissions by retiring, replacing, or repowering older engines, or installing exhaust retrofits. As another benefit of these restrictions, off-road diesel-powered vehicles would consume less fuel and combust fuel more efficiently.

In addition, technological innovations and more stringent standards are being researched, such as multi-function equipment, hybrid equipment, or other design changes, which could help to reduce demand on oil and emissions associated with construction in California, over the next few years. Therefore, temporary energy use during construction of the project would not result in a significant increase in peak or base demands on regional energy supplies or require additional capacity from local or regional energy supplies, and project construction activities would not result in a wasteful, inefficient, or unnecessary consumption of energy resources.

Further, substantial reductions in energy inputs for construction materials can be achieved by selecting building materials composed of recycled materials that require substantially less energy to produce than non-recycled materials. The project-related incremental increase in the use of energy bound in construction materials such as asphalt, steel, concrete, pipes, and manufactured or processed materials (e.g., lumber and gas) would not substantially increase demand for energy compared to overall local and regional demand for construction materials. It is reasonable to assume that production of building materials would employ all reasonable energy conservation practices in the interest of reducing costs.

OPERATIONAL ENERGY CONSUMPTION

Maintenance activities during operations, such as landscape maintenance and cleaning, and operation of the BESS would involve the use of electrical or gas-powered equipment. In addition to on-site energy use, the project would result in the consumption of oil-based fuels associated with vehicle trips generated by the employees and maintenance workers. Due to the CARB's increasing vehicle efficiency standards, it is assumed the long-term transportation fuel consumption from project operations would steadily decline over time and ensure that vehicle fuel consumption is not wasteful or inefficient.

The project would be subject to all relevant provisions of the most recent current standards of the Building Energy Efficiency Standards (Title 24) and the California Green Building Standards Code (CALGreen). Compliance with these standards would ensure that the building energy use associated with the project would not be wasteful, inefficient, or unnecessary. Thus, project impacts would be *less than significant*.

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

The County has not adopted a Climate Action Plan (CAP) or energy plan. Merced County is in the process of preparing a CAP, with a currently unknown anticipated completion date. Development of a CAP would outline specific strategies to reduce GHG emissions and is required by the General Plan.[29] When developed, the CAP will set a baseline for past and current GHG emissions, include forecasts of future emissions, and establish targets to help California reduce future emissions. While no CAP has been adopted, the General Plan includes several policies that seek to reduce GHG emissions, including promoting alternative energy sources.

The proposed solar facility would generate renewable energy and help reduce GHG emissions to 1990 levels by 2020, which is a target established by the Global Warming Solutions Act of 2006, also known as Assembly Bill (AB) 32 and reduce GHG emissions to 40% below 1990 levels by 2030, a target established by Senate Bill (SB) 32. Therefore, the project would not conflict with implementation of an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases, and impacts would be *less than significant*.

Mitigation Measures

No mitigation is required.

2.7 GEOLOGY AND SOILS

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project:				
(a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				

[29] Merced County, 2022. Merced County Climate Action Plan. Available at: https://mercedcap.rinconconsultants.com/ Accessed September 30, 2022.

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
(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 substantial direct or indirect risks to life or property?	☐	☐	☒	☐
(e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
(f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

Environmental Evaluation

Conclusions in this chapter are based upon findings in the *Geotechnical Engineering Investigation: Proposed Ground Mount Solar Array, East Cleveland Road and South Arbor Way (37.1249, -120.4576), Merced, California*[30] prepared for the project (Appendix E).

(a) Would the project 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.

Surface rupture is defined as surface displacement that occurs along the surface trace of the causative fault during an earthquake. Based on the proximity of several dominant active faults and structures, as well as the historic seismic record, the area of the subject site is considered subject to relatively moderate

[30] Salem Engineering Group, Inc. 2022. *Geotechnical Engineering Investigation: Proposed Ground Mount Solar Array, East Cleveland Road and South Arbor Way (37.1249, -120.4576), Merced, California*. May 2, 2022.

seismicity.[31]. The project site is approximately 30 miles east of the San Joaquin Fault, which runs parallel to I-5.[32] No known active faults or surface expression of fault traces cross the project site, and the project site is not located within a currently designated Alquist-Priolo Earthquake Fault Zone.[33] The potential for surface rupture at the project site is considered low, and impacts related to rupture of a known earthquake fault would be *less than significant*.

(ii) Strong seismic ground shaking?

The entire state of California is a seismically active region; however, the project is located in an area mapped as a moderate level of shaking during earthquakes.[34] The site is located about 30 miles from the nearest fault zone, which means it would likely experience moderate ground shaking from future earthquakes.

The proposed solar facility would be required to comply with the 2019 California Building Code (Merced County Zoning Code Section 16.16.010),[35] which provides a minimum standard for building design and construction. The project design would adhere to requirements related to seismic loads, structural design, foundation design, and excavation and grading. By adhering to state and County building code requirements, the direct or indirect impacts from development of the proposed project as they relate to strong seismic ground shaking would be *less than significant*.

(iii) Seismic-related ground failure, including liquefaction?

Primary factors that trigger liquefaction are moderate to strong ground shaking (seismic source), relatively clean, loose granular soils (primarily poorly graded sands and silty sands), and saturated soil conditions (shallow groundwater). Although the entire state is within a seismically active zone, the project is not located within a liquefaction zone.[36]

Per the Geotechnical Investigation and based on the relatively high seismic shaking and historic groundwater depths reported at 50 feet, seismic settlement due to liquefiable soils may occur due to a design level seismic event; however, mitigation of impacts due to settlement caused by liquefaction/ seismic shaking is not required by the 2019 California Building Code, and impacts would be *less than significant*.

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[31] Salem Engineering Group, Inc. 2022. *Geotechnical Engineering Investigation: Proposed Ground Mount Solar Array, East Cleveland Road and South Arbor Way (37.1249, -120.4576), Merced, California*. May 2, 2022.

[32] California Department of Conservation (CDOC). 1974, 2019. Earthquake Zones of Required Investigation, El Nido Quadrangle. CDOC, California Geological Survey. Available at: https://maps.conservation.ca.gov/cgs/informationwarehouse/. Accessed June 29, 2022.

[33] Ibid.

[34] California Geological Survey (CGS) and U.S. Geological Survey (USGS). 2016. Earthquake Shaking Potential for California, Map sheet 48. Available at: https://www.conservation.ca.gov/cgs/Documents/Publications/Map-Sheets/MS_048.pdf. Accessed June 29, 2022.

[35] Merced County. 2022. *Merced County Zoning Code Section 16.16.010*. Available at: https://library.qcode.us/lib/merced_county_ca/pub/county_code/item/title_16-chapter_16_16-16_16_010. Accessed June 28, 2022.

[36] California Geologic Survey (CGS). 2022. CGS Seismic Hazards Program: Liquefaction Zones. Available at: https://gis.data.ca.gov/datasets/b70a766a60ad4c0688babdd47497dbad_0/explore?location=35.720844%2C-119.759465%2C8.10. Accessed June 29, 2022.

(iv) Landslides?

The project site and surrounding vicinity are generally level, and the proposed solar facility is proposed to operate autonomously. No additional persons than those living on-site would be on-site, except during maintenance activities. The site is not located within a CDOC mapped landslide hazard zone, and there are no known landslides located on-site.[37] Therefore, impacts related to landslides would be *less than significant*.

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

The project site is generally level, and project grading is expected to be balanced, which limits the potential for substantial soil erosion. Project-related ground-disturbing activities would include excavation and grading for foundations, access roads, and utility trenches. Temporary erosion could occur during project construction. Impacts related to erosion and loss of topsoil would be mitigated by compliance with BMPs identified in the grading permits. These practices typically include sediment control measures, such as silt fences, straw wattles, or sediment traps, during construction; dust suppression; and the installation of soil stabilization measures, including erosion control blankets, slope drains with outlet protection, and establishment of vegetative cover.

With implementation of site-specific BMPs, including those listed above, and compliance with **MM GEO-1**, impacts associated with soil erosion and the loss of topsoil would be *less than significant with mitigation*.

(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?

Lateral spreading is a phenomenon in which soils move laterally during seismic shaking and is often associated with liquefaction. The amount of movement depends on the soil strength, duration and intensity of seismic shaking, and topography. Due to the low potential for liquefaction and relatively flat site topography, the likelihood of lateral spreading is low.[38] Additionally, the project is not located on a geologic or soil unit that is unstable. However, loose soils have been identified on-site due to previous livestock activities.

The project contains no features that would create instability in the soil or result in landslides, lateral spreading, subsidence, liquefaction, or collapse. Implementation of **MM GEO-2** would ensure impacts to unstable soils are reduced to *less than significant with mitigation*.

(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?

Expansive soils can undergo significant volume changes in moisture content, causing the soils to shrink and harden when dried and expand when wet. Based on laboratory testing, the soils encountered were

[37] California Department of Conservation (CDOC). 1974, 2019. CGS Information Warehouse: Landslides. Available at: https://maps.conservation.ca.gov/cgs/informationwarehouse/landslides/. Accessed June 29, 2022.

[38] Salem Engineering Group, Inc. 2022. *Geotechnical Engineering Investigation: Proposed Ground Mount Solar Array, East Cleveland Road and South Arbor Way (37.1249, -120.4576), Merced, California*. May 2, 2022.

determined to have low compressibility, slight collapse potential, and negligible expansion potential;[39] therefore, impacts would be *less than significant*.

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

The proposed project includes development of a solar energy facility on a vacant portion of an agricultural site and would not include components requiring the use of septic tanks or wastewater disposal systems; therefore, *no impacts* would occur.

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

The proposed project area is immediately underlain by Pleistocene and Holocene alluvial deposits that have low potential to contain significant paleontological resources.[40] Based on review of the Geologic Map of the San Francisco-San Jose, California quadrangle, the project site is located in an area mapped as Modesto Formation deposits (Qm).[41] While there are no known paleontological resources or unique geologic features present in the proposed project area, there is a chance that currently unknown paleontological resources may exist below the ground surface and could be encountered during ground-disturbing activities.

Although the project has the potential to impact paleontological resources if the work affects sensitive, previously undisturbed surficial sediment or sedimentary rock, the potential for significant paleontological discovery and impact is anticipated to be low within the proposed project area. Because the project is on flat land, ground disturbance would be minimal, and there are no known paleontological resources within the project area. With implementation of **MM GEO-3**, impacts to paleontological resources or unique geologic features would be considered *less than significant with mitigation*.

Mitigation Measures

MM GEO-1: **Erosion and Sediment Control Plan or Stormwater Pollution Prevention Plan**. Prior to issuance of a grading permit, the applicant shall submit an Erosion and Sediment Control Plan or SWPPP prepared by a registered professional engineer or Qualified SWPPP Developer (QSD) as an integral part of the grading plan. The plan shall be subject to review and approval of the County prior to the issuance of a grading permit. The plan shall include all erosion control measures to be used during project construction and operation, including runoff control, sediment control, and pollution control measures for the entire site to prevent discharge of sediment and contaminants into the drainage system. Post-construction measures include maintenance of the bioretention areas and vegetative landscaping. Prior to any construction within 50 feet of the agricultural ditch, BMPs shall be installed to prevent runoff and siltation from entering the ditch. The plan shall include the following measures, as applicable:

- Throughout the construction process, ground disturbance shall be minimized, and existing vegetation shall be retained to the extent possible to reduce soil erosion.

[39] Salem Engineering Group, Inc. 2022. *Geotechnical Engineering Investigation: Proposed Ground Mount Solar Array, East Cleveland Road and South Arbor Way (37.1249, -120.4576), Merced, California*. May 2, 2022.

[40] Ibid.

[41] Ibid.

All construction and grading activities, including short-term needs (equipment staging areas, storage areas, and field office locations) shall minimize the amount of land area disturbed. Whenever possible, existing disturbed areas shall be used for such purposes.

- All drainage ways, wetland areas, and stream areas shall be protected from silt and sediment in storm runoff using appropriate BMPs, such as silt fences, diversion berms, and check dams. Fill slopes shall be stabilized and covered when appropriate. All exposed surface areas shall be mulched and reseeded. All cut and fill slopes shall be protected with hay mulch and/or erosion control blankets, as appropriate.
- During construction, all erosion control measures shall be installed according to the approved plans prior to the onset of the rainy season but no later than October 15. Construction erosion control measures shall remain in place until the end of the rainy season but may not be removed before April 15. The County shall be responsible for notifying construction contractors about erosion control requirements.
- Example design standards for erosion and sediment control include, but are not limited to, the following: avoiding disturbance in especially erodible areas; minimizing disturbance on slopes; using berms, swales, ditches, vegetative filter strips, and catch basins to prevent the escape of sediment from the site; conducting development in increments; and planting bare soils to restore vegetative cover.
- The County shall develop an inspection program to evaluate if there is any significant on-site erosion as a result of rainfall. If problems arise at the site after rainfall, the engineer or contractor shall enhance methods to manage onsite erosion.

MM GEO-2: **Over-Excavate Loose Soils.** During grading activities, the engineer shall over-excavate areas of disturbed soils where former livestock were present. These areas shall be backfilled with on-site soils and compacted engineered fill.

MM GEO-3: **Paleontological Resources Inadvertent Discovery.** In the event that a paleontological resource is discovered during construction of the project, excavations within 50 feet of the find shall be temporarily halted or delayed until the discovery is examined by a qualified paleontologist in accordance with Society of Vertebrate Paleontology standards. The project applicant shall include a standard inadvertent discovery clause in every construction contract to inform contractors of this requirement. If the find is determined to be significant and if avoidance is not feasible, the paleontologist shall design and carry out a data recovery plan consistent with the Society of Vertebrate Paleontology standards.

2.8 GREENHOUSE GAS EMISSIONS

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

Environmental Evaluation

This section relies on the *East Cleveland Solar Project Air Quality & Greenhouse Gas Emissions Calculations Technical Memorandum*[42] prepared for the project (see Appendix B).

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

GHGs are compounds in the earth's atmosphere that play a critical role in determining the earth's surface temperature. Specifically, these gases allow high-frequency solar radiation to enter the earth's atmosphere but retain the low-frequency energy, which is radiated back from the earth to space, resulting in a warming of the atmosphere. This phenomenon is known as the greenhouse effect. Increased concentrations of GHGs in the earth's atmosphere are thought to be linked to global climate change, causing rising surface temperatures, melting icebergs and snowpack, rising sea levels, and the increasing frequency and magnitude of severe weather. GHGs include carbon dioxide (CO_2), methane, ozone, water vapor, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Although CO_2 is the most abundant GHG, other GHGs are less abundant but have higher global warming potential than CO_2. Thus, emissions of other GHGs are frequently expressed in the equivalent mass of CO_2, denoted as CO_2e. GHGs are the result of natural and anthropogenic activities. Forest fires, decomposition, industrial processes, landfills, and consumption of fossil fuels for power generation, transportation, heating, and cooking are the primary sources of GHG emissions.

The SJVAPCD has not yet adopted updated significance thresholds for project-generated GHG emissions. The project-related direct and indirect emissions of GHGs were calculated using CalEEMod, version 2020.4.0, and are summarized in Table 8. Detailed assumptions and calculations, as well as CalEEMod outputs, are provided in Appendix B.

GHG emissions would be generated from the proposed project during construction and operation. Temporary GHG emissions would occur during construction activities, predominantly from heavy-duty construction equipment exhaust and worker commute trips. Based on the construction activity forecast, emissions would be below the threshold level of 1,1000 metric tons adopted by the SJVAPCD. [43] Table 8 shows total project construction emissions are approximately 11.14 metric tons CO_2e amortized over the

[42] AMBIENT Air Quality & Noise Consulting. 2022. *East Cleveland Solar Project Air Quality & Greenhouse Gas Emissions Calculations Technical Memorandum*. October 4.

[43] San Joaquin Valley Air Pollution Control District (SJVAPCD). 2009. Staff Report: Addressing GHG impacts under CEQA. Available at: http://www.valleyair.org/Programs/CCAP/12-17-09/1%20CCAP%20-%20FINAL%20CEQA%20GHG%20Staff%20Report%20-%20Dec%2017%202009.pdf. Accessed October 3, 2022.

30-year construction life; therefore, construction-related GHG emissions would not have a significant impact on the environment, and impacts would be less than significant.

Table 8. Annual GHG Emissions Summary

Emissions Source	GHG Emissions (metric tons CO2e/year)
Routine Maintenance and Panel Washing	0.28
Construction emissions – amortized [1]	10.86
Total	**11.14**
Displaced emissions (from project operation) [2]	−1,875
Total Annual Emissions	**−1,864**
Significance threshold	1,100
Threshold exceeded?	No

[1] Total construction emissions amortized over project life of 30 years and includes GHG emissions associated with project decommissioning.

[2] Net displaced GHG emissions accounts for project generated GHG emissions associated with routine maintenance and solar panel cleaning activities, as well as construction generated GHG emissions amortized over an assumed 30 year project life.

Operations and maintenance of the proposed project would result in low-level GHG emissions from the off-site motor vehicle worker, vendor, and haul trips and the operation of the control/administration building on-site. Table 8 shows total project operations emissions are approximately 0.28 metric tons CO_2e. Therefore, operation-related GHG emissions would not have a significant impact on the environment, and impacts would be less than significant.

The project would offset GHG emissions through renewable energy generation and thereby result in environmental benefits by lessening the impacts of global climate change; as such, the annual displaced GHG emissions were estimated to include all direct and indirect emissions associated with implementation of the project. As described above, it is anticipated that the decommissioning emissions would be lower than the construction emissions.

As Table 8 shows, the amount of GHGs potentially displaced by the proposed project would more than offset estimated annual GHG emissions associated with project construction and operational activities and would be considered a beneficial impact of the project. Therefore, the proposed project would have a beneficial GHG emissions impact.

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

Currently, there are no federal, state, or local climate change or GHG emissions regulations that address the GHG emissions from project construction. There are a number of federal, state, and local plans and policies, and GHG emissions reduction strategies, that are potentially applicable to the proposed project, either directly or indirectly. The project operation is consistent with the following:

- The project is consistent with the AB 32 scoping plan strategies to increase the total amount of renewable energy sources consistent with the goal of the State's Renewable Portfolio Standard (RPS).
- The project is consistent with the CARB's emission reduction strategy presented in the scoping plans. The 2008 Scoping Plan specifically addresses critical measures directed at emission sources that are included in the cap-and-trade program that are designed to achieve cost-effective emissions reductions while accelerating the necessary transition to the low-carbon economy.

- The proposed project implementation will help California meet its RPS requirements.

The project would help promote California's GHG policies by creating renewable energy resources and would not exceed applicable GHG screening levels. Therefore, the proposed project would not conflict with an applicable plan, policy, or regulation adopted to reduce GHG emissions. Moreover, projects that are consistent with applicable plan, policy, or regulation adopted to reduce GHG emissions are considered less than significant during construction, operation, and reclamation.

Mitigation Measures

No mitigation is required.

2.9 HAZARDS AND HAZARDOUS MATERIALS

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project:				
(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 0.25 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 a plan has not been adopted, within 2 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?	☐	☐	☒	☐

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?

A significant impact may occur if a project would involve the use or disposal of hazardous materials as part of its routine operations or would have the potential to generate toxic or otherwise hazardous emissions that could adversely affect sensitive receptors.

Construction of the project would involve the transport, use, and disposal of potentially hazardous materials. These materials include lime, paints, adhesives, surface coatings, cleaning agents, fuels, and oils that are typically associated with development of roadway projects. As described in Chapter 1, *Project Description*, construction activities would be temporary and last approximately 6 months. These temporary construction activities involving the use, transport, storage, and disposal of hazardous materials would be conducted in compliance with all health and safety requirements, such as County and City General Plan policies, California Code of Regulations (CCR) Sections 337 through 340, Chapter 6.95 of California Health and Safety Code Article 1, and CCR Title 19, Public Safety, Division 2 (if required).

Project operation involves use of a BESS, which would require the applicant to obtain a Hazardous Materials Business Plan.

Because the Applicant would comply with applicable regulations and laws pertaining to the transport, storage, use, and disposal of potentially hazardous materials, the exposure of the public, construction workers, and environment to hazardous materials would be *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?

A significant impact may occur if a project could create an upset or accident condition involving hazardous materials. Construction of the project would use small amounts of hazardous materials, such as diesel fuel or solvents. Project operation would not use hazardous materials but would require operation of battery storage. As stated in Impact Discussion 2.9(a), the project would not 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, and the impact would be *less than significant*.

(c) Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?

A project-related significant adverse effect may occur if a project site is within 0.25 mile of an existing or proposed school site, and the project is projected to release hazardous emissions that would exceed regulatory thresholds and would pose a health hazard. The closest school is El Nido Elementary School, located approximately 1.8 miles west of the project. There are no schools within 0.25 mile of the project, and *no impacts* would occur.

(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?

California Government Code Section 65962.5 requires various state agencies to compile lists of hazardous waste disposal facilities, unauthorized release from underground storage tanks, contaminated drinking water wells, and solid waste facilities from which there is known migration of hazardous waste, and to submit such information to the Secretary for Environmental Protection on at least an annual basis. In meeting the provisions in California Government Code Section 65962.5, commonly referred to as the "Cortese List," database resources such as the California Department of Toxics Substances Control (DTSC) EnviroStor and State Water Resources Control Board (California Water Boards) GeoTracker databases provide information regarding identified facilities.

The *Phase 1 Environmental Site Assessment: Former Pastureland, 1945 East Cleveland Road, El Nido, California* (Phase 1 ESA) concluded that the project site is not on any governmental databases.[44]According to EnviroStor,[45] the nearest listed site is Potter Auxiliary Field 5 (#80000597), which is over 5 miles east of the project site. That site has been designated as a No Further Action site since May 21, 2018. On GeoTracker, [46] the nearest site is located approximately 1 mile south has been designated as a Leaking Underground Storage Tank (LUST) Cleanup site, and the case was closed on June 5, 1995.

The proposed project site is not listed on a hazardous materials list and would not create a significant hazard to the public; therefore, impacts would be *less than significant*.

(e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

The project site is not located with an airport land use plan, and there are no public airports within 2 miles of the project site. Additionally, the Federal Aviation Administration (FAA) made a project determination of No Hazard to Air Navigation issued on November 8, 2021.[47] The project would not result in a safety hazard for people residing or working in the project area, and *no impacts* would occur.

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

The Merced Office of Emergency Services (OES) was established in 1971 and is tasked to coordinate emergency activities between the county, cities, and special districts and serve as a communications link

[44] HEI Corporation. 2021. *Phase 1 Environmental Site Assessment: Former Pastureland, 1945 East Cleveland Road, El Nido, California*. Prepared for East Cleveland Road Solar. July 29.

[45] California Department of Toxics Substances Control (DTSC). 2018. EnviroStor. Available at: https://www.envirostor.dtsc.ca.gov/public/map. Accessed June 30, 2022.

[46] State Water Resources Control Board (California Water Boards). 2018. GeoTracker. Available at: https://geotracker.waterboards.ca.gov/map/. Accessed June 30, 2022.

[47] Federal Aviation Administration (FAA). 2021. *Determination of No Hazard to Air Navigation*. Aeronautical Study No. 2021-AWP-14851-OE.

focusing on the collection, processing, and dissemination of vital disaster information.[48] Additionally, the Merced County Community and Economic Development oversees state-mandated programs in Merced County, including hazardous materials generators and the California Accidental Release Prevention (CalARP) Program.

The proposed project would not include any characteristics (e.g., permanent road closures, etc.) that would physically impair or otherwise interfere with implementation of any adopted emergency response plan or emergency evacuation plan for the project vicinity; additionally, the facility would operate autonomously, except for routine maintenance. Therefore, impacts 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?

The California Department of Forestry and Fire Protection (CAL FIRE) has mapped fire threat potential throughout California. The project area is located in a rural agricultural area and is within a CAL FIRE Fire Hazard Severity Zone (FHSZ) Local Responsibility Area (LRA).[49] There are no Very High FHSZ near the project site, the facility would operate autonomously, and there would not be a significant risk of loss, injury, or death involving wildland fires.[50] Therefore, it would not substantially impair an adopted emergency response plan or emergency evacuation plan, and impacts would be *less than significant*.

Mitigation Measures

No mitigation is required.

2.10 HYDROLOGY AND WATER QUALITY

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project:				
(a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface water or groundwater quality?	☐	☒	☐	☐
(b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede 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;	☐	☒	☐	☐

[48] Merced County. 2013. *General Plan Background Report*. December. Available at: https://www.countyofmerced.com/DocumentCenter/View/6768/2030-Merced-County-General-Plan-Background-Report?bidId= Accessed September 13, 2022.

[49] California Department of Forestry and Fire Protection (CAL FIRE). 2007. FHSZ Viewer. Available at: https://egis.fire.ca.gov/FHSZ/. Accessed June 29, 2022.

[50] Ibid.

	Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
(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?	☐	☐	☒	☐

Environmental Evaluation

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

The site is currently undeveloped and pervious, and the proposed project would generate stormwater runoff from increased impervious surfaces. The project proposes adding approximately 237,152 square feet of impervious surface, including the panel surface, even though pervious areas would be located beneath the panels. The proposed BESS would be located on a gravel pad in the southeast corner of the parcel, and the proposed access road and parking areas are proposed to be gravel.

The California Regional Water Quality Boards are responsible for regulating stormwater discharge associated with project construction activities, such as clearing, grading, and excavation. Because the project would disturb over 1 acre of land, the Applicant would be required to obtain the State's General Construction Permit and prepare a SWPPP as a uniformly applied development standard. The purpose of the SWPPP is to describe and prescribe BMPs to control sediment and other pollutants during construction from possibly entering stormwater. The SWPPP must address grading and erosion impacts, as well as non-point source pollution impacts from the proposed project, including post-construction operations. BMPs implemented to address commercial pollutant sources generally involve maintenance of storm drain facilities, parking lots, vegetated areas, and dissemination of educational materials. Construction impacts must comply with the erosion/pollution control plan, which would include site-specific BMPs designed to prevent runoff from construction areas, impacting surface water quality. No construction would occur during major rain events, minimizing any chance of runoff from the site. Post-construction measures may include maintenance of the bioretention areas and vegetative landscaping.

Additionally, project design would comply with Chapter 9.53 (Regulation of Stormwater) of the County Code. Per Regulations and Requirements, Section 9.53.030A(2),[51] operators of a construction project would be required to prepare and submit a Sediment Control Plan (SCP) to the County Department of Public Works (DPW) for review and approval as a uniformly applied development standard.

[51] Merced County. 2022. Storm Water Management. Available at: https://www.countyofmerced.com/998/Storm-Water-Management. Accessed September 29, 2022.

Conformance with the State's General Construction Permit, the County Stormwater Ordinance, and **MM GEO-1** would ensure the project would not violate any water quality standards or waste discharge requirements and would not otherwise substantially degrade surface water or groundwater quality. Therefore, impacts would be *less than significant with mitigation*.

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

Groundwater for local, domestic, and commercial use is obtained from the Merced Groundwater Subbasin, which encompasses most of Merced County.[52] There are no water connections to existing services or groundwater use proposed as part of the project. The project is estimated to use approximately 10,000 gallons (approximately 0.03 acre-feet per year [AFY]) annually. Construction activities would require water for dust control, which would be delivered to the site by truck, and is estimated to be approximately 500,000 gallons (1.5 AFY).

Water would occasionally be trucked in for panel washing, provided by the Lone Tree Mutual Water Company, who provides water for agricultural irrigation uses in El Nido area and would be the water supplier for the proposed project. Lone Tree Mutual Water Company provides water pumped from the Merced Subbasin. The Merced Subbasin groundwater elevations have been monitored by various agencies since 1980. Average groundwater levels beneath the Merced Subbasin have declined approximately 14 feet, with most of this decline occurring between 1980 and 1996. Generally, the Merced Subbasin considered to be in a state of mild long-term groundwater level decline. However, the El Nido area has seen an increased delivery of surface water to the area by the Merced Irrigation district (MID), and the rate of groundwater level decline has shown a substantial decrease.[53] Given the additional delivery of water from MID, project construction and operation wouldn't represent a substantial decrease of groundwater supplies or interfere with groundwater recharge such that the project may impede sustainable groundwater management of the basin; therefore, impacts would be considered *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?

The proposed project would include grading activities and approximately 237,152 square feet of impervious surface. As mentioned in Impact Discussion 2.10(a), because the project would disturb over 1 acre of land, the applicant would be required to obtain the State's General Construction Permit and prepare a SWPPP or SCP. All project components would be required to implement erosion control measures as discussed under Impact Discussion 2.10(a) and as required in **MM GEO-1.**

Improper project grading activities, both during and post-construction, have the potential to increase the volume of runoff from a site and subsequently increase erosion. As discussed in Impact Discussion 2.7(b) in Section 2.7, *Geology and Soils*, the potential soil erosion impact of the project would be less than

[52] Merced County. 2022. Merced Subbasin Groundwater Sustainability Agency. Available at: https://www.countyofmerced.com/2799/Merced-Subbasin-GSA. Accessed September 29, 2022.

[53] Merced Integrated Regional Water Management Plan, 2019 Update. Available at: https://mercedirwmp.org/files/MIRWMP%20Revised%20Final.pdf. Accessed September 16, 2022.

significant through implementation of **MM GEO-1**, which would require the applicant to prepare and implement a SWPPP or SCP. Because of these regulatory standards and this mitigation measure, substantial siltation and erosion is not anticipated; therefore, the impact would be *less than significant with mitigation*.

(ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

A significant impact may occur if a project results in increased runoff volumes during construction or operation of the project that would result in flooding conditions affecting the project site or nearby properties. The project would result in an increase of approximately 237,152 square feet of impervious surface area, which would increase rate of runoff over existing conditions.

As described in Impact Discussions 2.10(a) and 2.10(b), the applicant would be required to implement BMPs to manage runoff and stormwater. Temporary pollution prevention and permanent stormwater BMPs have been designed to minimize the introduction of pollutants into streambeds and drainages. During construction, the contractor would be required to use filter fabric, gravel bags, straw wattles, or similar measures to collect sediment and filter water before allowing its discharge to downstream facilities. This would also require that disturbed areas be seeded to help stabilize unvegetated areas. Permanent BMPs and post-construction measures include maintenance of the bioretention areas, and vegetative landscaping management.

With these design measures and BMPs in place, the project would not substantially increase the rate or amount of surface runoff in a manner that would result in flooding, and the impact 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?

The project would result in an increase of approximately 237,152 square feet of impervious surface area, which would increase rate of runoff over existing conditions. As mentioned in Impact Discussion 2.10(a), because the project would disturb over 1 acre of land, the Applicant would be required to obtain the State's General Construction Permit and prepare a SWPPP or SCP.

All project components would be required to implement erosion control measures as discussed under Impact Discussion 2.10(a). There are not existing drainage facilities and stormwater would be managed and detained onsite consistent with current RWQCB post-construction requirements. Additionally, compliance with **MM GEO-1** would ensure that the project would not increase the rate or amount of surface runoff in a manner that would exceed the capacity of onsite drainage systems, and the impact would be *less than significant*.

(iv) Impede or redirect flood flows?

A significant impact may occur if a project were located in a flood hazard area and would impede or redirect flood flows. The project is not mapped in a flood hazard zone and is not located in an area with known localized flooding issues;[54] therefore, the project would not impede or redirect flood flows and *no impacts* would occur.

[54] Federal Emergency Management Agency (FEMA). 2021. FEMA Flood Map Service Center. Available at: https://msc.fema.gov/portal/search?AddressQuery. June 29, 2022.

(d) Would the project in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

The project site is not located in a tsunami hazard area, as mapped by the CDOC.[55] The project would not risk the release of pollutants due to project inundation from a tsunami, and *no impacts* would occur.

(e) Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

There are no water connections to existing municipal services proposed as part of the project. The project is estimated to use approximately 10,000 gallons (approximately 0.03 AFY) annually. Construction activities would require water for dust control, which would be delivered to the site by truck, and is estimated to be approximately 500,000 gallons (1.5 AFY).

The project is located in the Merced Integrated Regional Water Management Plan (IRWMP) Region east of the San Joaquin River in Merced Irrigation District's Division 2: El Nido.[56] The region boundaries were developed cooperatively by water management agencies in the region and approved by the California Department of Water Resources (DWR).[57] The Merced Groundwater Sustainability Agencies (GSAs) intend to continue activities necessary to implement the Groundwater Sustainability Plan (GSP) and put the basin on a path toward sustainable management. After the DWR determined on January 28, 2022, that the GSP was "incomplete," the GSP was updated in July 2022, which included responses to corrective actions laid out by DWR.[58]

The General Plan policies require groundwater resources to be protected, as required by a sustainable groundwater management plan. Project operations would not increase demands for groundwater. As part of complying with permit requirements during ground-disturbing or other construction activities, water quality control measures and BMPs would be implemented to ensure that water quality standards would be achieved, including water quality objectives that protect designated beneficial uses of surface water and groundwater, as defined in the GSP.

As noted previously, the project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin. The project would not conflict with or obstruct implementation of the IRWMP, GSP or other groundwater management plan, and impacts would be *less than significant*.

Mitigation Measures

No mitigation is required.

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[55] California Department of Conservation (CDOC). 2021. Tsunami Hazard Area Map. Available at: https://maps.conservation.ca.gov/cgs/informationwarehouse/. Accessed June 29, 2022.

[56] Merced County. 2009. *Draft Merced IRWMP, Conservation and Irrigation Districts*. Available at: https://www.countyofmerced.com/DocumentCenter/View/2484/Draft-IRWMP---Water-Conserv-and-Irrigation-Dist?bidId=. Accessed September 29, 2022.

[57] Merced Integrated Regional Water Management (IRWM). 2013. *Agricultural Water Management Plan*. Available at: https://www.mercedirwmp.org/index.html. Accessed September 29, 2022.

[58] Woodard & Curran. 2022. *Merced Groundwater Subbasin Groundwater Sustainability Plan: Water Year 2021 Annual Report*. Available at: http://mercedsgma.org/assets/pdf/reports/Merced-Subbasin-GSP-Annual-Report-Water-Year-2021.pdf. Accessed September 29, 2022.

2.11 LAND USE AND PLANNING

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project:				
(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?	☐	☐	☒	☐

Environmental Evaluation

The project site is currently zoned by the County as A-1 (General Agriculture) and is classified as Agricultural Land in the General Plan.[59,60] As outlined in County Code Section 18.10.010 ("Purpose of Agricultural Zones"),[61] the zoning district is to provide for areas for intensive farming operations dependent on higher quality soils, water availability, relatively flat topography, and agricultural commercial and/or industrial uses dependent on proximity to urban areas or location in sparsely populated low traffic areas.

Section 18.10.010 of the County Code identifies "Energy Generation Facilities, Wind Farms, Biomass Fuel Manufacturing (off-site energy use)" as uses that would require a CUP on General Agriculture land.

(a) Would the project physically divide an established community?

The project site is undeveloped and contains two residences and various accessory structures such as barns and sheds for livestock, ornamental trees, and a paddock for goats are located on the eastern portion of the parcel. The site is located at approximately 150 feet above sea level and contains flat, rural farmland. The surrounding area is characterized by agricultural operations (orchards, row crops, and dairies) and scattered rural residences.

The project site would be accessed via a 12-foot-wide gravel access point off of South Arbor Way. A 20-foot access driveway would provide access throughout the site. The improvements to roadway patterns and vehicle site access and circulation would not introduce physical features that create divisions or barriers. The project would not physically divide an established community and the impact would be *less than significant*.

[59] Merced County. 2009. *Merced County General Plan Designation Map*. Available at: https://mercedcounty.maps.arcgis.com/apps/webappviewer/index.html?id=31a7197f80cc4c729c0c559ca08150a5. Accessed June 15, 2022.

[60] Merced County. 2022. *Merced County Zoning Designation Map with Parcel Look Up*. Available at: https://mercedcounty.maps.arcgis.com/apps/webappviewer/index.html?id=8c1725dd20594ea4b7129c9d097c048a. Accessed June 15, 2022.

[61] Merced County. 2022. *Merced County Zoning Code Section 18.10.010*. Available at: http://online.encodeplus.com/regs/mercedcounty-ca/doc-viewer.aspx?secid=1467#secid-1468. Accessed June 28, 2022

(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?

A project would have a significant impact related to land use consistency if it would be inconsistent with the General Plan or its elements, a local coastal plan, or adopted environmental goals or policies, or if it would require a General Plan amendment or zone change.

The following policies contained in the General Plan are applicable to the project site's zoning of A-1 General Agriculture lands:[62]

- **Policy AG-2.2: Agricultural Land Mitigation (RDR).** Protect productive agricultural areas from conversion to non-agricultural residential uses by establishing and implementing an agricultural mitigation program that matches acres converted with farmland acres of similar quality to those converted preserved at a 1:1 ratio.
- **Program AG-J: Agricultural Conservation Easement Program (MPSP).** The County shall develop and adopt and Agricultural Land Mitigation Program ordinance. The ordinance shall ensure that agricultural mitigation is required for the conversion or change from an agricultural use to a predominantly non-agricultural use prior to, or concurrently with, approval of a zone change from agricultural to nonagricultural zoning designation, or other discretionary action by the County.
- **Policy AG-3.11: Solar and Wind Energy Production Facilities (RDR)** Encourage the installation of solar and wind energy production facilities in agricultural areas so long as they do not result in a tax burden to the County, do not result in permanent water transfers off of productive agricultural land, or do not require cancellation of Williamson Act contracts. In addition, these facilities should include dedications of agricultural land and habitat mitigation, measures to control erosion, and assurances for financing decommissioning activities

As noted in Section 2.2, *Agriculture and Forest Resources*, County Code Section 9.30.020 states that "Productive Agricultural Land" means land designated "Prime Farmland," "Farmland of Statewide Importance," and "Unique Farmland" by the CDOC as shown on their latest Important Farmland Map, prepared in accordance with the FMMP. According to the map, a majority of the project site is classified as "Farmland of Local Importance," and no mitigation would be required. The project does not propose any new, expanded, or modified land use in the project area and would not conflict with the existing and surrounding uses; therefore, impacts would be *less than significant*.

Mitigation Measures

No mitigation is required.

[62] Merced County. 2013. *2030 Merced County General Plan*. December 10. Available at: https://www.countyofmerced.com/DocumentCenter/View/6766/2030-Merced-County-General-Plan?bidId=. Accessed September 14, 2022.

2.12 MINERAL RESOURCES

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project:				
(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?

The project is located in an area characterized by agricultural operations (orchards, row crops, and dairies) and scattered rural residences. The site is currently being used to dry farm hay. The project proposes construction of a 3 MW solar PV electric generating facility on approximately 17 acres of the 40-acre parcel.

Per the *Mineral Land Classification of Merced County, California*, there are no known mineral resources on or surrounding the project site;[63] therefore, *no impacts* would occur.

(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?

A significant impact may occur if a project site is located in a County-designated Mineral Resource Zone (MRZ). MRZ-1 is defined as little likelihood for the presence of significant mineral resources and MRZ-2 is defined as significant mineral deposits present. The County does not designate the project site in either of these MRZs.[64] Per the General Plan, sand and gravel aggregate mines are located near the existing major rivers and creeks. Although eight major aggregate mine companies exist in Merced County,[65] none of these sites are located near the project site. For these reasons, *no impacts* would occur to the availability of a locally important mineral resource site.

Mitigation Measures

No mitigation is required.

[63] California Department of Conservation (CDOC). 1999. *Mineral Land Classification of Merced County, California*. DMG Open-file Report 99-08. California Department of Conservation Division of Mines and Geology.

[64] Ibid.

[65] Merced County. 2012. *2030 Merced County General Plan, Chapter 8: Natural Resources*. Available at: https://web2.co.merced.ca.us/pdfs/planning/generalplan/DraftGP/BackroundRpt_2030/MCGPU_BR_Ch8_NatRes-2012-11-30.pdf. Accessed June 29, 2022.

2.13 NOISE

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project result in:				
(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 2 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?	☐	☐	☐	☒

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?

The General Plan identifies the major sources of noise in Merced County to be traffic on I-5, state highways and local roads, railroad operations, aircraft operations, commercial uses, active recreation areas, and outdoor play areas.[66] The proposed project is located in a rural area zoned by the County as A-1 (General Agriculture) and classified as Agricultural Land in the General Plan.[67,68] Construction of the project would increase noise in the project vicinity and involve site preparation, grading, construction, and architectural coating work. The noise generated from project construction would be temporary and is anticipated to last approximately 6 months.

There are two residences onsite. The nearest sensitive noise receptors are a residence located on the adjacent property approximately 100 feet south of the southwest corner of the project site of the proposed project improvements, and another residence located approximately 380 feet from south the project site. Per General Plan Implementation Goal HS-7, the project would be required to limit exterior noise levels

[66] Merced County. 2013. *General Plan, Health and Safety Element*. Available at: https://www.countyofmerced.com/DocumentCenter/View/6766/2030-Merced-County-General-Plan?bidId= Accessed September 15, 2022

[67] Merced County. 2009. *Merced County General Plan Designation Map*. Available at: https://mercedcounty.maps.arcgis.com/apps/webappviewer/index.html?id=31a7197f80cc4c729c0c559ca08150a5. Accessed June 15, 2022.

[68] Merced County. 2022. *Merced County Zoning Designation Map with Parcel Look Up*. Available at: https://mercedcounty.maps.arcgis.com/apps/webappviewer/index.html?id=8c1725dd20594ea4b7129c9d097c048a. Accessed June 15, 2022.

at residential or other noise-sensitive land uses to 65 decibels (dB) day-night average noise level (Ldn) and interior noise levels to 45 dB Ldn.[69]

Per County Code Section 10.60.030 ("Sound Level Limitations"), the County sets limitations on noise levels at the property line of affected parcels and states the following: No person shall cause, suffer, allow, or permit the operation of any sound source on private property in such a manner as to create a sound level that results in any of the following, when measured at or within the real property line of the receiving property: Exceed the background sound level by at least ten (10) dBA during daytime hours (7:00 a.m. to 10:00 p.m.) and by at least five dBA during nighttime hours (10:00 p.m. to 7:00 a.m.). The background sound level is not permitted to exceed 65 dBA Ldn on residential real property or 70 dBA Ldn on nonresidential real property; or exceed 75 dBA Lmax on residential real property or 80 dBA Lmax on nonresidential real property.

Pile driving is proposed during construction and may exceed noise levels outlined in County Code Section 10.60.030 ("Sound Level Limitations"). The nearest noise-sensitive receptor is located 100 feet south of the project site's southeast corner. The implementation of Mitigation Measure N-2 requires the implementation of "quiet" pile-driving technology (such as pre-drilling of piles, sonic pile drivers, auger cast-in-place, or drilled-displacement, or the use of more than one pile driver to shorten the total pile-driving duration [only if such measure is preferable to reduce impacts to sensitive receptors]) where feasible. If impact pile driving is unavoidable, MM N-2 requires fitting impact pile driving equipment with an intake and exhaust muffler and a sound-attenuating shroud, as specified by the manufacturer. MM N-2 also requires noise monitoring before, during, and after the pile driving activity. Although it is possible that despite application of this standard requirement, construction activities may exceed acceptable noise levels at noise-sensitive receptors or increase noise levels by 10 dBA above ambient levels at noise-sensitive receptors, with application of MM N-2, the expected frequency, duration, and intensity of construction noise above these levels would be substantially reduced. Specifically, installation of the solar facility's foundation would be short term and minimized through these technologies to the extent feasible.

However, the County Code exempts several noise sources, including emergency signaling devices, exterior burglar alarms, domestic power tools, and construction activity between 7:00 a.m. and 6:00 p.m., if all construction equipment is properly muffled and maintained.[70] Therefore, project construction noise would be exempt from applicable standards, if conducted between 7:00 a.m. and 6:00 p.m. However, construction noise can be considered intrusive at noise-sensitive land uses (e.g., residences), particularly during the evening and nighttime hours. Therefore, implementation of **MM N-1** and **MM N-2** have been identified which set forth construction BMPs and quiet construction technology for abating noise and would reduce construction noise impacts to *less than significant with mitigation*.

Operationally, the project would not generate noise that would result in a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the General Plan or County Code. The facility would operate autonomously and would passively generate solar power; therefore, impacts would be *less than significant*.

[69] Merced County. 2013. *General Plan, Health and Safety Element*. Available at: https://www.countyofmerced.com/DocumentCenter/View/6766/2030-Merced-County-General-Plan?bidId=. Accessed June 21, 2022.

[70] Merced County. *County Code Chapter 10.60 NOISE CONTROL*. Available at: https://library.qcode.us/lib/merced_county_ca/pub/county_code/item/title_10-chapter_10_60. Accessed September 15, 2022

(b) Generation of excessive groundborne vibration or groundborne noise levels?

Construction activities (e.g., ground-disturbing activities, including movement of heavy construction equipment and hauling of debris and soil from the project site) may generate localized groundborne vibration and noise. Most proposed activities are consistent with other types of standard construction activities and would not be excessive. Groundborne noise and vibration as a result of pile driving activities would be minimized through implementation of **MM N-1** and **MM N-2**; therefore, impacts would be *less than significant with mitigation*.

(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 2 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 project is not located within the vicinity of a private airstrip or an airport land use plan and would not expose people residing or working in the project area to excessive noise levels; therefore, *no impacts* would occur.

Mitigation Measures

MM N-1: **Construction Noise Control Best Management Practices:** During construction, the applicant shall follow the construction noise best management practices below:

- Construction work hours shall be limited to the hours of 7:00 a.m. to 6:00 p.m., every day. No construction shall be permitted on Sundays and federal and state holidays.
- Heavy equipment engines shall be covered, and exhaust pipes shall include a muffler in good working condition.
- Stationary equipment such as compressors, generators, and welder machines shall be located as far away from surrounding residence as possible. The project shall connect to existing electrical service at the site to avoid the use of stationary, diesel-fueled, or other alternatively fueled power generators, if feasible.
- Impact tools such as jack hammers shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. When use of pneumatic tools is unavoidable, it shall be ensured the tool will not exceed a decibel limit of 85 dBA at a distance of 50 feet. Pneumatic tools shall also include a noise suppression device on the compressed air exhaust.
- No radios or other amplified sound devices shall be audible beyond the property line of the construction site.

MM N-2: **Construction Noise Control and Noise Control Plan**: If construction is completed outside of normal construction hours (7:00 am to 6:00 pm), the project sponsor team shall submit a project-specific construction Noise Control Plan to Merced County for approval. The Noise Control Plan shall identify noise control measures and include the following:

- Merced County and the project sponsor and/or its contractors shall prepare construction noise control documentation as detailed below.

- The construction noise control plan shall be prepared by a qualified acoustical engineer or qualified professional at the County's discretion, with input from the construction contractor, and include all feasible measures to reduce construction noise. The construction noise control plan shall identify noise control measures to meet a performance target of construction activities not resulting in a noise level greater than 75 dBA at noise-sensitive receptors and 10 dBA above the ambient noise level at noise-sensitive receptors. The County shall ensure that requirements of the construction noise control plan are included in contract specifications.
- The construction noise control plan shall include, the following measures to the degree feasible, or other effective measures, to reduce construction noise levels:
    - Use construction equipment that is in good working order, and inspect mufflers for proper functionality;
    - Select "quiet" construction methods and equipment (e.g., improved mufflers, use of intake silencers, engine enclosures);
    - Use construction equipment with lower noise emission ratings whenever possible, particularly for air compressors;
    - Prohibit the idling of inactive construction equipment for more than five minutes;
    - Locate stationary noise sources (such as compressors) as far from nearby noise-sensitive receptors as possible, muffle such noise sources, and construct barriers around such sources and/or the construction site;
    - Avoid placing stationary noise-generating equipment (e.g., generators, compressors) within noise-sensitive buffer areas (as determined by the qualified professional) immediately adjacent to neighbors;
    - Enclose or shield stationary noise sources from neighboring noise-sensitive properties with noise barriers to the extent feasible. To further reduce noise, locate stationary equipment in pit areas or excavated areas, if feasible; and
    - Install temporary barriers, barrier-backed sound curtains and/or acoustical panels around working powered impact equipment and, if necessary, around the project site perimeter. When temporary barrier units are joined together, the mating surfaces shall be flush with each other. Gaps between barrier units, and between the bottom edge of the barrier panels and the ground, shall be closed with material that completely closes the gaps, and dense enough to attenuate noise.
- The following measures for notifying the public of construction activities, complaint procedures, and monitoring construction noise levels may include the following:
    - Designate an on-site construction noise manager for the project;
    - Notify neighboring noise-sensitive receptors within 300 feet of the project construction area at least 30 days in advance of high-intensity noise-generating activities (e.g., pile driving, and other activities that may generate noise levels greater than 75 dBA at noise-sensitive receptors) about the estimated duration of the activity;

- Post a sign onsite describing noise complaint procedures and a complaint hotline number that shall always be answered during construction;
- Implement a procedure for notifying the planning department of any noise complaints within one week of receiving a complaint;
- Establish a list of measures for responding to and tracking complaints pertaining to construction noise. Such measures may include the evaluation and implementation of additional noise controls at sensitive receptors (residences, hospitals, convalescent homes, schools, churches, hotels and motels, and sensitive wildlife habitat); and
- Conduct noise monitoring (measurements) at the beginning of major construction phases (e.g., demolition, grading, excavation) and during high-intensity construction activities to determine the effectiveness of noise attenuation measures and, if necessary, implement additional noise control measures.

- Where feasible, the construction noise control plan shall include the following additional measures in the event of pile-driving activities:
  - When pile driving is to occur within 600 feet of a noise-sensitive receptor, implement "quiet" pile-driving technology (such as pre-drilling of piles, sonic pile drivers, auger cast-in-place, or drilled-displacement, or the use of more than one pile driver to shorten the total pile-driving duration [only if such measure is preferable to reduce impacts to sensitive receptors]) where feasible, in consideration of geotechnical and structural requirements and conditions;
  - Where the use of driven impact piles cannot be avoided, properly fit impact pile driving equipment with an intake and exhaust muffler and a sound-attenuating shroud, as specified by the manufacturer; and
  - Conduct noise monitoring (measurements) before, during, and after the pile-driving activity.

2.14 POPULATION AND HOUSING

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project:				
(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)?

Construction job opportunities created as a result of the project are not expected to result in substantial population growth in the area. The on-site construction workforce would consist of laborers, craftsmen, and supervisory, support, and construction management personnel. Up to 40 workers would be on-site at the peak. These workers would be on-site during the 6 months of construction. Construction workers are anticipated to be local or regional and would not be likely to relocate their household due to project work. Operation of the project would require two staff that may choose to move to the area. Therefore, significant housing or population impacts would not result from construction of the project and the project would not induce substantial unplanned population growth; therefore, impacts would be *less than significant*.

(b) Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

The proposed project includes construction of a solar facility on agricultural land. No housing is proposed. The project would not involve the demolition or displacement of substantial numbers of existing people or housing; therefore, *no impacts* would occur.

Mitigation Measures

No mitigation is required.

2.15 PUBLIC SERVICES

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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:				
(a) Fire protection?	☐	☐	☒	☐
(b) Police protection?	☐	☐	☒	☐
(c) Schools?	☐	☐	☒	☐
(d) Parks?	☐	☐	☒	☐
(e) Other public 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 fire protection?

The Merced County Fire Department provides fire protection services to the County, which includes fire suppression, hazardous materials mitigation, paramedic response, and urban search and rescue, through Fire Station 83, located at 10537 CA-59 in El Nido, approximately 2 miles west of the project site (an approximately 4 minutes trip by vehicle).

The project would involve industrial uses and would be required to conform with the 2019 California Fire Code, as adopted by the County in County Code Section 16.30.010. The project would represent an expansion and intensification of industrial uses and square footage, but the increase would not result in a substantial change to service ratios for Fire Station 83 and would not require the need for new facilities or to physically alter Fire Station 83 to maintain performance objectives. Therefore, the project would not substantially increase the demand for fire protection services, and impacts would be *less than significant*.

(b) 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 police protection?

The Merced County Sheriff's Office provides police service to the project site and is located at 700 West 22nd Street in downtown Merced, approximately 12 miles north of the project site, and approximately 22 minutes driving. The Sheriff's Office provides court protection, jail administration, and coroner service for the entire county, and provides patrol, detective, and other police services for the unincorporated parts of the county.

The proposed project would be fenced, and access would be restricted. The project would represent an expansion and intensification of development on-site but would not increase the number of residents, require the need for new facilities, or substantially increase the demand for police protection services; therefore, impacts would be *less than significant*.

(c) 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 schools?

As discussed in Section 2.14, Population and Housing, the project does not involve residential uses and would not add substantial population to the project area. There could be a minimal increase in the number of students if any permanent staff with children relocate to the area. Due to the limited number of permanent staff, impacts would be *less than significant*.

(d) 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 parks?

As discussed in Section 2.14, Population and Housing, the project does not involve residential uses and would not add substantial population to the project area. Therefore, the project would not substantially increase demand for recreational resources, and impacts would be *less than significant*.

(e) 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 other public facilities?

As discussed in Section 2.14, Population and Housing, the project does not involve residential uses, the project would not add substantial population, and the facility would operate with limited staff. Impacts to stormwater, wastewater, and water facilities are discussed in Section 2.19, Utilities and Service Systems. The project would not substantially increase demand for governmental facilities, and impacts would be *less than significant*.

Mitigation Measures

No mitigation is required.

2.16 RECREATION

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	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?

(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?

The project would construct and operate a solar energy facility and does not contain any residential or recreational components. The project would result in increased levels of activity on the site, but there would not be a substantial increase in new residents or permanent support staff associated with the project. Accordingly, the project would not result in a substantial increase of the use of any existing neighborhood, regional parks, or other recreational facilities, and impacts would be *less than significant*.

Additionally, no recreational or recreation-related facilities are included with the project; therefore, *no impacts* would occur.

Mitigation Measures

No mitigation is required.

2.17 TRAFFIC AND CIRCULATION

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project:				
(a) Conflict with a program plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	☐	☐	☐	☒
(b) Would the project conflict or be inconsistent with CEQA Guidelines Section 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?	☐	☐	☒	☐

Environmental Evaluation

(a) Would the project conflict with a program plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?

The project would construct a 3 MW solar PV electric generating facility on approximately 17 acres of a 40-acre privately owned parcel. The solar facilities would consist of a ground-mounted, single-axis tracking system featuring 8,316 PV panels and 24 string inverters. Other site improvements include

perimeter fencing, signage, construction of a 20-foot access driveway on-site, and a 12-foot-wide gravel access point on South Arbor Way.

Construction of the proposed project would be considered temporary over an approximate 6-month period. There would be a maximum of 40 employees during construction. Employee trips and construction deliveries would be considered temporary construction traffic. Following implementation of the proposed project, project operations would result in a small increase in trips by support staff.

There are no transit, bicycle, or pedestrian facilities in the project area. The solar facility would operate autonomously, and the proposed project would not conflict with a plan, ordinance, or policy addressing circulation, transit, roadway, or bicycle facilities; therefore, *no impacts* would occur.

(b) Would the project conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?

The proposed project does not increase the capacity of East Cleveland Road or South Arbor Way and is not anticipated to increase operational-related vehicle miles traveled (VMT). A temporary minor increase in VMT would occur during the 6 months of project construction resulting from worker trips to the site, materials delivery, and material hauling. The completed project would not increase VMT permanently, and there would be two full-time operational employees associated with the project; therefore, impacts 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)?

The project does not propose a change in roadway alignment, and access to the project site would continue via the proposed entrance off South Arbor Way during construction and project operation.

The access road would have a right-of-way (ROW) through the solar array. Parking is proposed along the internal access loop road. Therefore, the project would not increase hazards due to a geometric design, and impacts would be *less than significant*.

(d) Would the project result in inadequate emergency access?

The project proposes construction of a solar energy facility. The facility is proposed to be autonomous, and no person would be on-site during project operation, except for routine maintenance. The facility would have a perimeter fence with a Knox box for emergency personnel to access the site.

The Merced County Fire Department maintains standards for access roadways to provide for adequate emergency access. Encroachment Permits issued by the County would be required for construction of the proposed facility within public ROW. During construction and installation of underground pipeline within public ROW, there may be temporary lane closures that could cause delays and queuing of vehicle traffic, and thereby interfere with emergency services. However, there are adequate alternative routes, emergency vehicles would be expedited through the construction zone, and emergency service providers would be informed of the project so they could choose alternate routes as needed. All impacts related to lane closures would cease after project completion.

As stated in Impact Discussion 2.9(f) in Section 2.9, *Hazards and Hazardous Materials*, emergency response coordinated by the County fire and sheriff protection would remain the same as under existing conditions because the response time and distance would remain the same. Therefore, the proposed project would not result in inadequate emergency access, and impacts would be *less than significant*.

Mitigation Measures

No mitigation is required.

2.18 TRIBAL CULTURAL RESOURCES

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
(a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 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 section 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 Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

Environmental Evaluation

(a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 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 Section 5020.1(k)?

The County has not received notification from any Native American tribes requesting notification of project per the requirements of AB 52. Therefore, no notices were provided under AB 52 related to Tribal Cultural Resources.

Kleinfelder, through preparation of the *Cultural Resources Inventory Report: East Cleveland Road Solar Project, Merced County, California,*[71] contacted the Native American Heritage Commission (NAHC) and requested a Sacred Lands File search of the APE. The NAHC responded on March 7, 2022, that the

[71] Kleinfelder. 2022. *Cultural Resources Inventory Report: East Cleveland Road Solar Project, Merced County, California*. Prepared for RPCA Solar 7, LLC, Renewable Properties, LLC. July.

search returned negative results, and provided a list of Native American contacts. Kleinfelder distributed letters to the list of Native American contacts on March 15 and 22, 2022, requesting information on tribal cultural resources in or near the APE. A response was received from the following contact:

- Dumna Wo-Wah Tribal Government: Robert Ledger, Chairperson. Mr. Ledger requested tribal land recovery or monitoring via phone call and email on March 17, 2022. Kleinfelder replied to the request on April 6, 2022, and no response was received. A second follow-up email was sent on April 11, 2022, and no response was received.

No responses were received from the following contacts:

- Amah Mutsun Tribal Band: Valentin Lopez, Chairperson
- North Fork Rancheria of Mono Indians: Elaine Fink, Chairperson
- North Valley Yokuts Tribe: Timothy Perez and Katherine Perez, Chairperson
- Southern Sierra Miwuk Nation: Sandra Chapman, Chairperson
- Tule River Indian Tribe: Neil Peyron, Chairperson, Kerri Vera, Environmental Department and Joey Garfield, Tribal Archaeologist
- Wuksache Indian Tribe/Eshom Valley Band: Kenneth Woodrow, Chairperson

With implementation of **MM CUL-1**, impacts with regards to accidental discovery of tribal cultural resources would be *less than significant with mitigation*.

(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 Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

A lead agency engages in consultation with the local Native American tribes to identify Tribal Cultural Resources, establish the significance of any Tribal Cultural Resource, and determine how any resources are to be protected.

All Native American artifacts (tribal finds) shall be considered as a significant Tribal Cultural Resource, pursuant to PRC 21074. If appropriate, the archaeologist and Tribal Historic Preservation Officer (THPO) may introduce archaeological and tribal cultural monitoring on-site, and an archaeological report should be written detailing all archaeological finds and submitted to the County in consultation with the tribe's THPO.

With implementation of **MM CUL-1**, impacts to tribal cultural resources would be *less than significant with mitigation*.

Mitigation Measures

Implement **MM CUL-1**.

2.19 UTILITIES AND SERVICE SYSTEMS

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project:				
(a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
(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, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
(e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☒

Environmental Evaluation

(a) Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

WATER

The project proposes construction of a solar energy facility. Construction activities and operation of the solar energy facility would not result in the relocation or construction of new or expanded water treatment facilities, and *no impacts* would occur.

WASTEWATER

The facility would operate autonomously and would not require wastewater facilities. The project would not result in the relocation or require construction of wastewater treatment facilities, and *no impacts* would occur.

STORMWATER

The project is not required to implement an erosion/pollution control plan under the General National Pollution Discharge Elimination System (NPDES) Permit, as the site is located outside the Municipal Separate Storm Sewer System (MS4) stormwater boundary. All stormwater would remain on-site; therefore, impacts would be *less than significant*.

ELECTRICITY

The project is proposed to connect to PG&E's pre-existing electrical distribution system located on the southeast side of the parcel. The power generated from this facility would be sold to PG&E through a long-term PPA, and impacts would be *less than significant*.

TELECOMMUNICATIONS

No telecommunications are proposed as part of this project; therefore, *no impacts* would occur.

(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?

The proposed solar facility would operate autonomously, and up to two staff persons would be on-site for repairs as needed, and to wash the solar panels up to twice a year. There are no water connections to existing municipal services proposed as part of the project. However, water would occasionally be trucked in for panel washing, provided by the Lone Tree Mutual Water Company, who provides water for agricultural irrigation uses in El Nido area and would be the water supplier for the proposed project.[72] The minimal additional water required for the infrequent washing of equipment at the proposed solar facility would be sourced from offsite and would not require the development of new onsite water facilities.

The project would require approximately 10,000 gallons (approximately 0.03 AFY) annually. Construction activities would require water for dust control, which would be delivered to the site by truck, and is estimated to be approximately 500,000 gallons (1.5 AFY). This amount of use would not result in the need for expanded water treatment facilities, and impacts 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?

As discussed under Impact Discussion 2.19.a, the solar facility would not result in the relocation or construction of wastewater treatment facilities, and *no impacts* would occur.

(d) Would the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Solid waste pickup is provided to the project area and by private vendors such as Gilton Solid Waste,[73] which is a full-service waste management company that specializes in the collection, transport, processing, and diversion of waste generated by residents and businesses.[74] Solid waste goes to the Billy Wright Landfill (located at 17173 South Billy Wright Road in Los Banos) for recycling, composting, and

[72] Merced Integrated Regional Water Management Plan, 2019 Update. Available at: https://mercedirwmp.org/files/MIRWMP%20Revised%20Final.pdf. Accessed September 16, 2022.

[73] Merced County Regional Waste Authority (RWA). 2022. Merced County Refuse Disposal Contact Information. Available at: https://mcrwma.org/DocumentCenter/View/66/Merced-County-Refuse-DisposalRecycling-Contact-Information-PDF?bidId= Accessed September 13, 2022.

[74] HEI Corporation. 2021. *Phase 1 Environmental Site Assessment: Former Pasture Land, 1945 East Cleveland Road, El Nido, California*. Prepared for East Cleveland Road Solar. July 29.

disposal. The landfill is permitted and has an anticipated closure date of 2054.[75] As of September 2010, the landfill has a remaining capacity of 11,370,000 cubic yards.[76] The project would generate solid waste during construction and negligible amounts of solid waste during operation. Billy Wright Landfill has adequate capacity to manage the solid waste disposal needs of the project. Therefore, impacts 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?

The project would be required to comply with all federal, state, and local ordinances for water, energy, and waste reduction and management. CALGreen requires that all residential and commercial projects recycle and/or salvage for reuse a minimum of 65% of nonhazardous construction and demolition waste as a condition of approval on all building and/or demolition permits. The Billy Wright Landfill accepts construction and demolition waste, which would be generated by project construction. The project would comply with all federal, state, and local management and reduction statutes and regulations, and *no impacts* would occur.

Mitigation Measures

No mitigation is required.

2.20 WILDFIRE

Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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?	☐	☐	☒	☐
(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?	☐	☐	☒	☐

[75] California Department of Resources Recycling and Recovery (CalRecycle). 2019. SWIS Facility Detail. Billy Wright Disposal Site (24-AA-0002). Available at: https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/2909?siteID=1864. Accessed September 13, 2022.

[76] Ibid.

Environmental Evaluation

(a) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project substantially impair an adopted emergency response plan or emergency evacuation plan?

A significant impact may occur if a project is located in proximity to wildland areas and would pose a potential fire hazard, which could affect persons or structures in the area in the event of a fire. The project area is located in a rural agricultural area and is not within an FHSZ in a State Responsibility Area (SRA).[77] The site is classified as an LRA, and the closest mapped FHSZ is 15 miles east of the project site, along Santa Fe Avenue Between Chowchilla and Le Grand to SR 14.[78] The project is not located in a wildland–urban interface (WUI).[79] Therefore, development of the proposed project would not substantially impair an adopted emergency response plan or emergency evacuation plan, and impacts would be *less than significant*.

(b) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project, 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) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project 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) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project 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?

The project is not located in or near an SRA or land classified as a very high FHSZ; therefore, impacts would be *less than significant*.

Mitigation Measures

No mitigation is required.

[77] California Department of Forestry and Fire Protection (CAL FIRE). 2007. FHSZ Viewer. Available at: https://egis.fire.ca.gov/FHSZ/. Accessed June 29, 2022.

[78] California Department of Forestry and Fire Protection (CAL FIRE). 2007. FHSZ Viewer. Available at: https://egis.fire.ca.gov/FHSZ/. Accessed June 29, 2022.

[79] Association of Bay Area Governments (ABAG). 2020. *Wildland-Urban Interface Fire Threat Interactive Map*. Available at: https://www.arcgis.com/apps/mapviewer/index.html?layers=a4985d64969743db8feddf01c96c9435. Accessed June 29, 2022.

2.21 MANDATORY FINDINGS OF SIGNIFICANCE

	Environmental Issues	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	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?

The project site is located in Merced County on East Cleveland Road and South Arbor Way in the El Nido area. The project site contains habitat that was identified as potentially suitable for 12 special-status plant species and 23 special-status wildlife species. Impacts to special-status plant and wildlife species would be less than significant with implementation of **MM BIO-1** through **MM BIO-5** and **MM GEO-1**. Therefore, the project would have a less than significant impact on biological resources.

The project site is not known to have any association with an important example of California's history or prehistory. Construction phase procedures would be implemented in the event any archaeological or paleontological resources are discovered during grading and excavation, consistent with **MM CUL-1** and **MM GEO-3**. Implementation of these mitigation measures would ensure that impacts related to cultural, tribal, and paleontological resources would be *less than significant with mitigation*.

(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.)

The project would have less-than-significant impacts to aesthetics, agriculture, energy, GHGs, hazards and hazardous materials, hydrology and water quality, land use, minerals, noise, population and housing, public services, recreation, traffic and circulation, utilities and service systems, and wildfire.

The project's contribution to long-term, cumulative impacts would be less than significant, primarily because project impacts would be confined to the approximately 40-acre site, the project would be required to implement the required mitigation measures, and the project is consistent with General Plan goals and policies as well as County development standards. Given the size of the project, its limited duration, and the implementation of mitigation measures to reduce all potential impacts, the incremental construction effects of the proposed project would not contribute to a cumulatively considerable impact. Therefore, impacts would be *less than significant with mitigation*.

(c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

The new solar facility would provide renewable energy for PG&E through a PPA. The project lessens the use of fossil fuels, improving air quality and community health. Therefore, there would be no substantial, adverse impacts on human beings, directly or indirectly, and impacts would be *less than significant*.

CHAPTER 3. PREPARERS OF THE INITIAL STUDY AND MITIGATED NEGATIVE DECLARATION

3.1 LEAD AGENCY

Merced County
Community and Economic Development Department
Tiffany Ho, Planner III
2222 M Street, Second Floor
Merced, CA 95340

3.2 PROJECT APPLICANT

RPCA Solar 7, LLC
879 Sanchez Street
San Francisco, CA 94114

3.3 ENVIRONMENTAL CONSULTANTS (CEQA)

SWCA Environmental Consultants
1422 Monterey Street
San Luis Obispo, CA 93401

AMBIENT Air Quality and Noise Consulting
Kurt Legleiter, Principal
75 Higuera Street, Suite 105
San Luis Obispo, CA 93401

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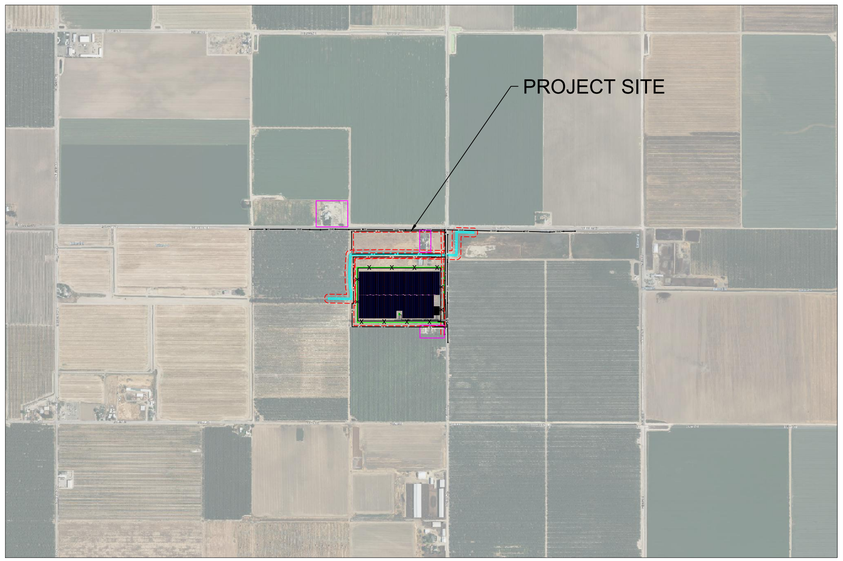
APPENDIX A

Site Plans

EAST CLEVELAND ROAD SOLAR
1945 EAST CLEAVELAND RD, EL NIDO, CA 95317

AERIAL MAP VIEW



GENERAL PROJECT SCOPE OF WORK

DEVELOP NEW SOLAR PHOTOVOLTAIC ELECTRICAL GENERATING FACILITIES ON APPROXIMATELY 18.35 ACRES OF LAND. THE SOLAR POWER PLANT WILL BE A SINGLE AXIS TRACKER SYSTEM. THE ENTIRE SITE WILL HAVE MINIMAL EARTHWORK DISTURBANCE AND GRADING OPERATIONS WILL OCCUR MAINLY FOR INSTALLATION OF ACCESS ROADS AND EQUIPMENT PADS.

DC NAMEPLATE: 4,490.64 kW
AC RATING: 3,000.00 kW

SOLAR MODULE QTY & MODEL:
(8,316) ASTRONERGY CHSM72M(DG)/F-BH , 540W

INVERTER QTY & MODEL:
(24) SUNGROW SG125HV, 125KW

INDEX OF DRAWINGS

OWNER INFORMATION, PROJECT TEAM

OWNER OF RECORD: AMITA PRASAD

PROJECT APPLICANT: RPCA SOLAR 7, LLC

PROJECT ENGINEER: SEQUOIA ENGINEERING & DESIGN ASSOCIATES

ZONING DISTRICT: A-1

GENERAL PLAN DESIGNATION: A

CODES & REGULATIONS

WORK PERFORMED AND MATERIALS FURNISHED SHALL CONFORM TO THE APPLICABLE PUBLICATIONS AND STANDARDS OF THE ORGANIZATIONS LISTED BELOW:

NATIONAL
- 2018 INTERNATIONAL BUILDING CODE (IBC)
- NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
- NATIONAL ELECTRIC CODE, 2020 EDITION
- UNDERWRITERS LABORATORIES INV. (UL)
- US DEPARTMENT OF LABOR, OCCUPATIONAL SAFETY AND HEATH ACT (OSHA)
- NFPA 704

STATE
- 2019 CALIFORNIA BUILDING CODE
- 2019 CALIFORNIA ELECTRICAL CODE
- 2019 CALIFORNIA ENERGY CODE
- 2019 CALIFORNIA FIRE CODE
- RULE 21 GUIDELINES
- CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH ACT (CAL OSHA)

NOT FOR CONSTRUCTION.

REVISIONS
7 PRELIM LAYOUT 08/01/22
6 PRELIM LAYOUT 07/20/22

RENEWABLE PROPERTIES
879 SANCHEZ STREET,
SAN FRANCISCO, CA 94111
PHONE (530) 518-7669
WWW.RENEWPROP.COM

SEDA
SEQUOIA ENGINEERING & DESIGN ASSOCIATES
575 LENNON LANE, SUITE 145
WALNUT CREEK, CA. 94598
PHONE (925) 891-4183
FAX (925) 954-1220
WWW.SEQUOIA-ENGINEERING.COM

PROJECT
EAST CLEVELAND ROAD SOLAR
1945 EAST CLEVELAND RD,
EL NIDO,
CA 95317
LAT: 37.124920°
LON: -120.457587°

SHEET TITLE
COVER SHEET

SCALE: AS SHOWN
DRAWN: LR
DATE: 08/01/22

T-100

SHEET 1 OF 3

1 ARRAY LOCATION
SCALE:1"=150'

N

SYSTEM SPECIFICATIONS

SYSTEM SIZE DC	4,490.64 kW
SYSTEM SIZE AC	3,000.00 kW
DC/AC RATIO	1.50
MODULE MANUFACTURER	ASTRONERGY
MODULE MODEL	CHSM72M(DG)/F-BH
MODULE RATING	540 W
TOTAL MODULE QTY	8,316
MODULES PER STRING	27
TOTAL NO. OF STRINGS	308
INVERTER MODEL	SUNGROW SG125HV
INVERTER RATING	125 kW
INVERTER QTY	24
STEP-UP TRANSFORMER	12KV/600V, 3000KVA
RACKING	ATI HSAT
# OF 81 MODULE RACKS	100
# OF 54 MODULE RACKS	4
TILT ANGLE	0°
INTER-ROW SPACING	12.7'
PITCH	20.2'
GCR	37%
SITE AREA INSIDE FENCE	18.35 Ac
PROPERTY BOUNDARY AREA	36.15 Ac

LEGEND

- ATI 81 MODULE TRACKER ROW
- ATI 54 MODULE TRACKER ROW
- POWER STATION - (1) MV TRANSFORMER, (1) DAS, (1) WEATHER STATION
- SUNGROW 125kW STRING INVERTER
- 12' WIDE SITE ACCESS GRAVEL ROAD
- PUBLIC ROAD
- PROPERTY LINE
- PROJECT SITE SECURITY FENCE
- (E) OH LINES
- MV CABLE
- SETBACK
- GRAVEL PAD

GENERAL NOTES

1. REFER TO SINGLE LINE DIAGRAM FOR DETAILS.
2. INSTALLATION TO COMPLY WITH NEC 2020 ARTICLE 690 AND ALL APPLICABLE LOCAL, STATE AND NATIONAL CODES OR REGULATIONS.
3. EQUIPMENT SHALL BE LABELED PER NEC 690 AND UTILITY REGULATIONS.
4. 12' ACCESS ROADS SHALL BE DESIGNED TO ACCOMMODATE ALL CONSTRUCTION, OPERATIONS, MAINTENANCE, AND UTILITY TRAFFIC THROUGHOUT THE SITE.
5. DIMENSIONS TO PROPERTY LINES AND EXISTING FEATURES ARE APPROXIMATE PENDING SURVEY.

PROPOSED CONDITIONS

PROJECT AREA, FENCED	799,288.88	SQFT.
PROJECT AREA, FENCED	18.35	AC.
PROPOSED GRAVEL ROAD OUTSIDE OF FENCED AREA	1,133	SQFT.
TOTAL PROJECT AREA	1,574,600	SQFT.
TOTAL PRE-PROJECT IMPERVIOUS	0	SQFT.
TOTAL NEW GRAVEL ROADS	10,674	SQFT.
TOTAL NEW POWER STATIONS	315	SQFT.
TOTAL NEW ENERGY STORAGE CONTAINERS (BESS)	2,400	SQFT.
TOTAL REPLACED IMPERVIOUS SURFACE	0	SQFT.
TOTAL POST-PROJECT IMPERVIOUS SURFACE WITH BESS	237,152	SQFT.
PERVIOUS SURFACE AREA REDUCTION WITH BESS	15.06	%
TOTAL POST-PROJECT IMPERVIOUS SURFACE WITHOUT BESS	234,752	SQFT.
PERVIOUS SURFACE AREA REDUCTION WITHOUT BESS	14.91	%

PRELIMINARY
NOT FOR CONSTRUCTION

REVISIONS

7	PRELIM LAYOUT	08/01/22
6	PRELIM LAYOUT	07/20/22

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WWW.SEQUOIA-ENGINEERING.COM

PROJECT

EAST CLEVELAND ROAD SOLAR
1945 EAST CLEVELAND RD,
EL NIDO,
CA 95317
LAT: 37.124920°
LON: -120.457587°

SHEET TITLE

SITE PLAN

SCALE: AS SHOWN
DRAWN: LR
DATE: 08/01/22

PV-100

SHEET 2 OF 3

APPENDIX B

Air Quality & Greenhouse Gas Emissions Calculations Technical Memorandum

AMBIENT
AIR QUALITY & NOISE CONSULTING

75 Higuera Street, Suite 105
San Luis Obispo, CA 93401
(805) 226-2727

TECHNICAL MEMORANDUM

Date:	October 4, 2022
To:	Erica Rippe, Project Environmental Planner SWCA Environmental Consultants, Inc.
From:	Kurt Legleiter, Principal
Project:	East Cleveland Solar Project
Subject:	Air Quality & Greenhouse Gas Emissions Calculations

INTRODUCTION

This memorandum provides estimated short-term construction and long-term operational emissions associated with the proposed East Cleveland Solar Project (project) in support of the environmental impact analysis being prepared for the project. The proposed project is located in Merced County, within the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD). Applicable CEQA thresholds of significance recommended by the SJVAPCD are summarized below. Emissions modeling output files are included as an attachment to this memorandum.

SJVAPCD CEQA Thresholds of Significance

To assist local jurisdictions in the evaluation of air quality impacts, the SJVAPCD has published the *Guide for Assessing and Mitigating Air Quality Impacts* (2015). This guidance document includes recommended thresholds of significance to be used for the evaluation of short-term construction and long-term operational air quality impacts. SJVAPCD's recommended mass-emissions thresholds of significance for short-term construction and long-term operational emissions of criteria air pollutants (ROG, NO_X, CO, SO_X, PM_{10}, $PM_{2.5}$) are summarized below.

- Short-term Emissions—Construction impacts associated with the proposed project would be considered significant if project-generated emissions would exceed 100 tons/year of CO, 10 tons/year of ROG or NO_X, 27 tons/year of SO_X, or 15 tons/year of PM_{10} or $PM_{2.5}$.
- Long-term Emissions—Operational impacts associated with the proposed project would be considered significant if project-generated emissions would exceed 100 tons/year of CO, 10 tons/year of ROG or NO_X, 27 tons/year of SO_X, or 15 tons/year of PM_{10} or $PM_{2.5}$.

In addition to the above mass-emissions thresholds, the SJVAPCD also recommends the use of average-daily emissions thresholds for the evaluation of project impacts on localized ambient air quality conditions. Accordingly, the project would also be considered to result in a significant contribution to localized ambient air quality if on-site emissions of ROG, NO_X, PM_{10}, $PM_{2.5}$, CO, or SO_2 associated with either short-term construction or long-term operational activities would exceed a daily average of 100 pounds per day (lbs/day) for each of the

pollutants evaluated. It is important to note that the SJVAPCD's recommended thresholds of significance were developed taking into account the achievement and maintenance of applicable ambient air quality standards. As previously noted, these standards represent the upper limits deemed necessary to adequately protect public health and welfare. Therefore, projects that do not exceed SJVAPCD's recommended significance thresholds would also be considered to have a less-than-significant impact with regard to potential health-related impacts. The SJVAPCD has not yet adopted updated significance thresholds for project-generated greenhouse gas (GHG) emissions.

Emissions Calculation Methodology

Construction and operational emissions of criteria air pollutants and GHG emissions associated with the proposed project were calculated using the California Emissions Estimator Model (CalEEMod), version 2020.4.0. Emissions modeling was conducted for annual and daily conditions based on construction and operational requirements (e.g., equipment use, vehicle trips) provided by the project applicant and information derived from similar solar projects. Construction-generated emissions were quantified for initial project staging, site preparation/clearing, grading/excavation, road improvements, trenching/solar photovoltaic (PV) cell installation, and installation of the battery energy storage system (BESS). Operational emissions included routine maintenance and solar panel washing activities. Decommissioning activities are assumed to require similar construction requirements as those identified for trenching/solar PV panel installation. As a result, emissions associated with the trenching/solar PV panel installation activities are also anticipated to be reflective of emissions associated with project decommissioning. Calculated emissions were compared to SJVAPCD's recommended significance thresholds. Calculated maximum daily emissions assumes some construction activities (e.g., grading/excavation, road improvements) could occur simultaneously on any given day based on the anticipated construction schedule provided. Emissions modeling assumptions and CalEEMod output files are included in Attachment A to this memorandum.

Proposed Project-Generated Emissions

Project generated annual and daily construction emissions are summarized in Tables 1 and 2, respectively. Project generated annual and daily operational emissions are summarized in Tables 3 and 4, respectively. As depicted, project generated emissions would not exceed SJVAPCD recommended significance thresholds. Project-generated GHG emissions are summarized in Table 5. As depicted, the amount of GHGs potentially displaced by the proposed project would more than offset estimated annual GHG emissions associated with project construction and operational activities and would be considered a beneficial impact of the project.

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San Luis Obispo, CA 93401
(805) 226-2727

Table 1. Annual Construction Emissions Summary (tons/year)

CONSTRUCTION YEAR	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$	$MTCO_2e$
2022	0.08	0.73	0.59	0.002	0.15	0.07	137.25
2023	0.09	0.76	0.77	0.002	0.13	0.03	175.78
SJVAPCD SIGNIFICANCE THRESHOLDS:	10	10	100	27	15	15	-
EXCEEDS SIGNIFICANCE THRESHOLDS?:	NO	NO	NO	NO	NO	NO	

PM emissions assume compliance with SJVAPCD Regulation VIII for the control of fugitive dust.
GHG emissions are presented in metric tons/year of carbon equivalents.

Table 2. Daily Construction Emissions Summary (lbs/day)

CONSTRUCTION PHASE	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
STAGING						
ONSITE	0.26	5.89	7.95	0.01	0.41	0.41
OFFSITE	0.08	0.68	0.66	0.003	0.21	0.06
TOTAL	0.34	6.57	8.61	0.013	0.62	0.47
SITE PREPARATION						
ONSITE	1.15	12.05	9.24	0.42	2.67	0.8
OFFSITE	0.1	0.69	0.8	0.004	0.25	0.07
TOTAL	1.25	12.74	10.04	0.424	2.92	0.87
GRADING/EXCAVATION-2022						
ONSITE	3.53	36.95	18.78	0.06	6.88	3.72
OFFSITE	0.13	0.72	1.03	0.004	0.31	0.09
TOTAL	3.66	37.67	19.81	0.064	7.19	3.81
ROAD IMPROVEMENTS-2022						
ONSITE	1.31	12.77	10.19	0.03	1.82	0.71

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Table 2. Daily Construction Emissions Summary (Continued)

OFFSITE	0.06	0.05	0.46	0.001	0.13	0.04
TOTAL	1.37	12.82	10.65	0.031	1.95	0.75
ROAD IMPROVEMENTS-2023						
ONSITE	1.23	11.38	10.08	0.03	1.81	0.71
OFFSITE	0.05	0.04	0.41	0.001	0.13	0.04
TOTAL	1.28	11.42	10.49	0.031	1.94	0.75
TRENCHING/SOLAR PV INSTALLATION-2022						
ONSITE	1.15	10.34	9.91	0.02	0.59	0.59
OFFSITE	0.09	0.69	0.8	0.004	0.25	0.07
TOTAL	1.24	11.03	10.71	0.024	0.84	0.66
TRENCHING/SOLAR PV INSTALLATION-2023						
ONSITE	1.09	9.52	9.82	0.02	0.44	0.44
OFFSITE	0.08	0.57	0.71	0.003	0.24	0.07
TOTAL	1.17	10.09	10.53	0.023	0.68	0.51
BESS FACILITY CONSTRUCTION/INFRASTRUCTURE-2022						
ONSITE	1.28	11.61	10.95	0.02	0.56	0.56
OFFSITE	1.88	1.6	15.55	0.04	4.34	1.17
TOTAL	3.16	13.21	26.5	0.06	4.9	1.73
BESS FACILITY CONSTRUCTION/INFRASTRUCTURE-2023						
ONSITE	1.18	10.73	10.85	0.02	0.49	0.47
OFFSITE	1.71	1.38	14	0.04	4.34	1.17
TOTAL	2.89	12.11	24.85	0.06	4.83	1.64

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Table 2. Daily Construction Emissions Summary (Continued)

MAXIMUM DAILY EMISSIONS						
TOTAL: GRADING/EXCAVATION/ROAD IMPROVEMENTS	5.03	50.49	30.46	0.095	9.14	4.56
TOTAL: TRENCHING/SOLAR PV/BESS FACILITY	4.4	24.24	37.21	0.084	5.74	2.39
MAXIMUM DAILY EMISSIONS	5.03	50.49	37.21	0.095	9.14	4.56
SJVAPCD SIGNIFICANCE THRESHOLDS	100	100	100	100	100	100
EXCEEDS SIGNIFICANCE THRESHOLDS?	NO	NO	NO	NO	NO	NO
PM emissions assume compliance with SJVAPCD Regulation VIII for the control of fugitive dust. Maximum daily emissions assumes multiple activities could occur simultaneously. Totals may not sum due to rounding.						

Table 3. Annual Operational Emissions Summary (tons/year)

OPERATIONAL ACTIVITIES	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$	$MTCO_2e$
ROUTINE MAINTENANCE	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.13
PANEL WASHING	<0.01	<0.01	<0.01	0	<0.01	<0.01	0.15
TOTAL	<0.01	<0.01	<0.01	0	<0.01	<0.01	0.28
SJVAPCD SIGNIFICANCE THRESHOLDS:	10	10	100	27	15	15	-
EXCEEDS SIGNIFICANCE THRESHOLDS?:	NO	NO	NO	NO	NO	NO	-
GHG emissions are presented in metric tons/year of carbon equivalents.							

Table 4. Daily Operational Emissions Summary (lbs/day)

OPERATIONAL ACTIVITIES	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
ROUTINE MAINTENANCE	0.02	0.02	0.17	<0.01	0.05	<0.01
PANEL WASHING	0.03	0.07	0.26	<0.01	0.08	0.02
TOTAL	0.05	0.09	0.43	0	0.13	0.02
SJVAPCD SIGNIFICANCE THRESHOLDS:	100	100	100	100	100	100
EXCEEDS SIGNIFICANCE THRESHOLDS?:	NO	NO	NO	NO	NO	NO

Table 5. Annual GHG Emissions Summary

ANNUAL GHG EMISSIONS SUMMARY	$MTCO_2e$/Year	
ROUTINE MAINTENANCE & PANEL WASHING	0.28	
AMORTIZED CONSTRUCTION EMISSIONS (30 Years)	10.86	
TOTAL:	11.14	
Amortized construction emissions were calculated based on an approximate 30-year project life. Includes GHG emissions associated with project decommissioning.		
DISPLACED GHG EMISSIONS		
ESTIMATED ANNUAL GENERATION	8,710,000	kWh/year
	8.71	GWh/year
DISPLACED GHG EMISSIONS POTENTIAL	1,875	$MTCO_2e$/year
NET ANNUAL GHGs POTENTIALLY DISPLACED	1,864	
Displaced GHG emissions assumes electricity generated by fossil fuels. Net displaced GHG emissions accounts for project generated GHG emissions associated with routine maintenance and solar panel cleaning activities, as well as, construction-generated GHG emissions amortized over an assumed 30 year project life.		

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ATTACHMENT A
EMISSIONS MODELING

ANNUAL CONSTRUCTION EMISSIONS SUMMARY

PROJECT: EAST CLEVELAND SOLAR PV PROJECT, MERCED COUNTY

ANNUAL EMISSIONS SUMMARY

CONSTRUCTION YEAR	ROG	NOX	CO	SOX	PM10	PM2.5	CO2e
2022	0.08	0.73	0.59	0.002	0.15	0.07	137.25
2023	0.09	0.76	0.77	0.002	0.13	0.03	175.78
SJVAPCD SIGNIFICANCE THRESHOLDS:	10	10	100	27	15	15	-
EXCEEDS SIGNIFICANCE THRESHOLDS?:	NO	NO	NO	NO	NO	NO	-
PM emissions assume compliance with SJVAPCD Regulation VIII for the control of fugitive dust.							

DAILY CONSTRUCTION EMISSIONS SUMMARY

PROJECT: EAST CLEVELAND SOLAR PV PROJECT, MERCED COUNTY

ANNUAL EMISSIONS SUMMARY

CONSTRUCTION PHASE	ROG	NOX	CO	SOX	PM10	PM2.5
STAGING						
ONSITE	0.26	5.89	7.95	0.01	0.41	0.41
OFFSITE	0.08	0.68	0.66	0.003	0.21	0.06
TOTAL	0.34	6.57	8.61	0.013	0.62	0.47
SITE PREPARATION						
ONSITE	1.15	12.05	9.24	0.42	2.67	0.8
OFFSITE	0.1	0.69	0.8	0.004	0.25	0.07
TOTAL	1.25	12.74	10.04	0.424	2.92	0.87
GRADING/EXCAVATION-2022						
ONSITE	3.53	36.95	18.78	0.06	6.88	3.72
OFFSITE	0.13	0.72	1.03	0.004	0.31	0.09
TOTAL	3.66	37.67	19.81	0.064	7.19	3.81
ROAD IMPROVEMENTS-2022						
ONSITE	1.31	12.77	10.19	0.03	1.82	0.71
OFFSITE	0.06	0.05	0.46	0.001	0.13	0.04
TOTAL	1.37	12.82	10.65	0.031	1.95	0.75
ROAD IMPROVEMENTS-2023						
ONSITE	1.23	11.38	10.08	0.03	1.81	0.71
OFFSITE	0.05	0.04	0.41	0.001	0.13	0.04
TOTAL	1.28	11.42	10.49	0.031	1.94	0.75
TRENCHING/SOLAR PV INSTALLATION-2022						
ONSITE	1.15	10.34	9.91	0.02	0.59	0.59
OFFSITE	0.09	0.69	0.8	0.004	0.25	0.07
TOTAL	1.24	11.03	10.71	0.024	0.84	0.66
TRENCHING/SOLAR PV INSTALLATION-2023						
ONSITE	1.09	9.52	9.82	0.02	0.44	0.44
OFFSITE	0.08	0.57	0.71	0.003	0.24	0.07
TOTAL	1.17	10.09	10.53	0.023	0.68	0.51
BESS FACILITY CONSTRUCTION/INFRASTRUCTURE-2022						
ONSITE	1.28	11.61	10.95	0.02	0.56	0.56
OFFSITE	1.88	1.6	15.55	0.04	4.34	1.17
TOTAL	3.16	13.21	26.5	0.06	4.9	1.73
BESS FACILITY CONSTRUCTION/INFRASTRUCTURE-2023						
ONSITE	1.18	10.73	10.85	0.02	0.49	0.47
OFFSITE	1.71	1.38	14	0.04	4.34	1.17
TOTAL	2.89	12.11	24.85	0.06	4.83	1.64
MAXIMUM DAILY EMISSIONS						
GRADING/EXCAVATION/ROAD IMPROVEMENTS	5.03	50.49	30.46	0.095	9.14	4.56
TRENCHING/SOLAR PV/BESS FACILITY	4.4	24.24	37.21	0.084	5.74	2.39
MAXIMUM DAILY EMISSIONS	5.03	50.49	37.21	0.095	9.14	4.56
SJVAPCD SIGNIFICANCE THRESHOLDS	100	100	100	100	100	100
EXCEEDS SIGNIFICANCE THRESHOLDS?	NO	NO	NO	NO	NO	NO

PM emissions assume compliance with SJVAPCD Regulation VIII for the control of fugitive dust. Maximum daily emissions assumes multiple activities could occur simultaneously. Totals may not sum due to rounding.

ANNUAL OPERATIONAL EMISSIONS SUMMARY

PROJECT: EAST CLEVELAND SOLAR PV PROJECT, MERCED COUNTY

ANNUAL EMISSIONS SUMMARY

OPERATIONAL ACTIVITIES	ROG	NOX	CO	SOX	PM10	PM2.5	CO2e
ROUTINE MAINTENANCE	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.13
PANEL WASHING	<0.01	<0.01	<0.01	0	<0.01	<0.01	0.15
TOTAL	<0.01	<0.01	<0.01	0	<0.01	<0.01	0.28
SJVAPCD SIGNIFICANCE THRESHOLDS:	10	10	100	27	15	15	-
EXCEEDS SIGNIFICANCE THRESHOLDS?:	NO	NO	NO	NO	NO	NO	-

DAILY OPERATIONAL EMISSIONS SUMMARY

PROJECT: EAST CLEVELAND SOLAR PV PROJECT, MERCED COUNTY

ANNUAL EMISSIONS SUMMARY

OPERATIONAL ACTIVITIES	ROG	NOX	CO	SOX	PM10	PM2.5
ROUTINE MAINTENANCE	0.02	0.02	0.17	<0.01	0.05	<0.01
PANEL WASHING	0.03	0.07	0.26	<0.01	0.08	0.02
TOTAL	0.05	0.09	0.43	0	0.13	0.02
SJVAPCD SIGNIFICANCE THRESHOLDS:	100	100	100	100	100	100
EXCEEDS SIGNIFICANCE THRESHOLDS?:	NO	NO	NO	NO	NO	NO

ANNUAL OPERATIONAL GHG EMISSIONS SUMMARY

PROJECT: EAST CLEVELAND SOLAR PV PROJECT, MERCED COUNTY

ANNUAL GHG EMISSIONS SUMMARY	**MTCO2e/Year**
Routine Maintenance & PV Panel Cleaning	0.28
Amortized Construction Emissions (30 Years)	10.86
Total:	11.14

Based on estimated annual construction-generated GHG emissions. Includes decommissioning emissions estimated to be roughly equivalent to GHG emissions generated during trenching/solar PV installation.

DISPLACED GHG EMISSIONS		
ESTIMATED ANNUAL GENERATION	8,710,000	kWh/year
	8.71	GWh/year
POTENTIAL DISPLACED GHG EMISSIONS	1,875.07	MTCO2e/year
NET ANNUAL GHGs POTENTIALLY DISPLACED	1,863.92	

Displaced GHG emissions assumes electricity generated by fossil fuels. Net displaced GHG emissions accounts for project generated GHG emissions associated with routine maintenance and solar panel cleaning activities, as well as, construction-generated GHG emissions amortized over an assumed 30 year project life.

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Merced County Cleveland Solar PV Project - Construction Only

Merced County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	18.50	Acre	18.50	805,860.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	49
Climate Zone	3			**Operational Year**	2024
Utility Company					
CO2 Intensity (lb/MWhr)	0	**CH4 Intensity (lb/MWhr)**	0	**N2O Intensity (lb/MWhr)**	0

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Land use type does not apply. Total acreage of disturbance: 18.5 acres

Construction Phase - Based on information provided. Road improvements assumed to occur concurrent with site grading/excavation.

Off-road Equipment - Equipment use based on information provided.

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Grading - Dust from material movement based on model defaults. No fill material imported or exported

Demolition - No demo required

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Trips and VMT - Worker trips are based on model defaults. Assumes an avg of 12 MHDT/HHDT per day. Empl trip distance based on model defaults. Haul trip length assumes 58 miles.

On-road Fugitive Dust - Onroad dust based on model defaults.

Architectural Coating - Arch coating not required.

Vehicle Emission Factors - Operational emissions not included in this model run.

Vehicle Emission Factors -

Vehicle Emission Factors -

Construction Off-road Equipment Mitigation - Assumes 50% CE for watering unpaved roads, 61% CE for watering exposed areas, 15 mph onsite speed limit. Mitigation for use of T3 equipment included for informational purposes.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	300.00	20.00
tblConstructionPhase	NumDays	30.00	32.00
tblConstructionPhase	NumDays	20.00	7.00
tblConstructionPhase	NumDays	30.00	32.00
tblConstructionPhase	NumDays	10.00	3.00
tblGrading	AcresOfGrading	64.00	90.00
tblGrading	AcresOfGrading	1.50	15.00
tblGrading	AcresOfGrading	16.00	96.00
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.20	0.20
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.41	0.41
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.20	0.20
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	58.00
tblTripsAndVMT	HaulingTripLength	20.00	58.00
tblTripsAndVMT	HaulingTripLength	20.00	58.00
tblTripsAndVMT	HaulingTripLength	20.00	58.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	132.00	0.00

2.0 Emissions Summary

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.0832	0.7299	0.5862	1.5400e-003	0.2690	0.0301	0.2991	0.0923	0.0278	0.1201						137.2453
2023	0.0915	0.7593	0.7708	1.9600e-003	0.1911	0.0339	0.2250	0.0524	0.0313	0.0837						175.7779
Maximum	**0.0915**	**0.7593**	**0.7708**	**1.9600e-003**	**0.2690**	**0.0339**	**0.2991**	**0.0923**	**0.0313**	**0.1201**						**175.7779**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.0426	0.6160	0.8244	1.5400e-003	0.1232	0.0269	0.1501	0.0409	0.0268	0.0677						137.2452
2023	0.0507	0.8297	1.0712	1.9600e-003	0.0942	0.0399	0.1341	0.0257	0.0399	0.0656						175.7778
Maximum	**0.0507**	**0.8297**	**1.0712**	**1.9600e-003**	**0.1232**	**0.0399**	**0.1501**	**0.0409**	**0.0399**	**0.0677**						**175.7778**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**46.60**	**2.91**	**-39.69**	**0.00**	**52.75**	**-4.36**	**45.78**	**53.98**	**-12.96**	**34.58**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**10-3-2022**	**1-2-2023**	0.8699	0.7103
2	**1-3-2023**	**4-2-2023**	0.6376	0.6492
3	**4-3-2023**	**7-2-2023**	0.1763	0.1966
		Highest	0.8699	0.7103

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	7.5900e-003	0.0000	1.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000						3.5000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Mobile	0.0105	0.0234	0.0937	2.3000e-004	0.0198	2.4000e-004	0.0200	5.3000e-003	2.2000e-004	5.5200e-003						21.4353
Waste						0.0000	0.0000		0.0000	0.0000						0.7996
Water						0.0000	0.0000		0.0000	0.0000						0.0000
Total	**0.0180**	**0.0234**	**0.0939**	**2.3000e-004**	**0.0198**	**2.4000e-004**	**0.0200**	**5.3000e-003**	**2.2000e-004**	**5.5200e-003**						**22.2353**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	7.5900e-003	0.0000	1.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000						3.5000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Mobile	0.0105	0.0234	0.0937	2.3000e-004	0.0198	2.4000e-004	0.0200	5.3000e-003	2.2000e-004	5.5200e-003						21.4353
Waste						0.0000	0.0000		0.0000	0.0000						0.7996
Water						0.0000	0.0000		0.0000	0.0000						0.0000
Total	**0.0180**	**0.0234**	**0.0939**	**2.3000e-004**	**0.0198**	**2.4000e-004**	**0.0200**	**5.3000e-003**	**2.2000e-004**	**5.5200e-003**						**22.2353**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Staging	Demolition	11/15/2022	11/23/2022	5	7	Staging
2	Site Preparation	Site Preparation	11/28/2022	11/30/2022	5	3	Site Preparation/Clearing
3	Grading/Excavation	Grading	12/1/2022	1/15/2023	5	32	Grading/Excavation

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4	Road Improvements	Grading	12/1/2022	1/15/2023	5	32	Road Improvements
5	Trenching/PV Installation	Trenching	12/16/2022	5/16/2023	5	108	Trenching/PV Installation
6	BESS Construction/Infrastructure	Building Construction	12/16/2022	1/12/2023	5	20	BESS Construction/Infrastructure

Acres of Grading (Site Preparation Phase): 15

Acres of Grading (Grading Phase): 90

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Staging	Concrete/Industrial Saws	0	8.00	81	0.73
Staging	Excavators	0	8.00	158	0.38
Staging	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Grading/Excavation	Excavators	1	8.00	158	0.38
Grading/Excavation	Graders	2	8.00	187	0.41
Grading/Excavation	Rubber Tired Dozers	2	8.00	247	0.40
Grading/Excavation	Scrapers	0	8.00	367	0.48
Grading/Excavation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Road Improvements	Cranes	0	7.00	231	0.29
Road Improvements	Forklifts	0	8.00	89	0.20
Road Improvements	Generator Sets	0	8.00	84	0.74
Road Improvements	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Road Improvements	Welders	0	8.00	46	0.45
Trenching/PV Installation	Pavers	0	8.00	130	0.42
Trenching/PV Installation	Paving Equipment	0	8.00	132	0.36

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Trenching/PV Installation	Rollers	0	8.00	80	0.38
BESS Construction/Infrastructure	Air Compressors	0	6.00	78	0.48
BESS Construction/Infrastructure	Cranes	1	8.00	231	0.29
Road Improvements	Excavators	1	8.00	158	0.38
BESS Construction/Infrastructure	Forklifts	2	8.00	89	0.20
BESS Construction/Infrastructure	Generator Sets	1	8.00	84	0.74
Road Improvements	Graders	1	8.00	187	0.41
Road Improvements	Rubber Tired Dozers	0	8.00	247	0.40
Road Improvements	Scrapers	0	8.00	367	0.48
BESS Construction/Infrastructure	Tractors/Loaders/Backhoes	0	7.00	97	0.37
BESS Construction/Infrastructure	Welders	1	8.00	46	0.45
Staging	Skid Steer Loaders	1	8.00	65	0.37
Staging	Generator Sets	1	8.00	84	0.74
Staging	Forklifts	2	8.00	89	0.20
Site Preparation	Skid Steer Loaders	3	8.00	65	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Off-Highway Trucks	1	8.00	402	0.38
Grading/Excavation	Rubber Tired Loaders	1	8.00	203	0.36
Grading/Excavation	Off-Highway Trucks	1	8.00	402	0.38
Road Improvements	Rollers	1	8.00	80	0.38
Road Improvements	Off-Highway Trucks	1	8.00	402	0.38
Trenching/PV Installation	Skid Steer Loaders	2	8.00	65	0.37
Trenching/PV Installation	Forklifts	1	8.00	89	0.20
Trenching/PV Installation	Trenchers	1	8.00	78	0.50
Trenching/PV Installation	Off-Highway Trucks	1	8.00	402	0.38
BESS Construction/Infrastructure	Skid Steer Loaders	1	8.00	65	0.37

Trips and VMT

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Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Staging	4	10.00	12.00	0.00	16.80	6.60	58.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	5	13.00	12.00	0.00	16.80	6.60	58.00	LD_Mix	HDT_Mix	HHDT
Grading/Excavation	7	18.00	12.00	0.00	16.80	6.60	58.00	LD_Mix	HDT_Mix	HHDT
Road Improvements	4	10.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Trenching/PV Installation	5	13.00	12.00	0.00	16.80	6.60	58.00	LD_Mix	HDT_Mix	HHDT
BESS Construction/Infrastruc	6	338.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use Soil Stabilizer

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Staging - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.2000e-003	0.0209	0.0258	4.0000e-005		1.1300e-003	1.1300e-003		1.0800e-003	1.0800e-003						3.5718
Total	**2.2000e-003**	**0.0209**	**0.0258**	**4.0000e-005**		**1.1300e-003**	**1.1300e-003**		**1.0800e-003**	**1.0800e-003**						**3.5718**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Staging - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	9.0000e-005	2.1600e-003	6.9000e-004	1.0000e-005	2.5000e-004	2.0000e-005	2.7000e-004	7.0000e-005	2.0000e-005	1.0000e-004						0.8099
Worker	1.8000e-004	1.5000e-004	1.6600e-003	0.0000	4.3000e-004	0.0000	4.4000e-004	1.2000e-004	0.0000	1.2000e-004						0.3716
Total	**2.7000e-004**	**2.3100e-003**	**2.3500e-003**	**1.0000e-005**	**6.8000e-004**	**2.0000e-005**	**7.1000e-004**	**1.9000e-004**	**2.0000e-005**	**2.2000e-004**						**1.1815**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	9.0000e-004	0.0206	0.0278	4.0000e-005		1.4400e-003	1.4400e-003		1.4400e-003	1.4400e-003						3.5718
Total	**9.0000e-004**	**0.0206**	**0.0278**	**4.0000e-005**		**1.4400e-003**	**1.4400e-003**		**1.4400e-003**	**1.4400e-003**						**3.5718**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Staging - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	9.0000e-005	2.1600e-003	6.9000e-004	1.0000e-005	2.5000e-004	2.0000e-005	2.7000e-004	7.0000e-005	2.0000e-005	1.0000e-004						0.8099
Worker	1.8000e-004	1.5000e-004	1.6600e-003	0.0000	4.3000e-004	0.0000	4.4000e-004	1.2000e-004	0.0000	1.2000e-004						0.3716
Total	**2.7000e-004**	**2.3100e-003**	**2.3500e-003**	**1.0000e-005**	**6.8000e-004**	**2.0000e-005**	**7.1000e-004**	**1.9000e-004**	**2.0000e-005**	**2.2000e-004**						**1.1815**

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					7.9500e-003	0.0000	7.9500e-003	8.6000e-004	0.0000	8.6000e-004						0.0000
Off-Road	1.7300e-003	0.0181	0.0139	4.0000e-005		6.2000e-004	6.2000e-004		5.7000e-004	5.7000e-004						3.4615
Total	**1.7300e-003**	**0.0181**	**0.0139**	**4.0000e-005**	**7.9500e-003**	**6.2000e-004**	**8.5700e-003**	**8.6000e-004**	**5.7000e-004**	**1.4300e-003**						**3.4615**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	4.0000e-005	9.3000e-004	3.0000e-004	0.0000	1.1000e-004	1.0000e-005	1.2000e-004	3.0000e-005	1.0000e-005	4.0000e-005						0.3471
Worker	1.0000e-004	8.0000e-005	9.3000e-004	0.0000	2.4000e-004	0.0000	2.4000e-004	6.0000e-005	0.0000	7.0000e-005						0.2071
Total	**1.4000e-004**	**1.0100e-003**	**1.2300e-003**	**0.0000**	**3.5000e-004**	**1.0000e-005**	**3.6000e-004**	**9.0000e-005**	**1.0000e-005**	**1.1000e-004**						**0.5541**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.1000e-003	0.0000	3.1000e-003	3.3000e-004	0.0000	3.3000e-004						0.0000
Off-Road	9.6000e-004	0.0193	0.0229	4.0000e-005		9.0000e-004	9.0000e-004		9.0000e-004	9.0000e-004						3.4615
Total	**9.6000e-004**	**0.0193**	**0.0229**	**4.0000e-005**	**3.1000e-003**	**9.0000e-004**	**4.0000e-003**	**3.3000e-004**	**9.0000e-004**	**1.2300e-003**						**3.4615**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	4.0000e-005	9.3000e-004	3.0000e-004	0.0000	1.1000e-004	1.0000e-005	1.2000e-004	3.0000e-005	1.0000e-005	4.0000e-005						0.3471
Worker	1.0000e-004	8.0000e-005	9.3000e-004	0.0000	2.4000e-004	0.0000	2.4000e-004	6.0000e-005	0.0000	7.0000e-005						0.2071
Total	**1.4000e-004**	**1.0100e-003**	**1.2300e-003**	**0.0000**	**3.5000e-004**	**1.0000e-005**	**3.6000e-004**	**9.0000e-005**	**1.0000e-005**	**1.1000e-004**						**0.5541**

3.4 Grading/Excavation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1802	0.0000	0.1802	0.0780	0.0000	0.0780						0.0000
Off-Road	0.0388	0.4065	0.2066	6.1000e-004		0.0165	0.0165		0.0152	0.0152						53.6255
Total	**0.0388**	**0.4065**	**0.2066**	**6.1000e-004**	**0.1802**	**0.0165**	**0.1968**	**0.0780**	**0.0152**	**0.0932**						**53.6255**

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3.4 Grading/Excavation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	2.8000e-004	6.8000e-003	2.1600e-003	3.0000e-005	7.9000e-004	7.0000e-005	8.6000e-004	2.3000e-004	7.0000e-005	3.0000e-004						2.5453
Worker	1.0400e-003	8.5000e-004	9.4000e-003	2.0000e-005	2.4600e-003	1.0000e-005	2.4700e-003	6.5000e-004	1.0000e-005	6.7000e-004						2.1024
Total	**1.3200e-003**	**7.6500e-003**	**0.0116**	**5.0000e-005**	**3.2500e-003**	**8.0000e-005**	**3.3300e-003**	**8.8000e-004**	**8.0000e-005**	**9.7000e-004**						**4.6477**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0703	0.0000	0.0703	0.0304	0.0000	0.0304						0.0000
Off-Road	0.0149	0.2871	0.3346	6.1000e-004		0.0112	0.0112		0.0112	0.0112						53.6254
Total	**0.0149**	**0.2871**	**0.3346**	**6.1000e-004**	**0.0703**	**0.0112**	**0.0815**	**0.0304**	**0.0112**	**0.0416**						**53.6254**

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3.4 Grading/Excavation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	2.8000e-004	6.8000e-003	2.1600e-003	3.0000e-005	7.9000e-004	7.0000e-005	8.6000e-004	2.3000e-004	7.0000e-005	3.0000e-004						2.5453
Worker	1.0400e-003	8.5000e-004	9.4000e-003	2.0000e-005	2.4600e-003	1.0000e-005	2.4700e-003	6.5000e-004	1.0000e-005	6.7000e-004						2.1024
Total	**1.3200e-003**	**7.6500e-003**	**0.0116**	**5.0000e-005**	**3.2500e-003**	**8.0000e-005**	**3.3300e-003**	**8.8000e-004**	**8.0000e-005**	**9.7000e-004**						**4.6477**

3.4 Grading/Excavation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1079	0.0000	0.1079	0.0383	0.0000	0.0383						0.0000
Off-Road	0.0155	0.1568	0.0884	2.8000e-004		6.1900e-003	6.1900e-003		5.7000e-003	5.7000e-003						24.3751
Total	**0.0155**	**0.1568**	**0.0884**	**2.8000e-004**	**0.1079**	**6.1900e-003**	**0.1141**	**0.0383**	**5.7000e-003**	**0.0440**						**24.3751**

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3.4 Grading/Excavation - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	7.0000e-005	2.5200e-003	8.5000e-004	1.0000e-005	3.6000e-004	2.0000e-005	3.8000e-004	1.0000e-004	2.0000e-005	1.2000e-004						1.1157
Worker	4.3000e-004	3.3000e-004	3.8400e-003	1.0000e-005	1.1200e-003	1.0000e-005	1.1200e-003	3.0000e-004	1.0000e-005	3.0000e-004						0.9243
Total	**5.0000e-004**	**2.8500e-003**	**4.6900e-003**	**2.0000e-005**	**1.4800e-003**	**3.0000e-005**	**1.5000e-003**	**4.0000e-004**	**3.0000e-005**	**4.2000e-004**						**2.0400**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0421	0.0000	0.0421	0.0149	0.0000	0.0149						0.0000
Off-Road	6.7500e-003	0.1305	0.1521	2.8000e-004		5.0800e-003	5.0800e-003		5.0800e-003	5.0800e-003						24.3751
Total	**6.7500e-003**	**0.1305**	**0.1521**	**2.8000e-004**	**0.0421**	**5.0800e-003**	**0.0472**	**0.0149**	**5.0800e-003**	**0.0200**						**24.3751**

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3.4 Grading/Excavation - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	7.0000e-005	2.5200e-003	8.5000e-004	1.0000e-005	3.6000e-004	2.0000e-005	3.8000e-004	1.0000e-004	2.0000e-005	1.2000e-004						1.1157
Worker	4.3000e-004	3.3000e-004	3.8400e-003	1.0000e-005	1.1200e-003	1.0000e-005	1.1200e-003	3.0000e-004	1.0000e-005	3.0000e-004						0.9243
Total	**5.0000e-004**	**2.8500e-003**	**4.6900e-003**	**2.0000e-005**	**1.4800e-003**	**3.0000e-005**	**1.5000e-003**	**4.0000e-004**	**3.0000e-005**	**4.2000e-004**						**2.0400**

3.5 Road Improvements - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0509	0.0000	0.0509	5.5000e-003	0.0000	5.5000e-003						0.0000
Off-Road	0.0144	0.1405	0.1121	3.0000e-004		5.4800e-003	5.4800e-003		5.0400e-003	5.0400e-003						26.9356
Total	**0.0144**	**0.1405**	**0.1121**	**3.0000e-004**	**0.0509**	**5.4800e-003**	**0.0564**	**5.5000e-003**	**5.0400e-003**	**0.0105**						**26.9356**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Road Improvements - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	5.8000e-004	4.7000e-004	5.2200e-003	1.0000e-005	1.3600e-003	1.0000e-005	1.3700e-003	3.6000e-004	1.0000e-005	3.7000e-004						1.1680
Total	**5.8000e-004**	**4.7000e-004**	**5.2200e-003**	**1.0000e-005**	**1.3600e-003**	**1.0000e-005**	**1.3700e-003**	**3.6000e-004**	**1.0000e-005**	**3.7000e-004**						**1.1680**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0199	0.0000	0.0199	2.1400e-003	0.0000	2.1400e-003						0.0000
Off-Road	7.4600e-003	0.1466	0.1808	3.0000e-004		6.3500e-003	6.3500e-003		6.3500e-003	6.3500e-003						26.9356
Total	**7.4600e-003**	**0.1466**	**0.1808**	**3.0000e-004**	**0.0199**	**6.3500e-003**	**0.0262**	**2.1400e-003**	**6.3500e-003**	**8.4900e-003**						**26.9356**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Road Improvements - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	5.8000e-004	4.7000e-004	5.2200e-003	1.0000e-005	1.3600e-003	1.0000e-005	1.3700e-003	3.6000e-004	1.0000e-005	3.7000e-004						1.1680
Total	**5.8000e-004**	**4.7000e-004**	**5.2200e-003**	**1.0000e-005**	**1.3600e-003**	**1.0000e-005**	**1.3700e-003**	**3.6000e-004**	**1.0000e-005**	**3.7000e-004**						**1.1680**

3.5 Road Improvements - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0509	0.0000	0.0509	5.5000e-003	0.0000	5.5000e-003						0.0000
Off-Road	6.1500e-003	0.0569	0.0504	1.4000e-004		2.2200e-003	2.2200e-003		2.0400e-003	2.0400e-003						12.2461
Total	**6.1500e-003**	**0.0569**	**0.0504**	**1.4000e-004**	**0.0509**	**2.2200e-003**	**0.0531**	**5.5000e-003**	**2.0400e-003**	**7.5400e-003**						**12.2461**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Road Improvements - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	2.4000e-004	1.9000e-004	2.1300e-003	1.0000e-005	6.2000e-004	0.0000	6.2000e-004	1.6000e-004	0.0000	1.7000e-004						0.5135
Total	**2.4000e-004**	**1.9000e-004**	**2.1300e-003**	**1.0000e-005**	**6.2000e-004**	**0.0000**	**6.2000e-004**	**1.6000e-004**	**0.0000**	**1.7000e-004**						**0.5135**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0199	0.0000	0.0199	2.1400e-003	0.0000	2.1400e-003						0.0000
Off-Road	3.3900e-003	0.0666	0.0822	1.4000e-004		2.8900e-003	2.8900e-003		2.8900e-003	2.8900e-003						12.2461
Total	**3.3900e-003**	**0.0666**	**0.0822**	**1.4000e-004**	**0.0199**	**2.8900e-003**	**0.0227**	**2.1400e-003**	**2.8900e-003**	**5.0300e-003**						**12.2461**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Road Improvements - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	2.4000e-004	1.9000e-004	2.1300e-003	1.0000e-005	6.2000e-004	0.0000	6.2000e-004	1.6000e-004	0.0000	1.7000e-004						0.5135
Total	**2.4000e-004**	**1.9000e-004**	**2.1300e-003**	**1.0000e-005**	**6.2000e-004**	**0.0000**	**6.2000e-004**	**1.6000e-004**	**0.0000**	**1.7000e-004**						**0.5135**

3.6 Trenching/PV Installation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	6.3200e-003	0.0569	0.0545	1.2000e-004		2.8900e-003	2.8900e-003		2.6600e-003	2.6600e-003						10.8740
Total	**6.3200e-003**	**0.0569**	**0.0545**	**1.2000e-004**		**2.8900e-003**	**2.8900e-003**		**2.6600e-003**	**2.6600e-003**						**10.8740**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Trenching/PV Installation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	1.4000e-004	3.4000e-003	1.0800e-003	1.0000e-005	4.0000e-004	4.0000e-005	4.3000e-004	1.1000e-004	4.0000e-005	1.5000e-004						1.2726
Worker	3.8000e-004	3.1000e-004	3.4000e-003	1.0000e-005	8.9000e-004	1.0000e-005	8.9000e-004	2.4000e-004	0.0000	2.4000e-004						0.7592
Total	**5.2000e-004**	**3.7100e-003**	**4.4800e-003**	**2.0000e-005**	**1.2900e-003**	**5.0000e-005**	**1.3200e-003**	**3.5000e-004**	**4.0000e-005**	**3.9000e-004**						**2.0318**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.0100e-003	0.0625	0.0764	1.2000e-004		3.2700e-003	3.2700e-003		3.2700e-003	3.2700e-003						10.8740
Total	**3.0100e-003**	**0.0625**	**0.0764**	**1.2000e-004**		**3.2700e-003**	**3.2700e-003**		**3.2700e-003**	**3.2700e-003**						**10.8740**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Trenching/PV Installation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	1.4000e-004	3.4000e-003	1.0800e-003	1.0000e-005	4.0000e-004	4.0000e-005	4.3000e-004	1.1000e-004	4.0000e-005	1.5000e-004						1.2726
Worker	3.8000e-004	3.1000e-004	3.4000e-003	1.0000e-005	8.9000e-004	1.0000e-005	8.9000e-004	2.4000e-004	0.0000	2.4000e-004						0.7592
Total	**5.2000e-004**	**3.7100e-003**	**4.4800e-003**	**2.0000e-005**	**1.2900e-003**	**5.0000e-005**	**1.3200e-003**	**3.5000e-004**	**4.0000e-005**	**3.9000e-004**						**2.0318**

3.6 Trenching/PV Installation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0527	0.4618	0.4763	1.0800e-003		0.0229	0.0229		0.0211	0.0211						95.9489
Total	**0.0527**	**0.4618**	**0.4763**	**1.0800e-003**		**0.0229**	**0.0229**		**0.0211**	**0.0211**						**95.9489**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Trenching/PV Installation - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	6.5000e-004	0.0244	8.2300e-003	1.1000e-004	3.4900e-003	1.5000e-004	3.6400e-003	1.0100e-003	1.5000e-004	1.1600e-003						10.8223
Worker	3.0300e-003	2.3500e-003	0.0269	7.0000e-005	7.8200e-003	4.0000e-005	7.8600e-003	2.0800e-003	4.0000e-005	2.1200e-003						6.4755
Total	**3.6800e-003**	**0.0268**	**0.0351**	**1.8000e-004**	**0.0113**	**1.9000e-004**	**0.0115**	**3.0900e-003**	**1.9000e-004**	**3.2800e-003**						**17.2977**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0265	0.5507	0.6737	1.0800e-003		0.0288	0.0288		0.0288	0.0288						95.9488
Total	**0.0265**	**0.5507**	**0.6737**	**1.0800e-003**		**0.0288**	**0.0288**		**0.0288**	**0.0288**						**95.9488**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Trenching/PV Installation - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	6.5000e-004	0.0244	8.2300e-003	1.1000e-004	3.4900e-003	1.5000e-004	3.6400e-003	1.0100e-003	1.5000e-004	1.1600e-003						10.8223
Worker	3.0300e-003	2.3500e-003	0.0269	7.0000e-005	7.8200e-003	4.0000e-005	7.8600e-003	2.0800e-003	4.0000e-005	2.1200e-003						6.4755
Total	**3.6800e-003**	**0.0268**	**0.0351**	**1.8000e-004**	**0.0113**	**1.9000e-004**	**0.0115**	**3.0900e-003**	**1.9000e-004**	**3.2800e-003**						**17.2977**

3.7 BESS Construction/Infrastructure - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.0200e-003	0.0639	0.0602	1.1000e-004		3.0700e-003	3.0700e-003		2.9200e-003	2.9200e-003						9.4545
Total	**7.0200e-003**	**0.0639**	**0.0602**	**1.1000e-004**		**3.0700e-003**	**3.0700e-003**		**2.9200e-003**	**2.9200e-003**						**9.4545**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.7 BESS Construction/Infrastructure - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	9.7900e-003	8.0000e-003	0.0883	2.1000e-004	0.0231	1.4000e-004	0.0232	6.1300e-003	1.3000e-004	6.2600e-003						19.7393
Total	**9.7900e-003**	**8.0000e-003**	**0.0883**	**2.1000e-004**	**0.0231**	**1.4000e-004**	**0.0232**	**6.1300e-003**	**1.3000e-004**	**6.2600e-003**						**19.7393**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.7800e-003	0.0567	0.0688	1.1000e-004		3.4000e-003	3.4000e-003		3.4000e-003	3.4000e-003						9.4545
Total	**2.7800e-003**	**0.0567**	**0.0688**	**1.1000e-004**		**3.4000e-003**	**3.4000e-003**		**3.4000e-003**	**3.4000e-003**						**9.4545**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.7 BESS Construction/Infrastructure - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	9.7900e-003	8.0000e-003	0.0883	2.1000e-004	0.0231	1.4000e-004	0.0232	6.1300e-003	1.3000e-004	6.2600e-003						19.7393
Total	**9.7900e-003**	**8.0000e-003**	**0.0883**	**2.1000e-004**	**0.0231**	**1.4000e-004**	**0.0232**	**6.1300e-003**	**1.3000e-004**	**6.2600e-003**						**19.7393**

3.7 BESS Construction/Infrastructure - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.3200e-003	0.0483	0.0488	9.0000e-005		2.2100e-003	2.2100e-003		2.1000e-003	2.1000e-003						7.7354
Total	**5.3200e-003**	**0.0483**	**0.0488**	**9.0000e-005**		**2.2100e-003**	**2.2100e-003**		**2.1000e-003**	**2.1000e-003**						**7.7354**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.7 BESS Construction/Infrastructure - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	7.3000e-003	5.6600e-003	0.0649	1.7000e-004	0.0189	1.1000e-004	0.0190	5.0100e-003	1.0000e-004	5.1100e-003						15.6212
Total	**7.3000e-003**	**5.6600e-003**	**0.0649**	**1.7000e-004**	**0.0189**	**1.1000e-004**	**0.0190**	**5.0100e-003**	**1.0000e-004**	**5.1100e-003**						**15.6212**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.2700e-003	0.0464	0.0563	9.0000e-005		2.7800e-003	2.7800e-003		2.7800e-003	2.7800e-003						7.7354
Total	**2.2700e-003**	**0.0464**	**0.0563**	**9.0000e-005**		**2.7800e-003**	**2.7800e-003**		**2.7800e-003**	**2.7800e-003**						**7.7354**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.7 BESS Construction/Infrastructure - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	7.3000e-003	5.6600e-003	0.0649	1.7000e-004	0.0189	1.1000e-004	0.0190	5.0100e-003	1.0000e-004	5.1100e-003						15.6212
Total	**7.3000e-003**	**5.6600e-003**	**0.0649**	**1.7000e-004**	**0.0189**	**1.1000e-004**	**0.0190**	**5.0100e-003**	**1.0000e-004**	**5.1100e-003**						**15.6212**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0105	0.0234	0.0937	2.3000e-004	0.0198	2.4000e-004	0.0200	5.3000e-003	2.2000e-004	5.5200e-003						21.4353
Unmitigated	0.0105	0.0234	0.0937	2.3000e-004	0.0198	2.4000e-004	0.0200	5.3000e-003	2.2000e-004	5.5200e-003						21.4353

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	14.43	36.26	40.52	52,469	52,469
Total	14.43	36.26	40.52	52,469	52,469

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	14.70	6.60	6.60	33.00	48.00	19.00	66	28	6

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.515533	0.047958	0.156749	0.151796	0.029800	0.007258	0.013970	0.049021	0.000803	0.000458	0.021477	0.002201	0.002977

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000						0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000						0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**0.0000**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0				0.0000
Total					**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0				0.0000
Total					**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	7.5900e-003	0.0000	1.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000						3.5000e-004
Unmitigated	7.5900e-003	0.0000	1.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000						3.5000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000						0.0000
Consumer Products	7.5800e-003					0.0000	0.0000		0.0000	0.0000						0.0000
Landscaping	2.0000e-005	0.0000	1.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000						3.5000e-004
Total	**7.6000e-003**	**0.0000**	**1.7000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**3.5000e-004**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000						0.0000
Consumer Products	7.5800e-003					0.0000	0.0000		0.0000	0.0000						0.0000
Landscaping	2.0000e-005	0.0000	1.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000						3.5000e-004
Total	**7.6000e-003**	**0.0000**	**1.7000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**3.5000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated				0.0000
Unmitigated				0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 22.0424				0.0000
Total					**0.0000**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 22.0424				0.0000
Total					**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated				0.7996
Unmitigated				0.7996

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	1.59				0.7996
Total					**0.7996**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	1.59				0.7996
Total					**0.7996**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Merced County Cleveland Solar PV Project - Construction Only

Merced County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	18.50	Acre	18.50	805,860.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	49
Climate Zone	3			**Operational Year**	2024
Utility Company					
CO2 Intensity (lb/MWhr)	0	**CH4 Intensity (lb/MWhr)**	0	**N2O Intensity (lb/MWhr)**	0

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Land use type does not apply. Total acreage of disturbance: 18.5 acres

Construction Phase - Based on information provided. Road improvements assumed to occur concurrent with site grading/excavation.

Off-road Equipment - Equipment use based on information provided.

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Grading - Dust from material movement based on model defaults. No fill material imported or exported

Demolition - No demo required

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Trips and VMT - Worker trips are based on model defaults. Assumes an avg of 12 MHDT/HHDT per day. Empl trip distance based on model defaults. Haul trip length assumes 58 miles.

On-road Fugitive Dust - Onroad dust based on model defaults.

Architectural Coating - Arch coating not required.

Vehicle Emission Factors - Operational emissions not included in this model run.

Vehicle Emission Factors -

Vehicle Emission Factors -

Construction Off-road Equipment Mitigation - Assumes 50% CE for watering unpaved roads, 61% CE for watering exposed areas, 15 mph onsite speed limit. Mitigation for use of T3 equipment included for informational purposes.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	300.00	20.00
tblConstructionPhase	NumDays	30.00	32.00
tblConstructionPhase	NumDays	20.00	7.00
tblConstructionPhase	NumDays	30.00	32.00
tblConstructionPhase	NumDays	10.00	3.00
tblGrading	AcresOfGrading	64.00	90.00
tblGrading	AcresOfGrading	1.50	15.00
tblGrading	AcresOfGrading	16.00	96.00
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.20	0.20
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.41	0.41
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.20	0.20
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	58.00
tblTripsAndVMT	HaulingTripLength	20.00	58.00
tblTripsAndVMT	HaulingTripLength	20.00	58.00
tblTripsAndVMT	HaulingTripLength	20.00	58.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	132.00	0.00

2.0 Emissions Summary

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	9.5662	74.3757	71.5327	0.1769	23.1965	3.1287	26.3252	8.6122	2.8958	11.5080						17,469.9342
2023	8.6747	65.2673	67.8892	0.1752	23.1965	2.6784	25.8749	8.6122	2.4790	11.0912						17,294.6901
Maximum	**9.5662**	**74.3757**	**71.5327**	**0.1769**	**23.1965**	**3.1287**	**26.3252**	**8.6122**	**2.8958**	**11.5080**						**17,469.9342**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	5.3776	63.7981	94.9570	0.1769	12.0895	2.8472	14.9367	4.1677	2.8443	7.0121						17,469.9341
2023	5.1524	63.3719	92.7099	0.1752	12.0895	2.8383	14.9278	4.1677	2.8359	7.0037						17,294.6901
Maximum	**5.3776**	**63.7981**	**94.9570**	**0.1769**	**12.0895**	**2.8472**	**14.9367**	**4.1677**	**2.8443**	**7.0121**						**17,469.9341**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	42.27	8.93	-34.60	0.00	47.88	2.09	42.79	51.61	-5.68	37.98	0.00	0.00	0.00	0.00	0.00	0.00

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0417	2.0000e-005	1.8900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.3100e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Mobile	0.1320	0.2313	1.0508	2.5000e-003	0.2128	2.4900e-003	0.2152	0.0569	2.3400e-003	0.0593						260.5426
Total	**0.1737**	**0.2313**	**1.0527**	**2.5000e-003**	**0.2128**	**2.5000e-003**	**0.2153**	**0.0569**	**2.3500e-003**	**0.0593**						**260.5469**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0417	2.0000e-005	1.8900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.3100e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Mobile	0.1320	0.2313	1.0508	2.5000e-003	0.2128	2.4900e-003	0.2152	0.0569	2.3400e-003	0.0593						260.5426
Total	**0.1737**	**0.2313**	**1.0527**	**2.5000e-003**	**0.2128**	**2.5000e-003**	**0.2153**	**0.0569**	**2.3500e-003**	**0.0593**						**260.5469**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Staging	Demolition	11/15/2022	11/23/2022	5	7	Staging
2	Site Preparation	Site Preparation	11/28/2022	11/30/2022	5	3	Site Preparation/Clearing
3	Grading/Excavation	Grading	12/1/2022	1/15/2023	5	32	Grading/Excavation
4	Road Improvements	Grading	12/1/2022	1/15/2023	5	32	Road Improvements
5	Trenching/PV Installation	Trenching	12/16/2022	5/16/2023	5	108	Trenching/PV Installation
6	BESS Construction/Infrastructure	Building Construction	12/16/2022	1/12/2023	5	20	BESS Construction/Infrastructure

Acres of Grading (Site Preparation Phase): 15

Acres of Grading (Grading Phase): 90

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Staging	Concrete/Industrial Saws	0	8.00	81	0.73
Staging	Excavators	0	8.00	158	0.38
Staging	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Grading/Excavation	Excavators	1	8.00	158	0.38
Grading/Excavation	Graders	2	8.00	187	0.41
Grading/Excavation	Rubber Tired Dozers	2	8.00	247	0.40
Grading/Excavation	Scrapers	0	8.00	367	0.48
Grading/Excavation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Road Improvements	Cranes	0	7.00	231	0.29
Road Improvements	Forklifts	0	8.00	89	0.20
Road Improvements	Generator Sets	0	8.00	84	0.74
Road Improvements	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Road Improvements	Welders	0	8.00	46	0.45
Trenching/PV Installation	Pavers	0	8.00	130	0.42
Trenching/PV Installation	Paving Equipment	0	8.00	132	0.36
Trenching/PV Installation	Rollers	0	8.00	80	0.38
BESS Construction/Infrastructure	Air Compressors	0	6.00	78	0.48
BESS Construction/Infrastructure	Cranes	1	8.00	231	0.29
Road Improvements	Excavators	1	8.00	158	0.38
BESS Construction/Infrastructure	Forklifts	2	8.00	89	0.20
BESS Construction/Infrastructure	Generator Sets	1	8.00	84	0.74
Road Improvements	Graders	1	8.00	187	0.41
Road Improvements	Rubber Tired Dozers	0	8.00	247	0.40
Road Improvements	Scrapers	0	8.00	367	0.48
BESS Construction/Infrastructure	Tractors/Loaders/Backhoes	0	7.00	97	0.37
BESS Construction/Infrastructure	Welders	1	8.00	46	0.45
Staging	Skid Steer Loaders	1	8.00	65	0.37
Staging	Generator Sets	1	8.00	84	0.74
Staging	Forklifts	2	8.00	89	0.20
Site Preparation	Skid Steer Loaders	3	8.00	65	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Off-Highway Trucks	1	8.00	402	0.38

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Grading/Excavation	Rubber Tired Loaders	1	8.00	203	0.36
Grading/Excavation	Off-Highway Trucks	1	8.00	402	0.38
Road Improvements	Rollers	1	8.00	80	0.38
Road Improvements	Off-Highway Trucks	1	8.00	402	0.38
Trenching/PV Installation	Skid Steer Loaders	2	8.00	65	0.37
Trenching/PV Installation	Forklifts	1	8.00	89	0.20
Trenching/PV Installation	Trenchers	1	8.00	78	0.50
Trenching/PV Installation	Off-Highway Trucks	1	8.00	402	0.38
BESS Construction/Infrastructure	Skid Steer Loaders	1	8.00	65	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Staging	4	10.00	12.00	0.00	16.80	6.60	58.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	5	13.00	12.00	0.00	16.80	6.60	58.00	LD_Mix	HDT_Mix	HHDT
Grading/Excavation	7	18.00	12.00	0.00	16.80	6.60	58.00	LD_Mix	HDT_Mix	HHDT
Road Improvements	4	10.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Trenching/PV Installation	5	13.00	12.00	0.00	16.80	6.60	58.00	LD_Mix	HDT_Mix	HHDT
BESS Construction/Infrastruc	6	338.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use Soil Stabilizer

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Staging - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6277	5.9734	7.3765	0.0117		0.3217	0.3217		0.3078	0.3078						1,124.9149
Total	**0.6277**	**5.9734**	**7.3765**	**0.0117**		**0.3217**	**0.3217**		**0.3078**	**0.3078**						**1,124.9149**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0261	0.5927	0.1942	2.3100e-003	0.0736	6.7000e-003	0.0803	0.0212	6.4100e-003	0.0276						254.9453
Worker	0.0592	0.0400	0.5624	1.2500e-003	0.1277	7.5000e-004	0.1285	0.0339	6.9000e-004	0.0346						126.9859
Total	**0.0854**	**0.6327**	**0.7566**	**3.5600e-003**	**0.2013**	**7.4500e-003**	**0.2088**	**0.0551**	**7.1000e-003**	**0.0622**						**381.9312**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Staging - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2580	5.8904	7.9542	0.0117		0.4128	0.4128		0.4128	0.4128						1,124.9149
Total	**0.2580**	**5.8904**	**7.9542**	**0.0117**		**0.4128**	**0.4128**		**0.4128**	**0.4128**						**1,124.9149**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0261	0.5927	0.1942	2.3100e-003	0.0736	6.7000e-003	0.0803	0.0212	6.4100e-003	0.0276						254.9453
Worker	0.0592	0.0400	0.5624	1.2500e-003	0.1277	7.5000e-004	0.1285	0.0339	6.9000e-004	0.0346						126.9859
Total	**0.0854**	**0.6327**	**0.7566**	**3.5600e-003**	**0.2013**	**7.4500e-003**	**0.2088**	**0.0551**	**7.1000e-003**	**0.0622**						**381.9312**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.3025	0.0000	5.3025	0.5726	0.0000	0.5726						0.0000
Off-Road	1.1527	12.0492	9.2365	0.0261		0.4165	0.4165		0.3832	0.3832						2,543.7651
Total	**1.1527**	**12.0492**	**9.2365**	**0.0261**	**5.3025**	**0.4165**	**5.7190**	**0.5726**	**0.3832**	**0.9557**						**2,543.7651**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0261	0.5927	0.1942	2.3100e-003	0.0736	6.7000e-003	0.0803	0.0212	6.4100e-003	0.0276						254.9453
Worker	0.0770	0.0519	0.7311	1.6200e-003	0.1661	9.8000e-004	0.1670	0.0440	9.0000e-004	0.0449						165.0816
Total	**0.1031**	**0.6447**	**0.9253**	**3.9300e-003**	**0.2397**	**7.6800e-003**	**0.2474**	**0.0652**	**7.3100e-003**	**0.0726**						**420.0269**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.0680	0.0000	2.0680	0.2233	0.0000	0.2233						0.0000
Off-Road	0.6388	12.8816	15.2339	0.0261		0.6002	0.6002		0.6002	0.6002						2,543.7651
Total	**0.6388**	**12.8816**	**15.2339**	**0.0261**	**2.0680**	**0.6002**	**2.6682**	**0.2233**	**0.6002**	**0.8235**						**2,543.7651**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0261	0.5927	0.1942	2.3100e-003	0.0736	6.7000e-003	0.0803	0.0212	6.4100e-003	0.0276						254.9453
Worker	0.0770	0.0519	0.7311	1.6200e-003	0.1661	9.8000e-004	0.1670	0.0440	9.0000e-004	0.0449						165.0816
Total	**0.1031**	**0.6447**	**0.9253**	**3.9300e-003**	**0.2397**	**7.6800e-003**	**0.2474**	**0.0652**	**7.3100e-003**	**0.0726**						**420.0269**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading/Excavation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					15.0268	0.0000	15.0268	6.9425	0.0000	6.9425						0.0000
Off-Road	3.5305	36.9534	18.7770	0.0550		1.5037	1.5037		1.3834	1.3834						5,373.8183
Total	**3.5305**	**36.9534**	**18.7770**	**0.0550**	**15.0268**	**1.5037**	**16.5306**	**6.9425**	**1.3834**	**8.3259**						**5,373.8183**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0261	0.5927	0.1942	2.3100e-003	0.0736	6.7000e-003	0.0803	0.0212	6.4100e-003	0.0276						254.9453
Worker	0.1066	0.0719	1.0123	2.2400e-003	0.2299	1.3600e-003	0.2313	0.0610	1.2500e-003	0.0622						228.5746
Total	**0.1327**	**0.6647**	**1.2065**	**4.5500e-003**	**0.3035**	**8.0600e-003**	**0.3116**	**0.0822**	**7.6600e-003**	**0.0898**						**483.5199**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading/Excavation - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.8605	0.0000	5.8605	2.7076	0.0000	2.7076						0.0000
Off-Road	1.3502	26.1035	30.4187	0.0550		1.0156	1.0156		1.0156	1.0156						5,373.8183
Total	**1.3502**	**26.1035**	**30.4187**	**0.0550**	**5.8605**	**1.0156**	**6.8760**	**2.7076**	**1.0156**	**3.7231**						**5,373.8183**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0261	0.5927	0.1942	2.3100e-003	0.0736	6.7000e-003	0.0803	0.0212	6.4100e-003	0.0276						254.9453
Worker	0.1066	0.0719	1.0123	2.2400e-003	0.2299	1.3600e-003	0.2313	0.0610	1.2500e-003	0.0622						228.5746
Total	**0.1327**	**0.6647**	**1.2065**	**4.5500e-003**	**0.3035**	**8.0600e-003**	**0.3116**	**0.0822**	**7.6600e-003**	**0.0898**						**483.5199**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading/Excavation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					15.0268	0.0000	15.0268	6.9425	0.0000	6.9425						0.0000
Off-Road	3.1032	31.3627	17.6780	0.0551		1.2382	1.2382		1.1391	1.1391						5,373.7956
Total	**3.1032**	**31.3627**	**17.6780**	**0.0551**	**15.0268**	**1.2382**	**16.2650**	**6.9425**	**1.1391**	**8.0816**						**5,373.7956**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0140	0.4822	0.1675	2.2300e-003	0.0736	3.1900e-003	0.0768	0.0212	3.0500e-003	0.0243						245.7367
Worker	0.0971	0.0622	0.9081	2.1700e-003	0.2299	1.2700e-003	0.2312	0.0610	1.1700e-003	0.0621						221.0364
Total	**0.1111**	**0.5444**	**1.0757**	**4.4000e-003**	**0.3035**	**4.4600e-003**	**0.3080**	**0.0822**	**4.2200e-003**	**0.0864**						**466.7731**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading/Excavation - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.8605	0.0000	5.8605	2.7076	0.0000	2.7076						0.0000
Off-Road	1.3502	26.1035	30.4187	0.0551		1.0156	1.0156		1.0156	1.0156						5,373.7956
Total	**1.3502**	**26.1035**	**30.4187**	**0.0551**	**5.8605**	**1.0156**	**6.8760**	**2.7076**	**1.0156**	**3.7231**						**5,373.7956**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0140	0.4822	0.1675	2.2300e-003	0.0736	3.1900e-003	0.0768	0.0212	3.0500e-003	0.0243						245.7367
Worker	0.0971	0.0622	0.9081	2.1700e-003	0.2299	1.2700e-003	0.2312	0.0610	1.1700e-003	0.0621						221.0364
Total	**0.1111**	**0.5444**	**1.0757**	**4.4000e-003**	**0.3035**	**4.4600e-003**	**0.3080**	**0.0822**	**4.2200e-003**	**0.0864**						**466.7731**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Road Improvements - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.1815	0.0000	3.1815	0.3435	0.0000	0.3435						0.0000
Off-Road	1.3127	12.7724	10.1893	0.0277		0.4980	0.4980		0.4582	0.4582						2,699.2180
Total	**1.3127**	**12.7724**	**10.1893**	**0.0277**	**3.1815**	**0.4980**	**3.6795**	**0.3435**	**0.4582**	**0.8017**						**2,699.2180**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0592	0.0400	0.5624	1.2500e-003	0.1277	7.5000e-004	0.1285	0.0339	6.9000e-004	0.0346						126.9859
Total	**0.0592**	**0.0400**	**0.5624**	**1.2500e-003**	**0.1277**	**7.5000e-004**	**0.1285**	**0.0339**	**6.9000e-004**	**0.0346**						**126.9859**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Road Improvements - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.2408	0.0000	1.2408	0.1340	0.0000	0.1340						0.0000
Off-Road	0.6778	13.3263	16.4326	0.0277		0.5775	0.5775		0.5775	0.5775						2,699.2180
Total	**0.6778**	**13.3263**	**16.4326**	**0.0277**	**1.2408**	**0.5775**	**1.8183**	**0.1340**	**0.5775**	**0.7115**						**2,699.2180**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0592	0.0400	0.5624	1.2500e-003	0.1277	7.5000e-004	0.1285	0.0339	6.9000e-004	0.0346						126.9859
Total	**0.0592**	**0.0400**	**0.5624**	**1.2500e-003**	**0.1277**	**7.5000e-004**	**0.1285**	**0.0339**	**6.9000e-004**	**0.0346**						**126.9859**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Road Improvements - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.1815	0.0000	3.1815	0.3435	0.0000	0.3435						0.0000
Off-Road	1.2303	11.3772	10.0842	0.0277		0.4437	0.4437		0.4082	0.4082						2,699.8008
Total	**1.2303**	**11.3772**	**10.0842**	**0.0277**	**3.1815**	**0.4437**	**3.6252**	**0.3435**	**0.4082**	**0.7517**						**2,699.8008**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0539	0.0345	0.5045	1.2000e-003	0.1277	7.1000e-004	0.1284	0.0339	6.5000e-004	0.0345						122.7980
Total	**0.0539**	**0.0345**	**0.5045**	**1.2000e-003**	**0.1277**	**7.1000e-004**	**0.1284**	**0.0339**	**6.5000e-004**	**0.0345**						**122.7980**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Road Improvements - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.2408	0.0000	1.2408	0.1340	0.0000	0.1340						0.0000
Off-Road	0.6778	13.3263	16.4326	0.0277		0.5775	0.5775		0.5775	0.5775						2,699.8008
Total	**0.6778**	**13.3263**	**16.4326**	**0.0277**	**1.2408**	**0.5775**	**1.8183**	**0.1340**	**0.5775**	**0.7115**						**2,699.8008**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0539	0.0345	0.5045	1.2000e-003	0.1277	7.1000e-004	0.1284	0.0339	6.5000e-004	0.0345						122.7980
Total	**0.0539**	**0.0345**	**0.5045**	**1.2000e-003**	**0.1277**	**7.1000e-004**	**0.1284**	**0.0339**	**6.5000e-004**	**0.0345**						**122.7980**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Trenching/PV Installation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1496	10.3402	9.9101	0.0223		0.5263	0.5263		0.4842	0.4842						2,179.3731
Total	**1.1496**	**10.3402**	**9.9101**	**0.0223**		**0.5263**	**0.5263**		**0.4842**	**0.4842**						**2,179.3731**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0261	0.5927	0.1942	2.3100e-003	0.0736	6.7000e-003	0.0803	0.0212	6.4100e-003	0.0276						254.9453
Worker	0.0770	0.0519	0.7311	1.6200e-003	0.1661	9.8000e-004	0.1670	0.0440	9.0000e-004	0.0449						165.0816
Total	**0.1031**	**0.6447**	**0.9253**	**3.9300e-003**	**0.2397**	**7.6800e-003**	**0.2474**	**0.0652**	**7.3100e-003**	**0.0726**						**420.0269**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Trenching/PV Installation - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5471	11.3555	13.8913	0.0223		0.5938	0.5938		0.5938	0.5938						2,179.3731
Total	**0.5471**	**11.3555**	**13.8913**	**0.0223**		**0.5938**	**0.5938**		**0.5938**	**0.5938**						**2,179.3731**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0261	0.5927	0.1942	2.3100e-003	0.0736	6.7000e-003	0.0803	0.0212	6.4100e-003	0.0276						254.9453
Worker	0.0770	0.0519	0.7311	1.6200e-003	0.1661	9.8000e-004	0.1670	0.0440	9.0000e-004	0.0449						165.0816
Total	**0.1031**	**0.6447**	**0.9253**	**3.9300e-003**	**0.2397**	**7.6800e-003**	**0.2474**	**0.0652**	**7.3100e-003**	**0.0726**						**420.0269**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Trenching/PV Installation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0875	9.5219	9.8200	0.0223		0.4729	0.4729		0.4351	0.4351						2,180.7326
Total	**1.0875**	**9.5219**	**9.8200**	**0.0223**		**0.4729**	**0.4729**		**0.4351**	**0.4351**						**2,180.7326**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0140	0.4822	0.1675	2.2300e-003	0.0736	3.1900e-003	0.0768	0.0212	3.0500e-003	0.0243						245.7367
Worker	0.0701	0.0449	0.6559	1.5700e-003	0.1661	9.2000e-004	0.1670	0.0440	8.4000e-004	0.0449						159.6374
Total	**0.0841**	**0.5271**	**0.8234**	**3.8000e-003**	**0.2397**	**4.1100e-003**	**0.2438**	**0.0652**	**3.8900e-003**	**0.0691**						**405.3741**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Trenching/PV Installation - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5471	11.3555	13.8913	0.0223		0.5938	0.5938		0.5938	0.5938						2,180.7326
Total	**0.5471**	**11.3555**	**13.8913**	**0.0223**		**0.5938**	**0.5938**		**0.5938**	**0.5938**						**2,180.7326**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0140	0.4822	0.1675	2.2300e-003	0.0736	3.1900e-003	0.0768	0.0212	3.0500e-003	0.0243						245.7367
Worker	0.0701	0.0449	0.6559	1.5700e-003	0.1661	9.2000e-004	0.1670	0.0440	8.4000e-004	0.0449						159.6374
Total	**0.0841**	**0.5271**	**0.8234**	**3.8000e-003**	**0.2397**	**4.1100e-003**	**0.2438**	**0.0652**	**3.8900e-003**	**0.0691**						**405.3741**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.7 BESS Construction/Infrastructure - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2762	11.6101	10.9532	0.0200		0.5587	0.5587		0.5308	0.5308						1,894.8698
Total	**1.2762**	**11.6101**	**10.9532**	**0.0200**		**0.5587**	**0.5587**		**0.5308**	**0.5308**						**1,894.8698**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	2.0022	1.3504	19.0090	0.0421	4.3173	0.0255	4.3428	1.1449	0.0235	1.1684						4,292.1224
Total	**2.0022**	**1.3504**	**19.0090**	**0.0421**	**4.3173**	**0.0255**	**4.3428**	**1.1449**	**0.0235**	**1.1684**						**4,292.1224**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.7 BESS Construction/Infrastructure - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5053	10.3132	12.5113	0.0200		0.6184	0.6184		0.6184	0.6184						1,894.8698
Total	**0.5053**	**10.3132**	**12.5113**	**0.0200**		**0.6184**	**0.6184**		**0.6184**	**0.6184**						**1,894.8698**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	2.0022	1.3504	19.0090	0.0421	4.3173	0.0255	4.3428	1.1449	0.0235	1.1684						4,292.1224
Total	**2.0022**	**1.3504**	**19.0090**	**0.0421**	**4.3173**	**0.0255**	**4.3428**	**1.1449**	**0.0235**	**1.1684**						**4,292.1224**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.7 BESS Construction/Infrastructure - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1817	10.7322	10.8511	0.0200		0.4905	0.4905		0.4659	0.4659						1,894.8443
Total	**1.1817**	**10.7322**	**10.8511**	**0.0200**		**0.4905**	**0.4905**		**0.4659**	**0.4659**						**1,894.8443**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	1.8230	1.1674	17.0524	0.0407	4.3173	0.0238	4.3411	1.1449	0.0219	1.1668						4,150.5717
Total	**1.8230**	**1.1674**	**17.0524**	**0.0407**	**4.3173**	**0.0238**	**4.3411**	**1.1449**	**0.0219**	**1.1668**						**4,150.5717**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.7 BESS Construction/Infrastructure - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5053	10.3132	12.5113	0.0200		0.6184	0.6184		0.6184	0.6184						1,894.8443
Total	**0.5053**	**10.3132**	**12.5113**	**0.0200**		**0.6184**	**0.6184**		**0.6184**	**0.6184**						**1,894.8443**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	1.8230	1.1674	17.0524	0.0407	4.3173	0.0238	4.3411	1.1449	0.0219	1.1668						4,150.5717
Total	**1.8230**	**1.1674**	**17.0524**	**0.0407**	**4.3173**	**0.0238**	**4.3411**	**1.1449**	**0.0219**	**1.1668**						**4,150.5717**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.1320	0.2313	1.0508	2.5000e-003	0.2128	2.4900e-003	0.2152	0.0569	2.3400e-003	0.0593						260.5426
Unmitigated	0.1320	0.2313	1.0508	2.5000e-003	0.2128	2.4900e-003	0.2152	0.0569	2.3400e-003	0.0593						260.5426

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	14.43	36.26	40.52	52,469	52,469
Total	14.43	36.26	40.52	52,469	52,469

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	14.70	6.60	6.60	33.00	48.00	19.00	66	28	6

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.515533	0.047958	0.156749	0.151796	0.029800	0.007258	0.013970	0.049021	0.000803	0.000458	0.021477	0.002201	0.002977

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**0.0000**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0417	2.0000e-005	1.8900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.3100e-003
Unmitigated	0.0417	2.0000e-005	1.8900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.3100e-003

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000						0.0000
Consumer Products	0.0415					0.0000	0.0000		0.0000	0.0000						0.0000
Landscaping	1.7000e-004	2.0000e-005	1.8900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.3100e-003
Total	**0.0417**	**2.0000e-005**	**1.8900e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**						**4.3100e-003**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000						0.0000
Consumer Products	0.0415					0.0000	0.0000		0.0000	0.0000						0.0000
Landscaping	1.7000e-004	2.0000e-005	1.8900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.3100e-003
Total	**0.0417**	**2.0000e-005**	**1.8900e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**						**4.3100e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Merced County Cleveland Solar PV Project - Construction Only

Merced County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	18.50	Acre	18.50	805,860.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	49
Climate Zone	3			**Operational Year**	2024
Utility Company					
CO2 Intensity (lb/MWhr)	0	**CH4 Intensity (lb/MWhr)**	0	**N2O Intensity (lb/MWhr)**	0

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Land use type does not apply. Total acreage of disturbance: 18.5 acres

Construction Phase - Based on information provided. Road improvements assumed to occur concurrent with site grading/excavation.

Off-road Equipment - Equipment use based on information provided.

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Off-road Equipment - .

Grading - Dust from material movement based on model defaults. No fill material imported or exported

Demolition - No demo required

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Trips and VMT - Worker trips are based on model defaults. Assumes an avg of 12 MHDT/HHDT per day. Empl trip distance based on model defaults. Haul trip length assumes 58 miles.

On-road Fugitive Dust - Onroad dust based on model defaults.

Architectural Coating - Arch coating not required.

Vehicle Emission Factors - Operational emissions not included in this model run.

Vehicle Emission Factors -

Vehicle Emission Factors -

Construction Off-road Equipment Mitigation - Assumes 50% CE for watering unpaved roads, 61% CE for watering exposed areas, 15 mph onsite speed limit. Mitigation for use of T3 equipment included for informational purposes.

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	300.00	20.00
tblConstructionPhase	NumDays	30.00	32.00
tblConstructionPhase	NumDays	20.00	7.00
tblConstructionPhase	NumDays	30.00	32.00
tblConstructionPhase	NumDays	10.00	3.00
tblGrading	AcresOfGrading	64.00	90.00
tblGrading	AcresOfGrading	1.50	15.00
tblGrading	AcresOfGrading	16.00	96.00
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.20	0.20
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.41	0.41
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.20	0.20
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Rollers
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	58.00
tblTripsAndVMT	HaulingTripLength	20.00	58.00
tblTripsAndVMT	HaulingTripLength	20.00	58.00
tblTripsAndVMT	HaulingTripLength	20.00	58.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	132.00	0.00

2.0 Emissions Summary

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	9.4243	74.7360	67.6652	0.1718	23.1965	3.1287	26.3253	8.6122	2.8958	11.5080						16,962.0281
2023	8.5508	65.5775	64.4722	0.1703	23.1965	2.6784	25.8749	8.6122	2.4790	11.0913						16,805.2131
Maximum	**9.4243**	**74.7360**	**67.6652**	**0.1718**	**23.1965**	**3.1287**	**26.3253**	**8.6122**	**2.8958**	**11.5080**						**16,962.0281**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	5.2357	64.1584	91.0895	0.1718	12.0895	2.8472	14.9367	4.1677	2.8444	7.0122						16,962.0281
2023	5.0285	63.6821	89.2928	0.1703	12.0895	2.8383	14.9278	4.1677	2.8359	7.0037						16,805.2131
Maximum	**5.2357**	**64.1584**	**91.0895**	**0.1718**	**12.0895**	**2.8472**	**14.9367**	**4.1677**	**2.8444**	**7.0122**						**16,962.0281**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	42.90	8.89	-36.51	0.00	47.88	2.09	42.79	51.61	-5.68	37.98	0.00	0.00	0.00	0.00	0.00	0.00

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0417	2.0000e-005	1.8900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.3100e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Mobile	0.1041	0.2560	1.0196	2.3200e-003	0.2128	2.4900e-003	0.2152	0.0569	2.3500e-003	0.0593						243.1620
Total	**0.1458**	**0.2561**	**1.0215**	**2.3200e-003**	**0.2128**	**2.5000e-003**	**0.2153**	**0.0569**	**2.3600e-003**	**0.0593**						**243.1663**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0417	2.0000e-005	1.8900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.3100e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Mobile	0.1041	0.2560	1.0196	2.3200e-003	0.2128	2.4900e-003	0.2152	0.0569	2.3500e-003	0.0593						243.1620
Total	**0.1458**	**0.2561**	**1.0215**	**2.3200e-003**	**0.2128**	**2.5000e-003**	**0.2153**	**0.0569**	**2.3600e-003**	**0.0593**						**243.1663**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Staging	Demolition	11/15/2022	11/23/2022	5	7	Staging
2	Site Preparation	Site Preparation	11/28/2022	11/30/2022	5	3	Site Preparation/Clearing
3	Grading/Excavation	Grading	12/1/2022	1/15/2023	5	32	Grading/Excavation
4	Road Improvements	Grading	12/1/2022	1/15/2023	5	32	Road Improvements
5	Trenching/PV Installation	Trenching	12/16/2022	5/16/2023	5	108	Trenching/PV Installation
6	BESS Construction/Infrastructure	Building Construction	12/16/2022	1/12/2023	5	20	BESS Construction/Infrastructure

Acres of Grading (Site Preparation Phase): 15

Acres of Grading (Grading Phase): 90

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Staging	Concrete/Industrial Saws	0	8.00	81	0.73
Staging	Excavators	0	8.00	158	0.38
Staging	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Grading/Excavation	Excavators	1	8.00	158	0.38
Grading/Excavation	Graders	2	8.00	187	0.41
Grading/Excavation	Rubber Tired Dozers	2	8.00	247	0.40
Grading/Excavation	Scrapers	0	8.00	367	0.48
Grading/Excavation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Road Improvements	Cranes	0	7.00	231	0.29
Road Improvements	Forklifts	0	8.00	89	0.20
Road Improvements	Generator Sets	0	8.00	84	0.74
Road Improvements	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Road Improvements	Welders	0	8.00	46	0.45
Trenching/PV Installation	Pavers	0	8.00	130	0.42
Trenching/PV Installation	Paving Equipment	0	8.00	132	0.36
Trenching/PV Installation	Rollers	0	8.00	80	0.38
BESS Construction/Infrastructure	Air Compressors	0	6.00	78	0.48
BESS Construction/Infrastructure	Cranes	1	8.00	231	0.29
Road Improvements	Excavators	1	8.00	158	0.38
BESS Construction/Infrastructure	Forklifts	2	8.00	89	0.20
BESS Construction/Infrastructure	Generator Sets	1	8.00	84	0.74
Road Improvements	Graders	1	8.00	187	0.41
Road Improvements	Rubber Tired Dozers	0	8.00	247	0.40
Road Improvements	Scrapers	0	8.00	367	0.48
BESS Construction/Infrastructure	Tractors/Loaders/Backhoes	0	7.00	97	0.37
BESS Construction/Infrastructure	Welders	1	8.00	46	0.45
Staging	Skid Steer Loaders	1	8.00	65	0.37
Staging	Generator Sets	1	8.00	84	0.74
Staging	Forklifts	2	8.00	89	0.20
Site Preparation	Skid Steer Loaders	3	8.00	65	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Off-Highway Trucks	1	8.00	402	0.38

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Grading/Excavation	Rubber Tired Loaders	1	8.00	203	0.36
Grading/Excavation	Off-Highway Trucks	1	8.00	402	0.38
Road Improvements	Rollers	1	8.00	80	0.38
Road Improvements	Off-Highway Trucks	1	8.00	402	0.38
Trenching/PV Installation	Skid Steer Loaders	2	8.00	65	0.37
Trenching/PV Installation	Forklifts	1	8.00	89	0.20
Trenching/PV Installation	Trenchers	1	8.00	78	0.50
Trenching/PV Installation	Off-Highway Trucks	1	8.00	402	0.38
BESS Construction/Infrastructure	Skid Steer Loaders	1	8.00	65	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Staging	4	10.00	12.00	0.00	16.80	6.60	58.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	5	13.00	12.00	0.00	16.80	6.60	58.00	LD_Mix	HDT_Mix	HHDT
Grading/Excavation	7	18.00	12.00	0.00	16.80	6.60	58.00	LD_Mix	HDT_Mix	HHDT
Road Improvements	4	10.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Trenching/PV Installation	5	13.00	12.00	0.00	16.80	6.60	58.00	LD_Mix	HDT_Mix	HHDT
BESS Construction/Infrastruc	6	338.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use Soil Stabilizer

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Staging - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.6277	5.9734	7.3765	0.0117		0.3217	0.3217		0.3078	0.3078						1,124.9149
Total	**0.6277**	**5.9734**	**7.3765**	**0.0117**		**0.3217**	**0.3217**		**0.3078**	**0.3078**						**1,124.9149**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0253	0.6320	0.2003	2.3100e-003	0.0736	6.7200e-003	0.0803	0.0212	6.4300e-003	0.0276						255.2177
Worker	0.0555	0.0474	0.4600	1.1100e-003	0.1277	7.5000e-004	0.1285	0.0339	6.9000e-004	0.0346						113.5703
Total	**0.0809**	**0.6794**	**0.6603**	**3.4200e-003**	**0.2013**	**7.4700e-003**	**0.2088**	**0.0551**	**7.1200e-003**	**0.0622**						**368.7880**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Staging - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2580	5.8904	7.9542	0.0117		0.4128	0.4128		0.4128	0.4128						1,124.9149
Total	**0.2580**	**5.8904**	**7.9542**	**0.0117**		**0.4128**	**0.4128**		**0.4128**	**0.4128**						**1,124.9149**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0253	0.6320	0.2003	2.3100e-003	0.0736	6.7200e-003	0.0803	0.0212	6.4300e-003	0.0276						255.2177
Worker	0.0555	0.0474	0.4600	1.1100e-003	0.1277	7.5000e-004	0.1285	0.0339	6.9000e-004	0.0346						113.5703
Total	**0.0809**	**0.6794**	**0.6603**	**3.4200e-003**	**0.2013**	**7.4700e-003**	**0.2088**	**0.0551**	**7.1200e-003**	**0.0622**						**368.7880**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.3025	0.0000	5.3025	0.5726	0.0000	0.5726						0.0000
Off-Road	1.1527	12.0492	9.2365	0.0261		0.4165	0.4165		0.3832	0.3832						2,543.7651
Total	**1.1527**	**12.0492**	**9.2365**	**0.0261**	**5.3025**	**0.4165**	**5.7190**	**0.5726**	**0.3832**	**0.9557**						**2,543.7651**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0253	0.6320	0.2003	2.3100e-003	0.0736	6.7200e-003	0.0803	0.0212	6.4300e-003	0.0276						255.2177
Worker	0.0722	0.0616	0.5980	1.4400e-003	0.1661	9.8000e-004	0.1670	0.0440	9.0000e-004	0.0449						147.6414
Total	**0.0975**	**0.6936**	**0.7983**	**3.7500e-003**	**0.2397**	**7.7000e-003**	**0.2474**	**0.0652**	**7.3300e-003**	**0.0726**						**402.8591**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.0680	0.0000	2.0680	0.2233	0.0000	0.2233						0.0000
Off-Road	0.6388	12.8816	15.2339	0.0261		0.6002	0.6002		0.6002	0.6002						2,543.7651
Total	**0.6388**	**12.8816**	**15.2339**	**0.0261**	**2.0680**	**0.6002**	**2.6682**	**0.2233**	**0.6002**	**0.8235**						**2,543.7651**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0253	0.6320	0.2003	2.3100e-003	0.0736	6.7200e-003	0.0803	0.0212	6.4300e-003	0.0276						255.2177
Worker	0.0722	0.0616	0.5980	1.4400e-003	0.1661	9.8000e-004	0.1670	0.0440	9.0000e-004	0.0449						147.6414
Total	**0.0975**	**0.6936**	**0.7983**	**3.7500e-003**	**0.2397**	**7.7000e-003**	**0.2474**	**0.0652**	**7.3300e-003**	**0.0726**						**402.8591**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading/Excavation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					15.0268	0.0000	15.0268	6.9425	0.0000	6.9425						0.0000
Off-Road	3.5305	36.9534	18.7770	0.0550		1.5037	1.5037		1.3834	1.3834						5,373.8183
Total	**3.5305**	**36.9534**	**18.7770**	**0.0550**	**15.0268**	**1.5037**	**16.5306**	**6.9425**	**1.3834**	**8.3259**						**5,373.8183**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0253	0.6320	0.2003	2.3100e-003	0.0736	6.7200e-003	0.0803	0.0212	6.4300e-003	0.0276						255.2177
Worker	0.1000	0.0853	0.8281	2.0000e-003	0.2299	1.3600e-003	0.2313	0.0610	1.2500e-003	0.0622						204.4265
Total	**0.1253**	**0.7173**	**1.0284**	**4.3100e-003**	**0.3035**	**8.0800e-003**	**0.3116**	**0.0822**	**7.6800e-003**	**0.0899**						**459.6442**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading/Excavation - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.8605	0.0000	5.8605	2.7076	0.0000	2.7076						0.0000
Off-Road	1.3502	26.1035	30.4187	0.0550		1.0156	1.0156		1.0156	1.0156						5,373.8183
Total	**1.3502**	**26.1035**	**30.4187**	**0.0550**	**5.8605**	**1.0156**	**6.8760**	**2.7076**	**1.0156**	**3.7231**						**5,373.8183**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0253	0.6320	0.2003	2.3100e-003	0.0736	6.7200e-003	0.0803	0.0212	6.4300e-003	0.0276						255.2177
Worker	0.1000	0.0853	0.8281	2.0000e-003	0.2299	1.3600e-003	0.2313	0.0610	1.2500e-003	0.0622						204.4265
Total	**0.1253**	**0.7173**	**1.0284**	**4.3100e-003**	**0.3035**	**8.0800e-003**	**0.3116**	**0.0822**	**7.6800e-003**	**0.0899**						**459.6442**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading/Excavation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					15.0268	0.0000	15.0268	6.9425	0.0000	6.9425						0.0000
Off-Road	3.1032	31.3627	17.6780	0.0551		1.2382	1.2382		1.1391	1.1391						5,373.7956
Total	**3.1032**	**31.3627**	**17.6780**	**0.0551**	**15.0268**	**1.2382**	**16.2650**	**6.9425**	**1.1391**	**8.0816**						**5,373.7956**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0131	0.5159	0.1727	2.2300e-003	0.0736	3.2000e-003	0.0768	0.0212	3.0600e-003	0.0243						246.2877
Worker	0.0913	0.0737	0.7453	1.9400e-003	0.2299	1.2700e-003	0.2312	0.0610	1.1700e-003	0.0621						197.7371
Total	**0.1044**	**0.5896**	**0.9180**	**4.1700e-003**	**0.3035**	**4.4700e-003**	**0.3080**	**0.0822**	**4.2300e-003**	**0.0864**						**444.0248**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading/Excavation - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.8605	0.0000	5.8605	2.7076	0.0000	2.7076						0.0000
Off-Road	1.3502	26.1035	30.4187	0.0551		1.0156	1.0156		1.0156	1.0156						5,373.7956
Total	**1.3502**	**26.1035**	**30.4187**	**0.0551**	**5.8605**	**1.0156**	**6.8760**	**2.7076**	**1.0156**	**3.7231**						**5,373.7956**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0131	0.5159	0.1727	2.2300e-003	0.0736	3.2000e-003	0.0768	0.0212	3.0600e-003	0.0243						246.2877
Worker	0.0913	0.0737	0.7453	1.9400e-003	0.2299	1.2700e-003	0.2312	0.0610	1.1700e-003	0.0621						197.7371
Total	**0.1044**	**0.5896**	**0.9180**	**4.1700e-003**	**0.3035**	**4.4700e-003**	**0.3080**	**0.0822**	**4.2300e-003**	**0.0864**						**444.0248**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Road Improvements - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.1815	0.0000	3.1815	0.3435	0.0000	0.3435						0.0000
Off-Road	1.3127	12.7724	10.1893	0.0277		0.4980	0.4980		0.4582	0.4582						2,699.2180
Total	**1.3127**	**12.7724**	**10.1893**	**0.0277**	**3.1815**	**0.4980**	**3.6795**	**0.3435**	**0.4582**	**0.8017**						**2,699.2180**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0555	0.0474	0.4600	1.1100e-003	0.1277	7.5000e-004	0.1285	0.0339	6.9000e-004	0.0346						113.5703
Total	**0.0555**	**0.0474**	**0.4600**	**1.1100e-003**	**0.1277**	**7.5000e-004**	**0.1285**	**0.0339**	**6.9000e-004**	**0.0346**						**113.5703**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Road Improvements - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.2408	0.0000	1.2408	0.1340	0.0000	0.1340						0.0000
Off-Road	0.6778	13.3263	16.4326	0.0277		0.5775	0.5775		0.5775	0.5775						2,699.2180
Total	**0.6778**	**13.3263**	**16.4326**	**0.0277**	**1.2408**	**0.5775**	**1.8183**	**0.1340**	**0.5775**	**0.7115**						**2,699.2180**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0555	0.0474	0.4600	1.1100e-003	0.1277	7.5000e-004	0.1285	0.0339	6.9000e-004	0.0346						113.5703
Total	**0.0555**	**0.0474**	**0.4600**	**1.1100e-003**	**0.1277**	**7.5000e-004**	**0.1285**	**0.0339**	**6.9000e-004**	**0.0346**						**113.5703**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Road Improvements - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.1815	0.0000	3.1815	0.3435	0.0000	0.3435						0.0000
Off-Road	1.2303	11.3772	10.0842	0.0277		0.4437	0.4437		0.4082	0.4082						2,699.8008
Total	**1.2303**	**11.3772**	**10.0842**	**0.0277**	**3.1815**	**0.4437**	**3.6252**	**0.3435**	**0.4082**	**0.7517**						**2,699.8008**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0507	0.0409	0.4141	1.0800e-003	0.1277	7.1000e-004	0.1284	0.0339	6.5000e-004	0.0345						109.8539
Total	**0.0507**	**0.0409**	**0.4141**	**1.0800e-003**	**0.1277**	**7.1000e-004**	**0.1284**	**0.0339**	**6.5000e-004**	**0.0345**						**109.8539**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Road Improvements - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.2408	0.0000	1.2408	0.1340	0.0000	0.1340						0.0000
Off-Road	0.6778	13.3263	16.4326	0.0277		0.5775	0.5775		0.5775	0.5775						2,699.8008
Total	**0.6778**	**13.3263**	**16.4326**	**0.0277**	**1.2408**	**0.5775**	**1.8183**	**0.1340**	**0.5775**	**0.7115**						**2,699.8008**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0507	0.0409	0.4141	1.0800e-003	0.1277	7.1000e-004	0.1284	0.0339	6.5000e-004	0.0345						109.8539
Total	**0.0507**	**0.0409**	**0.4141**	**1.0800e-003**	**0.1277**	**7.1000e-004**	**0.1284**	**0.0339**	**6.5000e-004**	**0.0345**						**109.8539**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Trenching/PV Installation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1496	10.3402	9.9101	0.0223		0.5263	0.5263		0.4842	0.4842						2,179.3731
Total	**1.1496**	**10.3402**	**9.9101**	**0.0223**		**0.5263**	**0.5263**		**0.4842**	**0.4842**						**2,179.3731**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0253	0.6320	0.2003	2.3100e-003	0.0736	6.7200e-003	0.0803	0.0212	6.4300e-003	0.0276						255.2177
Worker	0.0722	0.0616	0.5980	1.4400e-003	0.1661	9.8000e-004	0.1670	0.0440	9.0000e-004	0.0449						147.6414
Total	**0.0975**	**0.6936**	**0.7983**	**3.7500e-003**	**0.2397**	**7.7000e-003**	**0.2474**	**0.0652**	**7.3300e-003**	**0.0726**						**402.8591**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Trenching/PV Installation - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5471	11.3555	13.8913	0.0223		0.5938	0.5938		0.5938	0.5938						2,179.3731
Total	**0.5471**	**11.3555**	**13.8913**	**0.0223**		**0.5938**	**0.5938**		**0.5938**	**0.5938**						**2,179.3731**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0253	0.6320	0.2003	2.3100e-003	0.0736	6.7200e-003	0.0803	0.0212	6.4300e-003	0.0276						255.2177
Worker	0.0722	0.0616	0.5980	1.4400e-003	0.1661	9.8000e-004	0.1670	0.0440	9.0000e-004	0.0449						147.6414
Total	**0.0975**	**0.6936**	**0.7983**	**3.7500e-003**	**0.2397**	**7.7000e-003**	**0.2474**	**0.0652**	**7.3300e-003**	**0.0726**						**402.8591**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Trenching/PV Installation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0875	9.5219	9.8200	0.0223		0.4729	0.4729		0.4351	0.4351						2,180.7326
Total	**1.0875**	**9.5219**	**9.8200**	**0.0223**		**0.4729**	**0.4729**		**0.4351**	**0.4351**						**2,180.7326**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0131	0.5159	0.1727	2.2300e-003	0.0736	3.2000e-003	0.0768	0.0212	3.0600e-003	0.0243						246.2877
Worker	0.0659	0.0532	0.5383	1.4000e-003	0.1661	9.2000e-004	0.1670	0.0440	8.4000e-004	0.0449						142.8101
Total	**0.0790**	**0.5691**	**0.7110**	**3.6300e-003**	**0.2397**	**4.1200e-003**	**0.2438**	**0.0652**	**3.9000e-003**	**0.0691**						**389.0979**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.6 Trenching/PV Installation - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5471	11.3555	13.8913	0.0223		0.5938	0.5938		0.5938	0.5938						2,180.7326
Total	**0.5471**	**11.3555**	**13.8913**	**0.0223**		**0.5938**	**0.5938**		**0.5938**	**0.5938**						**2,180.7326**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0131	0.5159	0.1727	2.2300e-003	0.0736	3.2000e-003	0.0768	0.0212	3.0600e-003	0.0243						246.2877
Worker	0.0659	0.0532	0.5383	1.4000e-003	0.1661	9.2000e-004	0.1670	0.0440	8.4000e-004	0.0449						142.8101
Total	**0.0790**	**0.5691**	**0.7110**	**3.6300e-003**	**0.2397**	**4.1200e-003**	**0.2438**	**0.0652**	**3.9000e-003**	**0.0691**						**389.0979**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.7 BESS Construction/Infrastructure - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2762	11.6101	10.9532	0.0200		0.5587	0.5587		0.5308	0.5308						1,894.8698
Total	**1.2762**	**11.6101**	**10.9532**	**0.0200**		**0.5587**	**0.5587**		**0.5308**	**0.5308**						**1,894.8698**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	1.8770	1.6017	15.5489	0.0376	4.3173	0.0255	4.3428	1.1449	0.0235	1.1684						3,838.6754
Total	**1.8770**	**1.6017**	**15.5489**	**0.0376**	**4.3173**	**0.0255**	**4.3428**	**1.1449**	**0.0235**	**1.1684**						**3,838.6754**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.7 BESS Construction/Infrastructure - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5053	10.3132	12.5113	0.0200		0.6184	0.6184		0.6184	0.6184						1,894.8698
Total	**0.5053**	**10.3132**	**12.5113**	**0.0200**		**0.6184**	**0.6184**		**0.6184**	**0.6184**						**1,894.8698**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	1.8770	1.6017	15.5489	0.0376	4.3173	0.0255	4.3428	1.1449	0.0235	1.1684						3,838.6754
Total	**1.8770**	**1.6017**	**15.5489**	**0.0376**	**4.3173**	**0.0255**	**4.3428**	**1.1449**	**0.0235**	**1.1684**						**3,838.6754**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.7 BESS Construction/Infrastructure - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1817	10.7322	10.8511	0.0200		0.4905	0.4905		0.4659	0.4659						1,894.8443
Total	**1.1817**	**10.7322**	**10.8511**	**0.0200**		**0.4905**	**0.4905**		**0.4659**	**0.4659**						**1,894.8443**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	1.7141	1.3839	13.9959	0.0364	4.3173	0.0238	4.3411	1.1449	0.0219	1.1668						3,713.0631
Total	**1.7141**	**1.3839**	**13.9959**	**0.0364**	**4.3173**	**0.0238**	**4.3411**	**1.1449**	**0.0219**	**1.1668**						**3,713.0631**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.7 BESS Construction/Infrastructure - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5053	10.3132	12.5113	0.0200		0.6184	0.6184		0.6184	0.6184						1,894.8443
Total	**0.5053**	**10.3132**	**12.5113**	**0.0200**		**0.6184**	**0.6184**		**0.6184**	**0.6184**						**1,894.8443**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	1.7141	1.3839	13.9959	0.0364	4.3173	0.0238	4.3411	1.1449	0.0219	1.1668						3,713.0631
Total	**1.7141**	**1.3839**	**13.9959**	**0.0364**	**4.3173**	**0.0238**	**4.3411**	**1.1449**	**0.0219**	**1.1668**						**3,713.0631**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.1041	0.2560	1.0196	2.3200e-003	0.2128	2.4900e-003	0.2152	0.0569	2.3500e-003	0.0593						243.1620
Unmitigated	0.1041	0.2560	1.0196	2.3200e-003	0.2128	2.4900e-003	0.2152	0.0569	2.3500e-003	0.0593						243.1620

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	14.43	36.26	40.52	52,469	52,469
Total	14.43	36.26	40.52	52,469	52,469

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	14.70	6.60	6.60	33.00	48.00	19.00	66	28	6

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.515533	0.047958	0.156749	0.151796	0.029800	0.007258	0.013970	0.049021	0.000803	0.000458	0.021477	0.002201	0.002977

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**0.0000**

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0417	2.0000e-005	1.8900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.3100e-003
Unmitigated	0.0417	2.0000e-005	1.8900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.3100e-003

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000						0.0000
Consumer Products	0.0415					0.0000	0.0000		0.0000	0.0000						0.0000
Landscaping	1.7000e-004	2.0000e-005	1.8900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.3100e-003
Total	**0.0417**	**2.0000e-005**	**1.8900e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**						**4.3100e-003**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000						0.0000
Consumer Products	0.0415					0.0000	0.0000		0.0000	0.0000						0.0000
Landscaping	1.7000e-004	2.0000e-005	1.8900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.3100e-003
Total	**0.0417**	**2.0000e-005**	**1.8900e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**						**4.3100e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

Merced County Cleveland Solar PV Project - Construction Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Merced County Cleveland Solar PV Project - Operational Only

Merced County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	18.50	Acre	18.50	805,860.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	49
Climate Zone	3			**Operational Year**	2024
Utility Company					
CO2 Intensity (lb/MWhr)	0	**CH4 Intensity (lb/MWhr)**	0	**N2O Intensity (lb/MWhr)**	0

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Operational emissions quantified using the construction module

Land Use - Land use type does not apply.

Construction Phase - Assumes routine maintenance 6 days/year, panel washing 4 days/yr.

Off-road Equipment - .

Trips and VMT - Routine maintenance: 4 worker trips/day, 6 days/year. Panel washing 6 worker trips/day, 1 water haul truck/day, 4 days/year

On-road Fugitive Dust - Onroad dust based on model defaults.

Demolition - No demo required

Grading - .

Architectural Coating - Arch coating not required.

Vehicle Emission Factors - .

Vehicle Emission Factors -

Vehicle Emission Factors -

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Construction Off-road Equipment Mitigation - .

Off-road Equipment - No offroad equipment for routine maintenance or panel washing.

Off-road Equipment - .

Vehicle Trips - Operational emissions quantified using the construction module

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	300.00	6.00
tblConstructionPhase	NumDays	20.00	4.00
tblConstructionPhase	PhaseEndDate	10/28/2022	6/8/2023
tblConstructionPhase	PhaseEndDate	11/11/2022	6/6/2023
tblConstructionPhase	PhaseStartDate	10/3/2022	6/1/2023
tblConstructionPhase	PhaseStartDate	10/29/2022	6/1/2023
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	VendorTripNumber	132.00	0.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	WorkerTripNumber	338.00	4.00
tblTripsAndVMT	WorkerTripNumber	68.00	6.00

2.0 Emissions Summary

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	1.2000e-004	1.7000e-004	1.0500e-003	0.0000	3.1000e-004	0.0000	3.1000e-004	8.0000e-005	0.0000	8.0000e-005						0.2837
Maximum	**1.2000e-004**	**1.7000e-004**	**1.0500e-003**	**0.0000**	**3.1000e-004**	**0.0000**	**3.1000e-004**	**8.0000e-005**	**0.0000**	**8.0000e-005**						**0.2837**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	1.2000e-004	1.7000e-004	1.0500e-003	0.0000	3.1000e-004	0.0000	3.1000e-004	8.0000e-005	0.0000	8.0000e-005						0.2837
Maximum	**1.2000e-004**	**1.7000e-004**	**1.0500e-003**	**0.0000**	**3.1000e-004**	**0.0000**	**3.1000e-004**	**8.0000e-005**	**0.0000**	**8.0000e-005**						**0.2837**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
3	4-3-2023	7-2-2023	0.0003	0.0003
		Highest	0.0003	0.0003

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	7.5900e-003	0.0000	1.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000						3.5000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Mobile	0.0105	0.0234	0.0937	2.3000e-004	0.0198	2.4000e-004	0.0200	5.3000e-003	2.2000e-004	5.5200e-003						21.4353
Waste						0.0000	0.0000		0.0000	0.0000						0.7996
Water						0.0000	0.0000		0.0000	0.0000						0.0000
Total	**0.0180**	**0.0234**	**0.0939**	**2.3000e-004**	**0.0198**	**2.4000e-004**	**0.0200**	**5.3000e-003**	**2.2000e-004**	**5.5200e-003**						**22.2353**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	7.5900e-003	0.0000	1.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000						3.5000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Mobile	0.0105	0.0234	0.0937	2.3000e-004	0.0198	2.4000e-004	0.0200	5.3000e-003	2.2000e-004	5.5200e-003						21.4353
Waste						0.0000	0.0000		0.0000	0.0000						0.7996
Water						0.0000	0.0000		0.0000	0.0000						0.0000
Total	**0.0180**	**0.0234**	**0.0939**	**2.3000e-004**	**0.0198**	**2.4000e-004**	**0.0200**	**5.3000e-003**	**2.2000e-004**	**5.5200e-003**						**22.2353**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Routine Maintenance	Building Construction	6/1/2023	6/8/2023	5	6	Routine Mainenance
2	Panel Washing	Architectural Coating	6/1/2023	6/6/2023	5	4	Panel Washing

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Routine Maintenance	Concrete/Industrial Saws	0		81	0.73
Routine Maintenance	Excavators	0		158	0.38
Routine Maintenance	Forklifts	0	8.00	89	0.20
Routine Maintenance	Generator Sets	0	8.00	84	0.74
Routine Maintenance	Rubber Tired Dozers	0		247	0.40
Routine Maintenance	Skid Steer Loaders	0		65	0.37
Panel Washing	Graders	0	8.00	187	0.41
Panel Washing	Off-Highway Trucks	0	8.00	402	0.38
Panel Washing	Rubber Tired Dozers	0	8.00	247	0.40
Panel Washing	Skid Steer Loaders	0	8.00	65	0.37
Panel Washing	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Panel Washing	Air Compressors	0	6.00	78	0.48
Routine Maintenance	Cranes	0	7.00	231	0.29
Routine Maintenance	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Routine Maintenance	Welders	0	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Routine Maintenance	0	4.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Panel Washing	0	6.00	1.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Reduce Vehicle Speed on Unpaved Roads

3.2 Routine Maintenance - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**0.0000**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Routine Maintenance - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	6.0000e-005	4.0000e-005	5.1000e-004	0.0000	1.5000e-004	0.0000	1.5000e-004	4.0000e-005	0.0000	4.0000e-005						0.1232
Total	**6.0000e-005**	**4.0000e-005**	**5.1000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**1.5000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**						**0.1232**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**0.0000**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Routine Maintenance - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	6.0000e-005	4.0000e-005	5.1000e-004	0.0000	1.5000e-004	0.0000	1.5000e-004	4.0000e-005	0.0000	4.0000e-005						0.1232
Total	**6.0000e-005**	**4.0000e-005**	**5.1000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**1.5000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**						**0.1232**

3.3 Panel Washing - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000						0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**0.0000**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Panel Washing - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	8.0000e-005	3.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000						0.0372
Worker	6.0000e-005	4.0000e-005	5.1000e-004	0.0000	1.5000e-004	0.0000	1.5000e-004	4.0000e-005	0.0000	4.0000e-005						0.1232
Total	**6.0000e-005**	**1.2000e-004**	**5.4000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**						**0.1604**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000						0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**0.0000**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Panel Washing - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	8.0000e-005	3.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000						0.0372
Worker	6.0000e-005	4.0000e-005	5.1000e-004	0.0000	1.5000e-004	0.0000	1.5000e-004	4.0000e-005	0.0000	4.0000e-005						0.1232
Total	**6.0000e-005**	**1.2000e-004**	**5.4000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**						**0.1604**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0105	0.0234	0.0937	2.3000e-004	0.0198	2.4000e-004	0.0200	5.3000e-003	2.2000e-004	5.5200e-003						21.4353
Unmitigated	0.0105	0.0234	0.0937	2.3000e-004	0.0198	2.4000e-004	0.0200	5.3000e-003	2.2000e-004	5.5200e-003						21.4353

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	14.43	36.26	40.52	52,469	52,469
Total	14.43	36.26	40.52	52,469	52,469

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	14.70	6.60	6.60	33.00	48.00	19.00	66	28	6

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.515533	0.047958	0.156749	0.151796	0.029800	0.007258	0.013970	0.049021	0.000803	0.000458	0.021477	0.002201	0.002977

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000						0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000						0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**0.0000**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0				0.0000
Total					**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0				0.0000
Total					**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	7.5900e-003	0.0000	1.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000						3.5000e-004
Unmitigated	7.5900e-003	0.0000	1.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000						3.5000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000						0.0000
Consumer Products	7.5800e-003					0.0000	0.0000		0.0000	0.0000						0.0000
Landscaping	2.0000e-005	0.0000	1.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000						3.5000e-004
Total	**7.6000e-003**	**0.0000**	**1.7000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**3.5000e-004**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000						0.0000
Consumer Products	7.5800e-003					0.0000	0.0000		0.0000	0.0000						0.0000
Landscaping	2.0000e-005	0.0000	1.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000						3.5000e-004
Total	**7.6000e-003**	**0.0000**	**1.7000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**3.5000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated				0.0000
Unmitigated				0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 22.0424				0.0000
Total					**0.0000**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 22.0424				0.0000
Total					**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated				0.7996
Unmitigated				0.7996

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	1.59				0.7996
Total					**0.7996**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	1.59				0.7996
Total					**0.7996**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Merced County Cleveland Solar PV Project - Operational Only

Merced County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	18.50	Acre	18.50	805,860.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	49
Climate Zone	3			**Operational Year**	2024
Utility Company					
CO2 Intensity (lb/MWhr)	0	**CH4 Intensity (lb/MWhr)**	0	**N2O Intensity (lb/MWhr)**	0

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Operational emissions quantified using the construction module

Land Use - Land use type does not apply.

Construction Phase - Assumes routine maintenance 6 days/year, panel washing 4 days/yr.

Off-road Equipment - .

Trips and VMT - Routine maintenance: 4 worker trips/day, 6 days/year. Panel washing 6 worker trips/day, 1 water haul truck/day, 4 days/year

On-road Fugitive Dust - Onroad dust based on model defaults.

Demolition - No demo required

Grading - .

Architectural Coating - Arch coating not required.

Vehicle Emission Factors - .

Vehicle Emission Factors -

Vehicle Emission Factors -

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Construction Off-road Equipment Mitigation - .

Off-road Equipment - No offroad equipment for routine maintenance or panel washing.

Off-road Equipment - .

Vehicle Trips - Operational emissions quantified using the construction module

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	300.00	6.00
tblConstructionPhase	NumDays	20.00	4.00
tblConstructionPhase	PhaseEndDate	10/28/2022	6/8/2023
tblConstructionPhase	PhaseEndDate	11/11/2022	6/6/2023
tblConstructionPhase	PhaseStartDate	10/3/2022	6/1/2023
tblConstructionPhase	PhaseStartDate	10/29/2022	6/1/2023
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	VendorTripNumber	132.00	0.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	WorkerTripNumber	338.00	4.00
tblTripsAndVMT	WorkerTripNumber	68.00	6.00

2.0 Emissions Summary

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	0.0551	0.0747	0.5185	1.3900e-003	0.1339	9.7000e-004	0.1348	0.0356	9.0000e-004	0.0365						143.2760
Maximum	**0.0551**	**0.0747**	**0.5185**	**1.3900e-003**	**0.1339**	**9.7000e-004**	**0.1348**	**0.0356**	**9.0000e-004**	**0.0365**						**143.2760**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	0.0551	0.0747	0.5185	1.3900e-003	0.1339	9.7000e-004	0.1348	0.0356	9.0000e-004	0.0365						143.2760
Maximum	**0.0551**	**0.0747**	**0.5185**	**1.3900e-003**	**0.1339**	**9.7000e-004**	**0.1348**	**0.0356**	**9.0000e-004**	**0.0365**						**143.2760**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0417	2.0000e-005	1.8900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.3100e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Mobile	0.1320	0.2313	1.0508	2.5000e-003	0.2128	2.4900e-003	0.2152	0.0569	2.3400e-003	0.0593						260.5426
Total	**0.1737**	**0.2313**	**1.0527**	**2.5000e-003**	**0.2128**	**2.5000e-003**	**0.2153**	**0.0569**	**2.3500e-003**	**0.0593**						**260.5469**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0417	2.0000e-005	1.8900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.3100e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Mobile	0.1320	0.2313	1.0508	2.5000e-003	0.2128	2.4900e-003	0.2152	0.0569	2.3400e-003	0.0593						260.5426
Total	**0.1737**	**0.2313**	**1.0527**	**2.5000e-003**	**0.2128**	**2.5000e-003**	**0.2153**	**0.0569**	**2.3500e-003**	**0.0593**						**260.5469**

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Routine Maintenance	Building Construction	6/1/2023	6/8/2023	5	6	Routine Mainenance
2	Panel Washing	Architectural Coating	6/1/2023	6/6/2023	5	4	Panel Washing

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Routine Maintenance	Concrete/Industrial Saws	0		81	0.73
Routine Maintenance	Excavators	0		158	0.38
Routine Maintenance	Forklifts	0	8.00	89	0.20
Routine Maintenance	Generator Sets	0	8.00	84	0.74
Routine Maintenance	Rubber Tired Dozers	0		247	0.40
Routine Maintenance	Skid Steer Loaders	0		65	0.37
Panel Washing	Graders	0	8.00	187	0.41
Panel Washing	Off-Highway Trucks	0	8.00	402	0.38
Panel Washing	Rubber Tired Dozers	0	8.00	247	0.40

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Panel Washing	Skid Steer Loaders	0	8.00	65	0.37
Panel Washing	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Panel Washing	Air Compressors	0	6.00	78	0.48
Routine Maintenance	Cranes	0	7.00	231	0.29
Routine Maintenance	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Routine Maintenance	Welders	0	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Routine Maintenance	0	4.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Panel Washing	0	6.00	1.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Reduce Vehicle Speed on Unpaved Roads

3.2 Routine Maintenance - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**0.0000**

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Routine Maintenance - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0216	0.0138	0.2018	4.8000e-004	0.0511	2.8000e-004	0.0514	0.0136	2.6000e-004	0.0138						49.1192
Total	**0.0216**	**0.0138**	**0.2018**	**4.8000e-004**	**0.0511**	**2.8000e-004**	**0.0514**	**0.0136**	**2.6000e-004**	**0.0138**						**49.1192**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**0.0000**

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Routine Maintenance - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0216	0.0138	0.2018	4.8000e-004	0.0511	2.8000e-004	0.0514	0.0136	2.6000e-004	0.0138						49.1192
Total	**0.0216**	**0.0138**	**0.2018**	**4.8000e-004**	**0.0511**	**2.8000e-004**	**0.0514**	**0.0136**	**2.6000e-004**	**0.0138**						**49.1192**

3.3 Panel Washing - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000						0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**0.0000**

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Panel Washing - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	1.1700e-003	0.0402	0.0140	1.9000e-004	6.1300e-003	2.7000e-004	6.4000e-003	1.7700e-003	2.5000e-004	2.0200e-003						20.4781
Worker	0.0324	0.0207	0.3027	7.2000e-004	0.0766	4.2000e-004	0.0771	0.0203	3.9000e-004	0.0207						73.6788
Total	**0.0335**	**0.0609**	**0.3167**	**9.1000e-004**	**0.0828**	**6.9000e-004**	**0.0835**	**0.0221**	**6.4000e-004**	**0.0227**						**94.1569**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000						0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**0.0000**

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Panel Washing - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	1.1700e-003	0.0402	0.0140	1.9000e-004	6.1300e-003	2.7000e-004	6.4000e-003	1.7700e-003	2.5000e-004	2.0200e-003						20.4781
Worker	0.0324	0.0207	0.3027	7.2000e-004	0.0766	4.2000e-004	0.0771	0.0203	3.9000e-004	0.0207						73.6788
Total	**0.0335**	**0.0609**	**0.3167**	**9.1000e-004**	**0.0828**	**6.9000e-004**	**0.0835**	**0.0221**	**6.4000e-004**	**0.0227**						**94.1569**

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.1320	0.2313	1.0508	2.5000e-003	0.2128	2.4900e-003	0.2152	0.0569	2.3400e-003	0.0593						260.5426
Unmitigated	0.1320	0.2313	1.0508	2.5000e-003	0.2128	2.4900e-003	0.2152	0.0569	2.3400e-003	0.0593						260.5426

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	14.43	36.26	40.52	52,469	52,469
Total	14.43	36.26	40.52	52,469	52,469

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	14.70	6.60	6.60	33.00	48.00	19.00	66	28	6

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.515533	0.047958	0.156749	0.151796	0.029800	0.007258	0.013970	0.049021	0.000803	0.000458	0.021477	0.002201	0.002977

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**0.0000**

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0417	2.0000e-005	1.8900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.3100e-003
Unmitigated	0.0417	2.0000e-005	1.8900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.3100e-003

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000						0.0000
Consumer Products	0.0415					0.0000	0.0000		0.0000	0.0000						0.0000
Landscaping	1.7000e-004	2.0000e-005	1.8900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.3100e-003
Total	**0.0417**	**2.0000e-005**	**1.8900e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**						**4.3100e-003**

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000						0.0000
Consumer Products	0.0415					0.0000	0.0000		0.0000	0.0000						0.0000
Landscaping	1.7000e-004	2.0000e-005	1.8900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.3100e-003
Total	**0.0417**	**2.0000e-005**	**1.8900e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**						**4.3100e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Merced County Cleveland Solar PV Project - Operational Only

Merced County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
City Park	18.50	Acre	18.50	805,860.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	49
Climate Zone	3			**Operational Year**	2024
Utility Company					
CO2 Intensity (lb/MWhr)	0	**CH4 Intensity (lb/MWhr)**	0	**N2O Intensity (lb/MWhr)**	0

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Operational emissions quantified using the construction module

Land Use - Land use type does not apply.

Construction Phase - Assumes routine maintenance 6 days/year, panel washing 4 days/yr.

Off-road Equipment - .

Trips and VMT - Routine maintenance: 4 worker trips/day, 6 days/year. Panel washing 6 worker trips/day, 1 water haul truck/day, 4 days/year

On-road Fugitive Dust - Onroad dust based on model defaults.

Demolition - No demo required

Grading - .

Architectural Coating - Arch coating not required.

Vehicle Emission Factors - .

Vehicle Emission Factors -

Vehicle Emission Factors -

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Construction Off-road Equipment Mitigation - .

Off-road Equipment - No offroad equipment for routine maintenance or panel washing.

Off-road Equipment - .

Vehicle Trips - Operational emissions quantified using the construction module

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	300.00	6.00
tblConstructionPhase	NumDays	20.00	4.00
tblConstructionPhase	PhaseEndDate	10/28/2022	6/8/2023
tblConstructionPhase	PhaseEndDate	11/11/2022	6/6/2023
tblConstructionPhase	PhaseStartDate	10/3/2022	6/1/2023
tblConstructionPhase	PhaseStartDate	10/29/2022	6/1/2023
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	VendorTripNumber	132.00	0.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	WorkerTripNumber	338.00	4.00
tblTripsAndVMT	WorkerTripNumber	68.00	6.00

2.0 Emissions Summary

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	0.0518	0.0839	0.4285	1.2700e-003	0.1339	9.7000e-004	0.1348	0.0356	9.0000e-004	0.0365						130.3779
Maximum	**0.0518**	**0.0839**	**0.4285**	**1.2700e-003**	**0.1339**	**9.7000e-004**	**0.1348**	**0.0356**	**9.0000e-004**	**0.0365**						**130.3779**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	0.0518	0.0839	0.4285	1.2700e-003	0.1339	9.7000e-004	0.1348	0.0356	9.0000e-004	0.0365						130.3779
Maximum	**0.0518**	**0.0839**	**0.4285**	**1.2700e-003**	**0.1339**	**9.7000e-004**	**0.1348**	**0.0356**	**9.0000e-004**	**0.0365**						**130.3779**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0417	2.0000e-005	1.8900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.3100e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Mobile	0.1041	0.2560	1.0196	2.3200e-003	0.2128	2.4900e-003	0.2152	0.0569	2.3500e-003	0.0593						243.1620
Total	**0.1458**	**0.2561**	**1.0215**	**2.3200e-003**	**0.2128**	**2.5000e-003**	**0.2153**	**0.0569**	**2.3600e-003**	**0.0593**						**243.1663**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0417	2.0000e-005	1.8900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.3100e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Mobile	0.1041	0.2560	1.0196	2.3200e-003	0.2128	2.4900e-003	0.2152	0.0569	2.3500e-003	0.0593						243.1620
Total	**0.1458**	**0.2561**	**1.0215**	**2.3200e-003**	**0.2128**	**2.5000e-003**	**0.2153**	**0.0569**	**2.3600e-003**	**0.0593**						**243.1663**

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Routine Maintenance	Building Construction	6/1/2023	6/8/2023	5	6	Routine Mainenance
2	Panel Washing	Architectural Coating	6/1/2023	6/6/2023	5	4	Panel Washing

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Routine Maintenance	Concrete/Industrial Saws	0		81	0.73
Routine Maintenance	Excavators	0		158	0.38
Routine Maintenance	Forklifts	0	8.00	89	0.20
Routine Maintenance	Generator Sets	0	8.00	84	0.74
Routine Maintenance	Rubber Tired Dozers	0		247	0.40
Routine Maintenance	Skid Steer Loaders	0		65	0.37
Panel Washing	Graders	0	8.00	187	0.41
Panel Washing	Off-Highway Trucks	0	8.00	402	0.38
Panel Washing	Rubber Tired Dozers	0	8.00	247	0.40

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Panel Washing	Skid Steer Loaders	0	8.00	65	0.37
Panel Washing	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Panel Washing	Air Compressors	0	6.00	78	0.48
Routine Maintenance	Cranes	0	7.00	231	0.29
Routine Maintenance	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Routine Maintenance	Welders	0	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Routine Maintenance	0	4.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Panel Washing	0	6.00	1.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Reduce Vehicle Speed on Unpaved Roads

3.2 Routine Maintenance - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**0.0000**

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Routine Maintenance - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0203	0.0164	0.1656	4.3000e-004	0.0511	2.8000e-004	0.0514	0.0136	2.6000e-004	0.0138						43.9416
Total	**0.0203**	**0.0164**	**0.1656**	**4.3000e-004**	**0.0511**	**2.8000e-004**	**0.0514**	**0.0136**	**2.6000e-004**	**0.0138**						**43.9416**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**0.0000**

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Routine Maintenance - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	0.0203	0.0164	0.1656	4.3000e-004	0.0511	2.8000e-004	0.0514	0.0136	2.6000e-004	0.0138						43.9416
Total	**0.0203**	**0.0164**	**0.1656**	**4.3000e-004**	**0.0511**	**2.8000e-004**	**0.0514**	**0.0136**	**2.6000e-004**	**0.0138**						**43.9416**

3.3 Panel Washing - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000						0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**0.0000**

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Panel Washing - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	1.0900e-003	0.0430	0.0144	1.9000e-004	6.1300e-003	2.7000e-004	6.4000e-003	1.7700e-003	2.6000e-004	2.0200e-003						20.5240
Worker	0.0304	0.0246	0.2485	6.5000e-004	0.0766	4.2000e-004	0.0771	0.0203	3.9000e-004	0.0207						65.9124
Total	**0.0315**	**0.0676**	**0.2628**	**8.4000e-004**	**0.0828**	**6.9000e-004**	**0.0835**	**0.0221**	**6.5000e-004**	**0.0227**						**86.4363**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	0.0000					0.0000	0.0000		0.0000	0.0000						0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**0.0000**

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Panel Washing - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Vendor	1.0900e-003	0.0430	0.0144	1.9000e-004	6.1300e-003	2.7000e-004	6.4000e-003	1.7700e-003	2.6000e-004	2.0200e-003						20.5240
Worker	0.0304	0.0246	0.2485	6.5000e-004	0.0766	4.2000e-004	0.0771	0.0203	3.9000e-004	0.0207						65.9124
Total	**0.0315**	**0.0676**	**0.2628**	**8.4000e-004**	**0.0828**	**6.9000e-004**	**0.0835**	**0.0221**	**6.5000e-004**	**0.0227**						**86.4363**

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.1041	0.2560	1.0196	2.3200e-003	0.2128	2.4900e-003	0.2152	0.0569	2.3500e-003	0.0593						243.1620
Unmitigated	0.1041	0.2560	1.0196	2.3200e-003	0.2128	2.4900e-003	0.2152	0.0569	2.3500e-003	0.0593						243.1620

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	14.43	36.26	40.52	52,469	52,469
Total	14.43	36.26	40.52	52,469	52,469

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	14.70	6.60	6.60	33.00	48.00	19.00	66	28	6

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.515533	0.047958	0.156749	0.151796	0.029800	0.007258	0.013970	0.049021	0.000803	0.000458	0.021477	0.002201	0.002977

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**0.0000**

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000						0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**						**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0417	2.0000e-005	1.8900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.3100e-003
Unmitigated	0.0417	2.0000e-005	1.8900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.3100e-003

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000						0.0000
Consumer Products	0.0415					0.0000	0.0000		0.0000	0.0000						0.0000
Landscaping	1.7000e-004	2.0000e-005	1.8900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.3100e-003
Total	**0.0417**	**2.0000e-005**	**1.8900e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**						**4.3100e-003**

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000						0.0000
Consumer Products	0.0415					0.0000	0.0000		0.0000	0.0000						0.0000
Landscaping	1.7000e-004	2.0000e-005	1.8900e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005						4.3100e-003
Total	**0.0417**	**2.0000e-005**	**1.8900e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**						**4.3100e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

Merced County Cleveland Solar PV Project - Operational Only - Merced County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX C

Biological Resources Assessment

KLEINFELDER
Bright People. Right Solutions.

EAST CLEVELAND ROAD SOLAR PROJECT, BIOLOGICAL RESOURCES ASSESSMENT

MERCED COUNTY, CALIFORNIA

MAY 2022

Prepared for:

Stephanie Loucas
VP, Development
Renewable Properties, RPCA Solar 7, LLC

East Cleveland Road Solar Project
Biological Resources Assessment

Merced County, California

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February 2022
Project No.: 20224278.001A

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EAST CLEVELAND ROAD SOLAR PROJECT

BIOLOGICAL RESOURCES ASSESSMENT

SUMMARY

The proposed East Cleveland Road Solar Project (Project) involves construction of a new solar and energy facility in unincorporated Merced County (County), California (Figure 1). In January of 2022, Kleinfelder biologist Lisa Achter conducted a desktop review of the vicinity of the Project Area (Figure 2) and performed a field verification survey of the Project Area. The intention of the field verification survey was to identify and characterize existing on-site biological resources and determine the potential for special status species and/or habitat (as defined by state and federal resource agencies) to occur on the site.

The field survey focused on the approximate 37.8-acre parcel (Project Area), of which 18.5 acres would be developed under the proposed Project (Project Site). Based on the results of the desktop review and field verification survey, two special-status wildlife species (San Joaquin kit fox [*Vulpes macrotis mutica]* and Swainson's hawk [*Buteo swainsoni*]), and no special-status plant species were determined to have a moderate or higher potential to occur within the Project Area. One special-status wildlife species (northern harrier [*Circus hudsonius]*) was observed flying over the Project Area during the field survey.

This report serves to document the methods and results of the January 2022 biological field survey, describes potential biological resource constraints associated with construction of a solar facility at the site, and provides recommendations to address these constraints.

1. INTRODUCTION

1.1. BACKGROUND AND PROJECT DESCRIPTION

The proposed East Cleveland Road Solar Project is a small-scale utility solar and energy storage facility which will be located on approximately 18.5 acres of a 37.8-acre parcel (APN 075-072-008) of land in El Nido, California. The developer has entered into a long-term lease agreement with the property owner, Amita Prasad, to facilitate the development of a small-scale, utility solar power generation facility.

The Project will generate a total of 3.0 megawatts (MW) alternating current (AC) (4.5MW direct current [DC]) of clean, reliable solar energy when completed. The Project will interconnect to Pacific Gas and Electric Company's (PG&E) pre-existing electrical distribution system located on the parcel. The power generated from this facility will be sold to PG&E through a long-term Power Purchase Agreement (PPA).

The Project will utilize approximately 8,316 solar modules and 24 string inverters to convert the sun's energy into usable, AC power. Single-axis tracking technology will be utilized to allow the modules to efficiently track the sun throughout the day and maximize the efficiency of solar collection. The modules will be mounted on a steel racking system which will be anchored into the ground using driven steel piers. The overall height of the array will be no more than 8-feet tall.

1.2. OBJECTIVES

The purpose of this analysis is to evaluate the Project Area to assess the potential for special-status plant and wildlife species and sensitive natural communities to occur, and the potential effects to these biological resources due to construction and operation of the Project. This assessment provides the methods and results of the field survey, including vegetation communities and land cover types present within the Project Area, special-status plant and wildlife species detected or with potential to occur within the Project Area, the presence of wildlife movement corridors or federally designated Critical Habitat within or adjacent to the Project Area, and any additional focused surveys necessary to further evaluate potential impacts to biological resources that could occur within the Project Area. . Recommendations to avoid and minimize impacts to these resources are also provided at the end of this document.

1.3. PROJECT LOCATION

The approximate 40.47-acre parcel is located on the southwestern corner of the intersection of East Cleveland Road and South Arbor Way in Merced County (Figure 2), California, approximately 1.9 miles east of State Route 59. The Project Area occurs within one parcel (APN 075-072-008-000) that is surrounded by agriculture consisting of row crops on all sides, except for the southern portion of the parcel, which contains an orchard. The parcel is located at sea level (zero elevation), and adjacent land uses are primarily agriculture, with some rural residences scattered among farms. Two residences and various accessory structures such as barns and sheds for livestock are located on the parcel (Figure 2).

The Project Area is situated within Township 9 South, Range 14 East, and Section 29 of the 7.5-minute U.S. Geological Survey (USGS) El Nido quadrangle. The corresponding latitude and longitude at the approximate center of the Project Area is 37°07'31" north latitude and 120°27'28" west longitude.

2. REGULATORY SETTING

2.1. FEDERAL

Federal Endangered Species Act (FESA)

The FESA prohibits the taking, possession, sale or transport of endangered species. Pursuant to the requirements of FESA, a federal agency reviewing a project within its jurisdiction must determine whether any federally listed threatened or endangered species could be present in the project site and determine the extent to which the project will have an effect on such species. In addition, federal agencies are required to determine whether the project is likely to jeopardize the continued existence of any species proposed to be listed under FESA or result in the destruction or adverse modification of critical habitat designated for such species (16 USC 1536[3], [4]). Projects that would result in "take" of any federally-listed threatened or endangered species are required to obtain authorization from the National Marine Fisheries Service (NMFS) and/or U.S. Fish and Wildlife Service (USFWS) through either Section 7 (interagency consultation) or section 10(a) (incidental take permit) of FESA, depending on whether the federal government is involved in permitting or funding the project.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) regulates or prohibits taking, killing, possession of, or harm to migratory bird species listed in Title 50 Code of Federal Regulations (CFR) Section 10.13. The MBTA is an international treaty for the conservation and management of bird species that migrate through more than one country, and is enforced in the United States by the USFWS. Hunting of specific migratory game birds is permitted under the regulations listed in Title 50 CFR 20. The MBTA was amended in 1972 to include protection for migratory birds of prey (raptors).

Federal Clean Water Act (Section 404)

The objective of the Clean Water Act (CWA) is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Under Section 404 of the CWA, the U.S. Army Corps of Engineers (ACOE) has the authority to regulate activities that could discharge fill or dredge material or otherwise adversely modify wetlands or other waters of the United States. The ACOE implements the federal policy embodied in Executive Order 11990, which, when implemented, is intended to result in no net loss of wetland values or function.

Federal Clean Water Act (Section 401)

The State Water Resources Control Board (SWRCB) has authority over wetlands through Section 401 of the CWA, as well as the Porter-Cologne Act, California Code of Regulations Section 3831(k), and California Wetlands Conservation Policy. The CWA requires that an applicant for a Section 404 permit (to discharge dredged or fill material into waters of the United States) first obtain certification from the appropriate state agency stating that the fill is consistent with the State's water quality standards and criteria. In California, the authority to either grant certification or waive the requirement for permits is delegated by the SWRCB to the nine regional boards. The Regional Water Quality Control Board (RWQCB) has authority for Section 401 compliance in the

Project Area. A request for certification is submitted to the regional board at the same time that an application is filed with the ACOE.

2.2. STATE

California Endangered Species Act (CESA)

Under the CESA, the California Fish and Wildlife Commission (CFWC) has the responsibility of maintaining a list of threatened species and endangered species. California Department of Fish and Wildlife (CDFW) also maintains lists of species of special concern. A Species of Special Concern (SSC) is a species, subspecies, or distinct population of an animal native to California that currently satisfies one or more of the following (not necessarily mutually exclusive) criteria:

- is extirpated from the State or, in the case of birds, in its primary seasonal or breeding role;
- is listed as Federally-, but not State-, threatened or endangered;
- meets the State definition of threatened or endangered but has not formally been listed;
- is experiencing, or formerly experienced, serious (noncyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for State threatened or endangered status;
- has naturally small populations exhibiting high susceptibility to risk from any factor(s), that if realized, could lead to declines that would qualify it for State threatened or endangered status.

CESA prohibits the take of state-listed animals and plants in most cases, but CDFW may issue incidental take permits under special conditions. Pursuant to the requirements of CESA, a state agency reviewing a project within its jurisdiction must determine whether any state-listed endangered or threatened species could be present on the property and determine whether the project would have a potentially significant impact on such species.

California Fish and Game Code Sections 3503, 3511, 3513, 4150

Fish and Game Code Section 3503 states that it is unlawful to take, possess, or needlessly destroy the nests or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Fish and Game Code Section 3503.5 protects all birds-of-prey (raptors) and their eggs and nests. Section 3511 states fully protected birds or parts thereof may not be taken or possessed at any time. Section 3513 states that it is unlawful to take or possess any migratory non-game bird as designated in the Migratory Bird Treaty Act. All nongame mammals, including bats, are protected by California Fish and Game Code 4150.

California Fish and Game Code Sections 1600-1616

Under Sections 1600-1616 of the California Fish and Game Code, the CDFW regulates activities that would alter the flow, bed, channel, or bank of streams and lakes. The limits of CDFW's jurisdiction are defined in the code as the "… bed, channel or bank of any river, stream, or lake designated by the department in which there

is at any time an existing fish or wildlife resource or from which these resources derive benefit ..." (Section 1601). In practice, the CDFW usually marks its jurisdictional limit at the top of the stream or bank, or at the outer edge of the riparian vegetation, whichever is wider.

CDFW Wetlands Protection Regulations

CDFW derives its authority to oversee activities that affect wetlands from state legislation. This authority includes Sections 1600-1616 of the Fish and Game Code (lake and streambed alteration agreements), CESA (protection of state listed species and their habitats - which could include wetlands), and the Keene-Nejedly California Wetlands Preservation Act of 1976 (states a need for an affirmative and sustained public policy program directed at wetlands preservation, restoration, and enhancement). In general, the CDFW asserts authority over wetlands within the state either through review and comment on ACOE Section 404 permits, review and comment on CEQA documents, preservation of state listed species, or through stream and lakebed alteration agreements.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act established the SWRCB and each Regional Water Quality Control Board (RWQCB) as the principal state agencies responsible for the protection of water quality in California. As noted above, the RWQCB has regulatory authority over the Project Area.

The Porter-Cologne Water Quality Control Act provides that, "All discharges of waste into the waters of the State are privileges, not rights." Waters of the State are defined in Section 13050(e) of the Porter-Cologne Water Quality Control Act as "…any surface water or groundwater, including saline waters, within the boundaries of the state." All dischargers are subject to regulation under the Porter Cologne Water Quality Control Act, including both point and nonpoint source dischargers. The RWQCB has the authority to implement water quality protection standards through the issuance of permits for discharges to waters at locations within its jurisdiction. As noted above, the RWQCB is the appointed authority for Section 401 compliance in the Project Area.

California Environmental Quality Act

Although threatened and endangered species are protected by specific federal and state statutes, California Environmental Quality Act (CEQA) Guidelines Section 15380(b) provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to meet certain criteria. These criteria have been modeled after the definition in FESA and the section of the California Fish and Game Code dealing with rare or endangered plants and animals and allows a public agency to undertake a review to determine if a significant effect on a species that has not yet been listed by either the USFWS or CDFW (i.e., species of concern) would occur. Whether a species is rare, threatened, or endangered can be legally significant because, under CEQA Guidelines Section 15065, an agency must find an impact to be significant if a project would "substantially reduce the number or restrict the range of an endangered, rare, or threatened species." Thus, CEQA provides an agency with the ability to protect a species from a project's potential impacts until the respective government agencies have an opportunity to designate the species as protected, if warranted.

3. METHODS

3.1. DESKTOP REVIEW

Special-status plant and wildlife species present or potentially present within or adjacent to the Project Area were identified through a desktop literature review using the following sources: USFWS Information for Planning and Consultation (IPaC) Trust Resource Report; CDFW California Natural Diversity Database (CNDDB); and the California Native Plant Society (CNPS) Online Inventory of Rare and Endangered Vascular Plants. Additionally, the Natural Resources Conservation Service (NRCS), Web Soil Survey (WSS) was queried to determine soil types that exist within the boundary of the Project Area (USDA 2022). The CNDDB and CNPS database searches included the 7.5-minute USGS El Nido quadrangle and surrounding eight quadrangles. The IPaC search included the Project Area and a one-mile buffer surrounding the site. Special-status species include those that are considered threatened, endangered, candidate for listing, species of special concern or fully protected by CDFW, or USFWS, or ranked by CNPS. California Rare Plant Rank (CRPR) 1 and 2 plant species were included in the CNPS search. Following a review of these resources, Kleinfelder also reviewed relevant life history information on those species documented as occurring in the region, including habitat type, soils, and elevation preferences.

3.2. DEFINITION OF SPECIAL-STATUS SPECIES

Special-status plant and wildlife species with state and/or federal protections as described under FESA or CESA in Section 2 above are specifically defined below.

3.2.1. SPECIAL-STATUS WILDLIFE SPECIES

Special-status wildlife species include taxa designated as follows:

- Threatened, endangered, or candidate for listing under FESA;
- Threatened, endangered, or rare under the CESA;
- CDFW species of special concern or fully protected species.

3.2.2. SPECIAL-STATUS PLANT SPECIES

Special-status plant species include taxa designated as follows:

- Threatened, endangered, or candidate for listing under the FESA;
- Threatened, endangered, or rare under the CESA;
- Species with CRPRs as described below (CNPS 2021):
  - 1A – Plants presumed extinct in California
  - 1B – Plants considered rare, threatened, or endangered in California and elsewhere
  - 2 – Plants considered rare, threatened, or endangered in California, but more common elsewhere.

3.3. FIELD SURVEYS

A field survey was performed by Kleinfelder biologist Lisa Achter on January 26, 2022, to evaluate botanical and wildlife resources within the Project Area, including habitat suitability for special-status species.

The survey consisted of walking throughout the Project Area to map and characterize vegetation communities; collect data on the relative quality of, and potential for existing habitats to support the special-status species identified during the preliminary database and resources review discussed previously; and to identify any other sensitive biological resources present or potentially present within the site. Private property surrounding the Project Area that could not be accessed was observed with and without binoculars. An aerial photograph (Google Earth 2022) and georeferenced mobile map with an overlay of the Project Site boundary was utilized to map the vegetation communities and record any special-status or sensitive biological resources while in the field. Protocol-level surveys for special-status plant and wildlife species were not conducted during this time. However, any incidental observations of such species were documented during the field survey.

Kleinfelder conducted a constraints-level analysis for potentially jurisdictional wetlands and waters based on current and historic aerial photography signatures and field observations. The analysis was based on criteria provided by the following agencies:

- Waters of the U.S., including wetlands, under the jurisdiction of the ACOE, pursuant to Section 404 of the CWA.
- Wetlands and Waters of the State under the jurisdiction of the Regional Water Quality Control Board (RWQCB), pursuant to Section 401 of the CWA and the Porter-Cologne Water Quality Control Act (Porter-Cologne Act).
- Rivers, streams, or lakes under the jurisdiction of CDFW, pursuant to Section 1602 of the California Fish and Game Code.

4. RESULTS

4.1. BIOLOGICAL SETTING

The biological setting surrounding the Project Area is primarily agriculture, with well-spaced rural residences situated within multiple farms. The Central Valley region of California has experienced extreme drought within the last several years, and because of the timing of the survey, the agricultural fields located north and northwest of the Project Area were dry and unplanted. Orchards are present within and adjacent to the southern and eastern portions of the Project Area.

4.2. EXISTING HABITATS

A discussion of the general characteristics observed within the Project Area during the field survey are presented below.

4.2.1. SOILS

According to the NRCS (USDA 2022), six soil types are present within the Project Area, including: Pachappa sandy loam, 0 to 1 percent slopes; Pachappa sandy loam, deep over hardpan, 0 to 1 percent slopes; Pachappa

sandy loam, deep over hardpan, slightly saline-alkali, 0 to 1 percent slopes; Pachappa fine sandy loam, 0 to 1 percent slopes; Pachappa fine sandy loam, deep over hardpan, 0 to 1 percent slopes; and, Tujunga sand, 0 to 3 percent slopes (Figure 3).

Pachappa sandy loam is a well-drained, alluvium derived from granite that occurs on the toe slope of alluvial fan remnants. Pachappa sandy loam, deep over hardpan, is similar to the above, but the bottom layer is cemented. Pachappa sandy loam that is slightly saline-alkali occurs in the very northwestern portion of the Project Area. Tujunga sand is located throughout the middle, southwestern, and northeastern portions of the Project Area and is a somewhat excessively drained sandy alluvium derived from granite, typically found on toe slopes of alluvial fans. Due to the presence of this soil type within the Project Area, the Project Area is considered Farmland of Local Importance by the California Department of Conservation (CDC 2022).

4.2.2. VEGETATION COMMUNITIES AND LAND COVER TYPES

Using the classifications described in *A Manual of California Vegetation* (Sawyer Keeler-Wolf 2009), one vegetation community and three land cover types were mapped within the Project Area (Figure 4). These are described in more detail below.

Non-Native Annual Grassland (26.46 acres). This vegetation community occurs throughout most of the Project Area and throughout the entirety of the Project Site, and is dominated by non-native annual grasses such as wild oat (*Avena* sp.) and brome (*Bromus* sp.). Non-native forbs such as yellow star thistle (*Centaurea solstitialis*) and narrowleaf plantain (*Plantago lanceolata*) are also present in this vegetation community. All of the grass species are dormant during the dry summer months. Three eucalyptus (*Eucalyptus* sp.) trees were observed in the southwestern corner of this vegetation community (Figure 5a, Photo 2).

Pasture (7.82 acres). This land cover type occurs in the northwestern and northeastern portions of the Project Area and is similar to the non-native annual grassland described above; however, the grasses and forbs are grazed regularly and therefore sparser and shorter. There are several bee boxes located in the western portion of the northwestern pasture area (Figure 4, Figure 5).

Orchard (3.64 acres). This agricultural landcover type is located in the southern portion of the parcel (Figure 4, Figure 5). The trees were dormant at the time of the survey, so the orchard type could not be identified. A residence is located along the eastern boundary of the orchard.

Developed/Disturbed (4.52 acres). The residences, driveways, storage areas, and areas with ornamental plantings comprise this landcover type within the Project Area (Figure 4). The residences in the parcel and the areas surrounding them contain gravel, bare ground, or are dominated by sparse non-native grasses and forbs, which provide little habitat that would support special-status or common wildlife or plant species.

WETLANDS AND WATER FEATURES

No wetlands or other waters that could be considered jurisdictional by the ACOE, RWCQB, or CDFW were observed within the Project Site during the survey. An agricultural ditch runs in a north-south direction outside of the western edge of the parcel, and then curves in an east-west direction and travels through the center of the parcel. The ditch then terminates into a culvert near the western boundary of the northern residence and appears

again on the east side of South Arbor Way where it continues north to El Nido Reservoir (Figure 4). This ditch is mapped as a riverine feature in the National Wetlands Inventory, likely because it connects to El Nido Reservoir. However, it does not exhibit typical characteristics of riverine habitat, and although this ditch runs through the parcel, it is excluded from the Project Site by a 40-foot buffer on either side.

Plant species observed in the ditch included mostly non-native species such as crabgrass (*Digitaria* sp.), Italian ryegrass (*Festuca perennis*), dandelion (*Taraxacum* sp.), and bull thistle (*Cirsium vulgare*), with the exception of some rush (*Juncus* sp.), which is native.

4.3. Special-Status Wildlife Species with Potential To Occur in the Project Area

Results of the CNDDB and IPaC searches indicated 23 special-status wildlife species known to occur within the one-mile search radius of the Project Area (CDFW 2022; USFWS 2022). Of these, 20 species are not expected to occur or have a low potential to occur within the Project Area due to a lack of suitable habitat, or the site is outside of the species' known range. As such, these 20 species were removed from further consideration. Of the remaining three special-status wildlife species, San Joaquin kit fox and Swainson's hawk have a moderate potential to occur at the site, and northern harrier was observed flying over the Project Site during the January field survey.

San Joaquin kit fox occurs in grasslands and agricultural areas along the edges of the San Joaquin Valley. It uses dens created by other mammals, as well as larger pipes and culverts for cover. It is primarily a nocturnal species and feeds on small mammals, birds and reptiles. Suitable cover and foraging habitat exist within and adjacent to the Project Area, and the agricultural fields surrounding the site provide potentially suitable breeding habitat. However, no suitably sized dens were observed for this species during the field survey. There are several documented occurrences of this species approximately seven miles northwest of the Project Area at the Merced Wildlife Refuge (CDFW 2022).

Swainson's hawk spends the breeding season in the Central Valley of California and is commonly found in agricultural areas or open grasslands containing solitary trees for nesting. Their diet consists of insects, small mammals and reptiles, and they have been known to forage up to 10 miles from nest sites (CDFW 1994). No large stick nests or Swainson's hawks were observed during the field survey; however, large trees within in the vicinity of the Project Area and the eucalyptus trees in the southwestern portion of the annual grassland habitat on the site could provide suitable nesting habitat for this species, and the Project Site and agricultural fields adjacent to the site could provide foraging habitat for this species.

Northern harrier utilizes marshes, fields, and prairies for nesting and foraging. It is found in many kinds of open terrain, in both wet and dry habitats where there is ample ground cover. It is often found in marshes, especially in nesting season, but sometimes it will nest in dry open fields. It usually hunts by flying low over fields and scanning the ground. This species was observed flying over the pasture and annual grassland within the Project Site during the field survey.

In addition to the species listed above, at least two barn owls (*Tyto alba*) were observed in a nest box on the western boundary of the Project Area, and several pellets were observed on the ground below the nest box during the field survey. Although barn owls are not considered special-status by CDFW or USFWS, they are protected under Section 3503.5 of the California Fish and Game Code.

A list of special-status wildlife species with potential to occur in the vicinity of the Project Area is included in Appendix A. Recommended avoidance and minimization measures (AMMs) for San Joaquin kit fox, Swainson's hawk, and northern harrier is provided in Section 5.

4.4. Special-Status Plant Species with Potential to Occur in the Project Area

Results of the IPaC, CNDDB and CNPS searches indicated 12 special-status plant species known to occur within the one-mile search radius of the Project Area (CNPS 2022). None of these species are expected to occur within or adjacent to the Project Area due to a lack of suitable habitat, a lack of occurrences in the vicinity of the Project Area, or the Project Area is outside of the species' known range; therefore, special-status plants are not discussed further in this document. A list of plant species with potential to occur in the vicinity of the Project Area is included in Appendix B.

4.5. Critical Habitat

Critical habitat is a term defined and used in the federal Endangered Species Act to specify geographic areas that contain features essential to the conservation of an endangered or threatened species, and that may require special management and protection. Critical habitat may also include areas that are not currently occupied by the species but will be needed for its recovery.

The Project Area does not fall within or adjacent to Critical Habitat limits for any special-status wildlife or plant species; however, Critical Habitat has been mapped for Colusa grass (*Neostapfia colusana*) approximately two miles north of the Project Area.

4.6. Wildlife Corridors and Habitat Linkages

Wildlife corridors are linear features that connect large patches of natural open space and provide avenues for the migration of animals. Habitat linkages are small patches that join larger blocks of habitat and help reduce the adverse effects of habitat fragmentation; they may be continuous habitat or discrete habitat islands that function as stepping stones for wildlife dispersal.

The Project Area is not recognized as an important wildlife corridor by any regional or state agency or jurisdiction and is not considered critical to the ecological functioning of adjoining open space areas. It likely supports local movement patterns and provides food and cover resources for common wildlife species. Temporary effects due to noise and increased human activity during project activities would not interfere with these local movement patterns over time or affect the ability of these species to forage or reproduce.

4.7. Common Wildlife and Plant Species

Eleven common and one special-status wildlife species were detected during the field survey and are listed in Table 1 below. These included 10 avian species, one invertebrate and one mammal.

Table 1. Wildlife Species Observed During the Field Survey

Common Name	Scientific Name	Detection Type
Invertebrates		
honeybee	*Apis mellifera*	Visual
Birds		
American crow	*Corvus brachyrhynchos*	Visual
western bluebird	*Sialia mexicana*	Visual
mourning dove	*Zenaida macroura*	Visual
white-crowned sparrow	*Zonotrichia leucophrys*	Visual
American kestrel	*Falco sparverius*	Visual
turkey vulture	*Cathartes aura*	Visual
western meadowlark	*Sturnella neglecta*	Visual
black phoebe	*Sayornis nigricans*	Visual
barn owl	*Tyto alba*	Prey remains on ground, two adults visible in nest box
northern harrier*	*Circus hudsonius*	Visual
Mammals		
Botta's pocket gopher	*Thomomys bottae*	Evidence of burrows (Figure 5)

*Denotes CDFW Species of Special Concern

Common wildlife species adapted to life in proximity to human development, such as raccoon (*Procyon lotor*), coyote (*Canis latrans*), and striped skunk (*Mephitis mephitis*) are likely to move through the Project Area on a regular basis to find food and cover. Several common native and non-native bird species are likely to use the Project Area for nesting and foraging, as there is suitable habitat available throughout the Project Area (Figure 5).

The Project Area is characterized predominantly by non-native annual grassland and pasture with some ruderal areas interspersed throughout the parcel. Recent aerial photography (within ~10 years) shows regular disturbance on the site, including grading for calf hutches. The presence of Russian thistle (*Salsola tragus*), common stork's bill (*Erodium cicutarium*) and other non-native grasses and forbs along with prior recent disturbance on the site limits the potential for special-status plants or sensitive habitats to occur. A list of plants observed on the site during the field survey is included in Table 2 below.

Table 2. Plant Species Observed During the Field Survey

Scientific Name	Common Name
Amsinckia menziesii	small-flowered fiddleneck
Avena sp.	wild oat
Brassica sp.	mustard
Bromus sp.	brome
Calvatia gigantea	giant puffball (fungus)
Centaurea solstitialis	yellow star-thistle
Cirsium vulgare	bull thistle
Croton setiger	doveweed
Erodium cicutarium	common stork's bill
Eucalyptus sp.	eucalyptus
Geranium sp.	geranium

Scientific Name	Common Name
Heterotheca grandiflora	telegraphweed
Mentha sp.	mint
Malva sp.	mallow
Plantago lanceolata	English plantain
Salsola tragus	Russian thistle
Sphagnum sp.	moss
Taraxacum sp.	dandelion
Trifolium sp.	clover

5. RECOMMENDATIONS

This section addresses potential constraints to approval of the proposed Project as a result of the presence of sensitive biological resources and potential impacts to such resources that would result from project activities. Recommendations to address potential biological resource constraints are described below.

BIO-1: Preconstruction Nesting Bird Survey. All native birds in California are protected by the federal Migratory Bird Treaty Act (MBTA), and Section 3503.5 of the California Fish and Game Code specifically protects raptors. Ground disturbance**,** noise, or removal of vegetation that would result in destruction of active bird nests or disruption of breeding/nesting activity could be a violation of the MBTA and the California Fish and Game Code, as well as a significant impact under CEQA. The barn owls observed in the nest box along the western edge of the Project Area are considered raptors.

Kleinfelder recommends a nesting bird survey be performed by a qualified biologist no earlier than 15 days prior to any construction during the nesting season (March 1 – August 31) to determine if any native birds are nesting on or near the site (including a 200-foot buffer for raptors and a 0.5-mile buffer for Swainson's hawk). If any active nests are observed during surveys, a suitable avoidance buffer from the nests should be determined by the qualified biologist based on species, location, and extent and type of planned construction activity. These nests would be avoided until the chicks have fledged and the nests are no longer active, as determined by the qualified biologist. Kleinfelder also recommends removing any suitable nesting habitat (i.e., trees and vegetation) outside of the bird breeding season to avoid impacts to nesting birds.

BIO-2: Trash Receptacles. Impacts to special-status species due to increased predation from construction activities could be considered a significant impact in the context of CEQA. All trash and waste items generated by construction or crew activities should be properly contained in a covered trash receptacle and removed from the Project Site daily. This includes biodegradable items, such as apple cores and banana peels, that attract predators such as raccoons and American crows that could prey upon sensitive wildlife species.

BIO-3: Sediment and Erosion Control. Impacts to wetlands and waters under jurisdiction of the ACOE, RWQCB and CDFW in the form of increased sedimentation and potential spills from construction equipment could be considered significant in the context of CEQA. Although no potentially jurisdictional wetlands or other waters were observed within the Project Site during the field survey, impacts to the agricultural ditch in the form of siltation or runoff should be

avoided, as this ditch connects to El Nido reservoir northeast of the site, which could be considered jurisdictional by ACOE and the RWQCB.

Proper best management practices (BMPs) should be included in the Stormwater Pollution Prevention Plan (SWPPP) and prior to any construction within 50 feet of the agricultural ditch, BMP's should be installed to prevent runoff and siltation from entering the ditch. These BMPs may include, but are not limited to, biodegradable straw wattles free from weed seed, silt fencing, hydroseeding, or biodegradable erosion control mats/blankets. Specific BMPs should be defined prior to construction to protect the ditch, and spill kits should be available to all workers on the site during construction activities.

BIO-5: San Joaquin Kit Fox. A qualified biologist (approved by USFWS) shall perform early evaluation surveys in accordance with the current USFWS-approved protocol for San Joaquin kit fox prior to ground- or vegetation-disturbing activities associated with pre-construction, geotechnical or soils investigations, construction, operations, or maintenance. Upon completion of early evaluation surveys, informal consultation with USFWS will be initiated to determine proper techniques to employ to avoid impacts to this species during project construction, which would be considered significant under CEQA.

Security fences installed on the project site shall be designed to enable passage of San Joaquin kit fox and their prey, while impeding the passage of larger predators, such as coyotes (*Canis latrans*) and larger domestic dogs. All fencing shall leave a 4- to 6-inch opening between the fence mesh and the ground. The bottom of the fence fabric shall be knuckled (wrapped back to form a smooth edge) to protect wildlife that pass under the fence. Fences shall be monitored quarterly to ensure that any damage or vandalism is quickly repaired.

BIO-6: Special-Status and Common Wildlife Awareness. All Project personnel will visually check for animals in any pipes, culverts, or other open-ended materials and equipment stored on site for one or more overnight periods prior to moving, burying, or capping to ensure that no animals are present within the materials and equipment. To prevent accidental entrapment of wildlife during construction, all excavated holes, ditches, or trenches greater than six (6) inches deep will be covered at the end of each workday by suitable materials that cannot be displaced, or escape ramps will be placed in excavations. After opening and before filling, such holes, ditches, and trenches will be thoroughly inspected for trapped animals.

If a special-status species is discovered in the Project Site, the qualified biologist will be contacted and the appropriate natural resource agency(ies) (e.g., CDFW, USFWS, etc.) will be notified within 24 hours where appropriate. The animal will be allowed to move off site on its own and will not be harmed or harassed.

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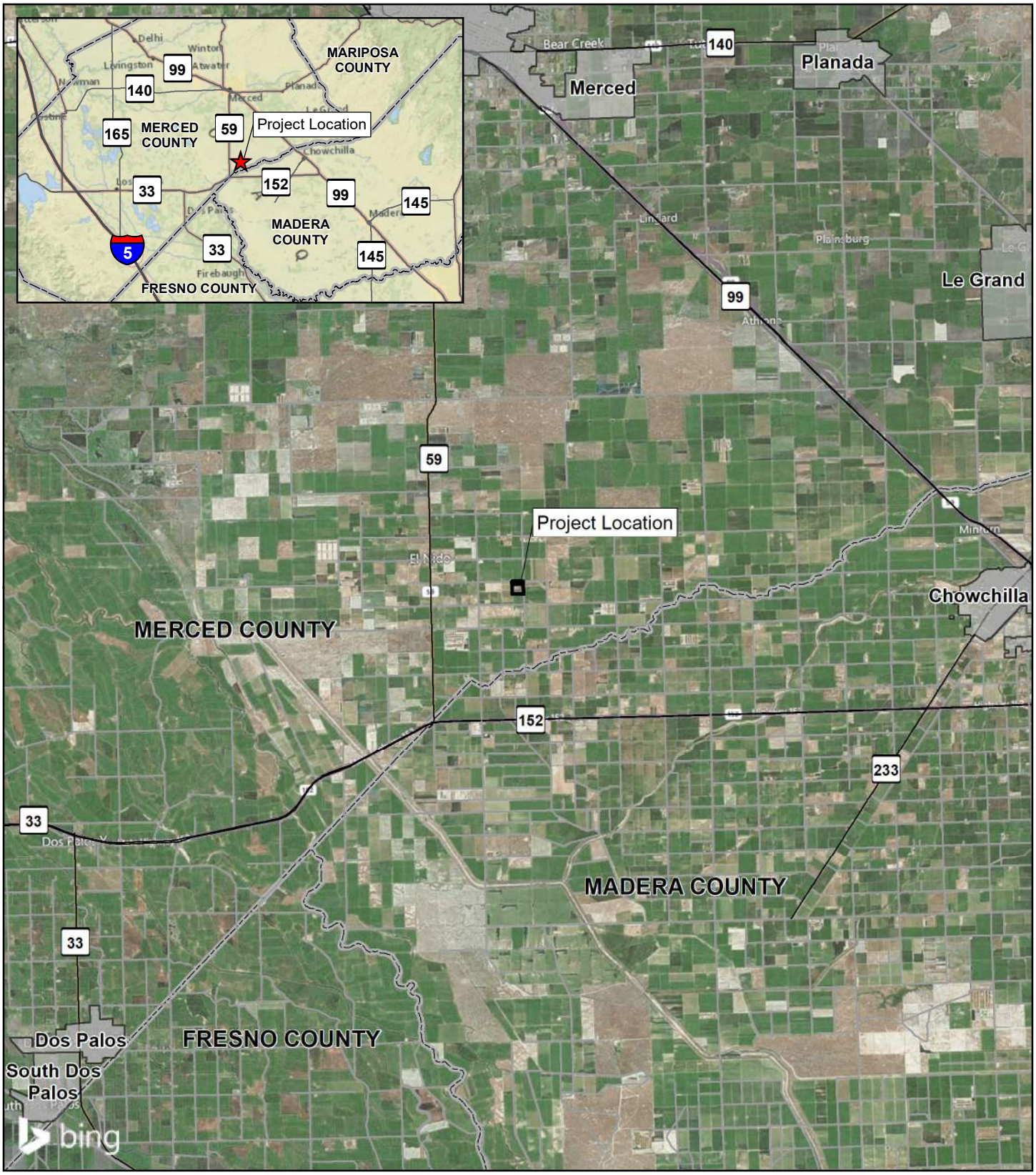


Source: Bing Maps

0 1.5 3 Miles

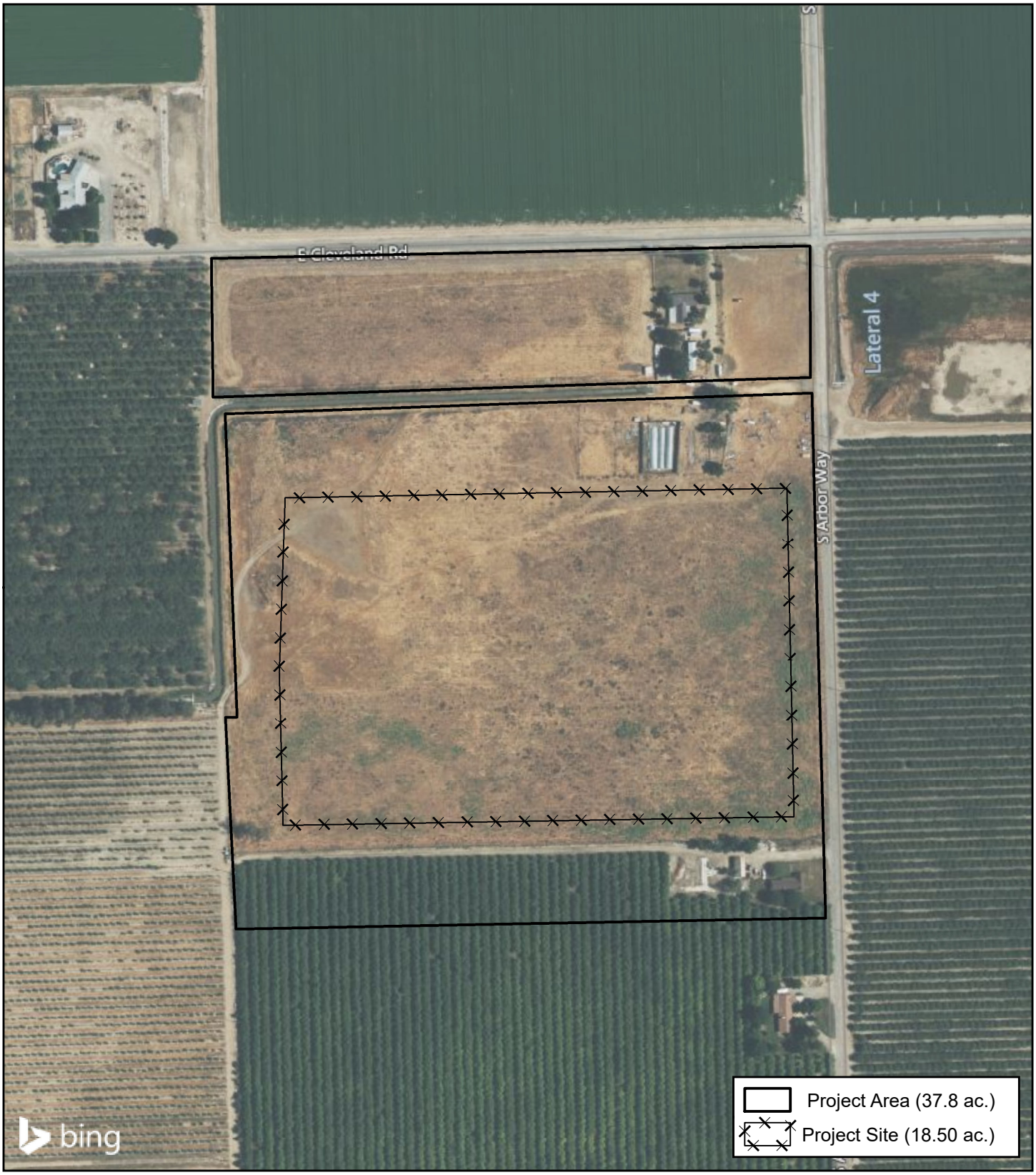
0 2.5 5 Kilometers

N

Scale 1:190,080
1 in = 3 miles

Figure 1. Regional Vicinity
East Cleveland Solar Project
Merced County, California
Biological Resources Assessment

KLEINFELDER
Bright People. Right Solutions.



Source: Bing Maps

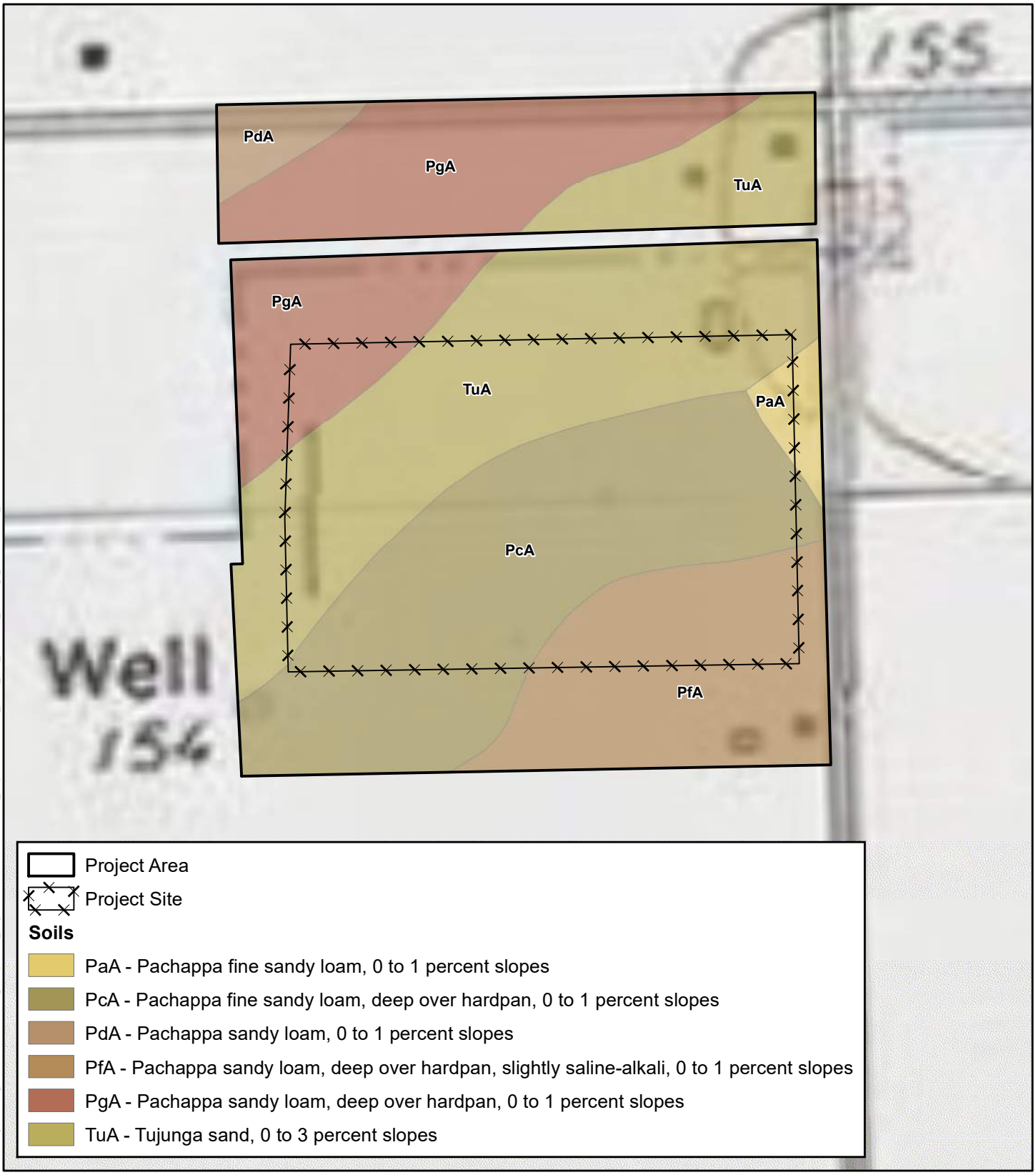
0 150 300 Feet
0 50 100 Meters

N

Scale 1:3,600
1 in = 300 feet

Figure 2. Project Area
East Cleveland Solar Project
Merced County, California
Biological Resources Assessment

KLEINFELDER
Bright People. Right Solutions.



Project Area

Project Site

Soils

- PaA - Pachappa fine sandy loam, 0 to 1 percent slopes
- PcA - Pachappa fine sandy loam, deep over hardpan, 0 to 1 percent slopes
- PdA - Pachappa sandy loam, 0 to 1 percent slopes
- PfA - Pachappa sandy loam, deep over hardpan, slightly saline-alkali, 0 to 1 percent slopes
- PgA - Pachappa sandy loam, deep over hardpan, 0 to 1 percent slopes
- TuA - Tujunga sand, 0 to 3 percent slopes

Source: SSURGO (February 2022)

0 150 300 Feet

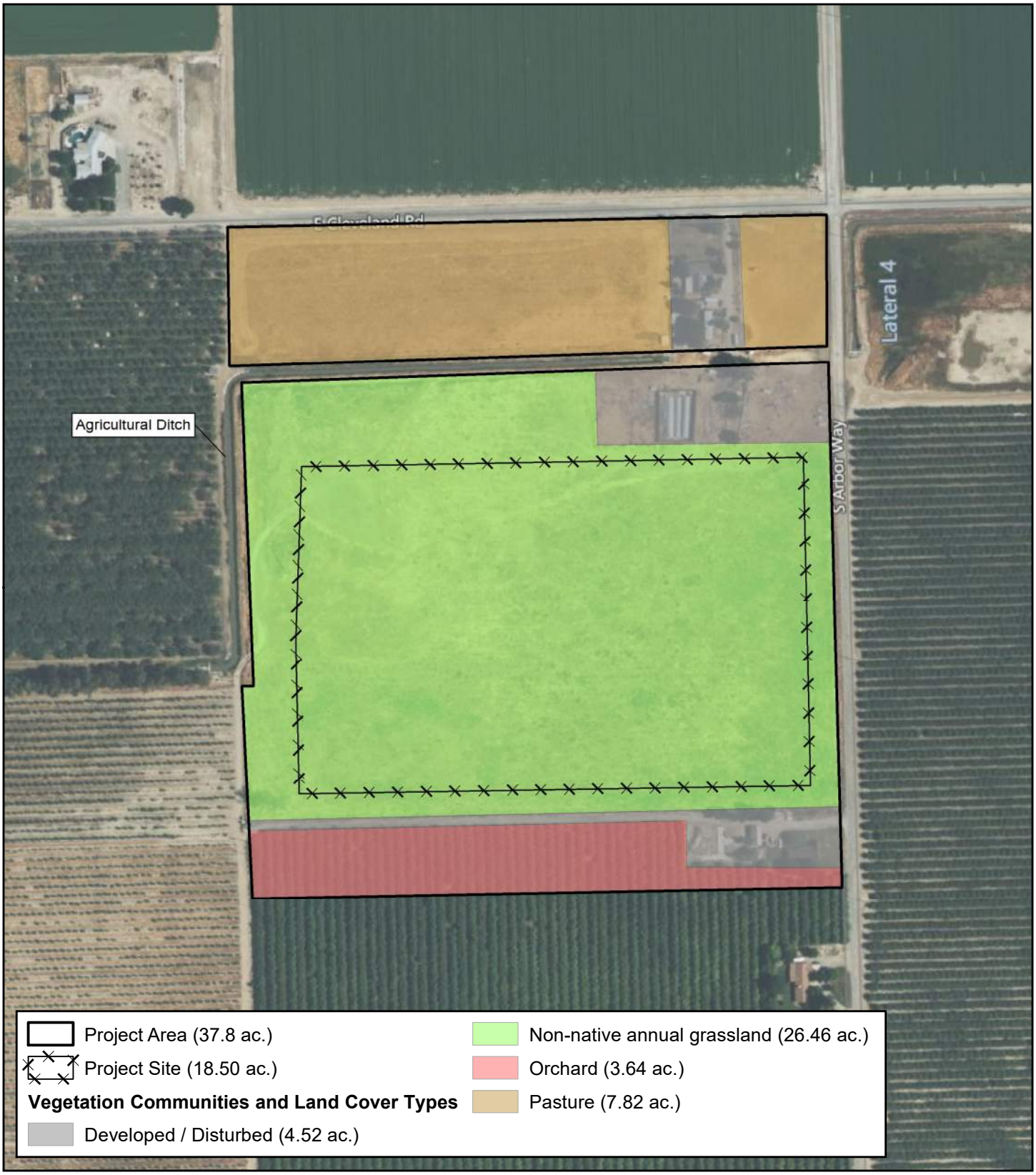
0 50 100 Meters

N

Scale 1:3,600

Figure 3. Soils
East Cleveland Solar Project
Merced County, California
Biological Resources Assessment

KLEINFELDER
Bright People. Right Solutions.



Source: Bing Maps

0 150 300 Feet
0 50 100 Meters

N

Scale 1:3,600
1 in = 300 feet

Figure 4. Vegetation Communities
East Cleveland Solar Project
Merced County, California
Biological Resources Assessment

KLEINFELDER
Bright People. Right Solutions.

Photo 1. Barn owl box with at least two owls inside

Photo 2. Eucalyptus in southwestern portion of annual grassland

Photo 3. Evidence of barn owl pellets along western edge of property

Photo 4. Evidence of pocket gophers in annual grassland

Photo 5. Example of small mammal burrow in annual grassland

Photo 6. Looking east along agricultural ditch toward residence and disturbed area

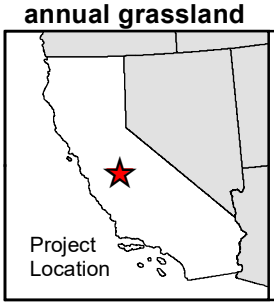


Figure 5a. Photos
East Cleveland Solar Project
Merced County, California
Biological Resources Assessment

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Photo 7. Looking east along road between annual grassland and orchard

Photo 8. Looking east through annual grassland

Photo 9. Looking north along western portion of project area

Photo 10. Looking north at bee boxes in northwestern pasture

Photo 11. Looking south along eastern edge of annual grassland

Photo 12. Looking south along western edge of annual grassland

Figure 5b.Photos
East Cleveland Solar Project
Merced County, California
Biological Resources Assessment

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Photo 13. Looking south outside western edge of property at agricultural ditch

Photo 14. Looking southeast at orchard from annual grassland

Photo 15. Looking southwest across pasture in northwestern portion of property

Photo 16. Looking west along agricultural ditch between parcels

Photo 17. Looking west through annual grassland in project area

Photo 18. Residence and disturbed area on property

Figure 5c.Photos
East Cleveland Solar Project
Merced County, California
Biological Resources Assessment

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Appendix A
Special-Status Wildlife Species with Known or Potential Occurrence in the Vicinity of the East Cleveland Solar Project in Merced County, California.

Common Name	Scientific Name	Federal/State Status[1]	Habitat Associations	Potential to Occur in the Project Area[2]
			Invertebrates	
conservancy fairy shrimp	*Branchinecta conservatio*	Endangered/None	Conservancy fairy shrimp occurs in disjunct locations within Solano, Merced, Tehama, Butte, and Glenn counties. It is found in large, deep vernal pools that occur within annual grassland habitat.	**Not expected to occur.** Suitable aquatic habitat for this species is not present within the Project area.
monarch – California overwintering population	*Danaus plexippus* (pop. 1)	Candidate Threatened, USFS Sensitive/None	Monarch adults make massive, multi-generation migrations from August-October, flying south thousands of miles to hibernate along the California coast and in central Mexico. Monarchs stop to feed on flower nectar and to roost together at night. During warm winter days, the butterflies may take moisture and flower nectar. Most mating happens before they journey north in the spring, when females lay single eggs along the way under host plant leaves (*Asclepias* sp.); caterpillars eat flowers and leaves. Overwintering sites along the California coast are important for conservation of this species.	**Not expected to occur.** Suitable habitat for this species is not present within or adjacent to the Project area, and there are no known winter roosts in the vicinity of the Project area.
valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	Threatened/None	Valley elderberry longhorn beetle is completely dependent on its host plant, elderberry (*Sambucus* sp.), which occurs in riparian and other woodland communities in California's Central Valley and the associated foothills. Female beetles lay their eggs in crevices on the stems or on the leaves of living elderberry plants. When the eggs hatch, larvae bore into the stems of the plant and the larval stage lasts for one to two years. The fifth instar larvae create emergence holes in the stems and then plug the holes and remain in the stems through pupation. Adults emerge through the holes from late March through June. The short-lived adult beetles forage on leaves and flowers of elderberry shrubs.	**Not expected to occur.** Suitable habitat for this species is not present within the Project area, as there are no elderberry shrubs within the Project area.
vernal pool fairy shrimp	*Branchinecta lynchi*	Threatened/None	Vernal pool fairy shrimp is adapted to seasonally inundated aquatic features and occur primarily in vernal pools and seasonal wetlands that fill with water during fall and winter rains, then dry up in spring and summer. Typically, the majority of pools in any vernal pool complex are not inhabited by the species at any one time. Different pools within or between complexes may provide habitat for the fairy shrimp in alternative years, as climatic conditions vary.	**Not expected to occur.** Suitable aquatic habitat for this species is not present within the Project area.
vernal pool tadpole shrimp	*Lepidurus packardi*	Endangered/None	Vernal pool tadpole shrimp is associated with low-alkalinity, ephemeral freshwater habitats in grasslands, including alkaline pools, clay flats, vernal lakes, vernal pools, vernal swales, and other seasonal wetlands in California. Suitable vernal pools and seasonal swales are generally underlain by hardpan or sandstone.	**Not expected to occur.** Suitable aquatic habitat for this species is not present within the Project area.

Appendix A (Continued)

Common Name	Scientific Name	Federal/State Status[1]	Habitat Associations	Potential to Occur in the Project Area[2]
Fish				
Delta smelt	*Hypomesus transpacificus*	Threatened/Endangered	Delta smelt are a euryhaline species. For a large part of their one-year life span, delta smelt live along the freshwater edge of the mixing zone (saltwater-freshwater interface). Shortly before spawning, adults migrate upstream from the brackish-water habitat associated with the mixing zone and disperse widely into river channels and tidally influenced backwater sloughs. They spawn in shallow, fresh or slightly brackish water upstream of the mixing zone.	**Not expected to occur.** Suitable habitat for this species is not present within or adjacent to the Project area.
steelhead – pop. 11 (Central Valley DPS)	*Oncorhynchus mykiss irideus*	Threatened/None	Central Valley steelhead spawn downstream of dams on every major tributary within the Sacramento and San Joaquin River systems. Regardless of life history strategy, for the first year or two of life, rainbow trout and steelhead are found in cool, clear, fast-flowing permanent streams and rivers where riffles predominate over pools, there is ample cover from riparian vegetation or undercut banks, and invertebrate life is diverse and abundant.	**Not expected to occur.** Suitable habitat for this species is not present within or adjacent to the Project area.
Amphibians and Reptiles				
blunt-nosed leopard lizard	*Gambelia sila*	Endangered/Endangered, FP	Blunt-nosed leopard lizard occurs in semi-arid grasslands, alkali flats, and washes in the San Joaquin Valley and surrounding valleys and foothills. It is a diurnal species that uses mammal dens and burrows for shelter and cover and breeds from May to June.	**Low potential to occur.** The annual grassland on the site is very dense and the nearest documented occurrence of this species is 5 miles west of the site, from the 1960's. Agricultural conversion in the vicinity of the Project area likely precludes this species from occurring.

Common Name	Scientific Name	Federal/State Status[1]	Habitat Associations	Potential to Occur in the Project Area[2]
California red-legged frog	*Rana draytonii*	Threatened/SSC	California red-legged frogs occur in different habitats depending on their life stage, the season, and weather conditions. Breeding habitat includes coastal lagoons, marshes, springs, permanent and semi-permanent natural ponds, and ponded and backwater portions of streams. They can also breed in artificial impoundments including stock ponds, irrigation ponds, and siltation ponds. Creeks and ponds with dense growths of woody riparian vegetation, especially willows (*Salix* spp.) near deep (≥2 to 3 feet), still or slow-moving water are preferred, although the absence of vegetation at an aquatic site does not rule out the possibility of occupancy.	**Low potential to occur.** Although potentially suitable aquatic breeding habitat exists approximately 0.65 mile east of the Project area, there are no documented occurrences of this species within 6 miles of the Project area, and agricultural conversion in the vicinity of the Project area likely precludes this species from occurring.
California tiger salamander	*Ambystoma californiense*	Threatened/Threatened	California tiger salamander (CTS) may be found in riparian and wet meadow habitats, but is more common in annual grasslands. Temporary or permanent freshwater pools (e.g., vernal pools and wetlands) are required for egg-laying and larval development; however, they appear to be absent in waters containing predatory game fish. CTS spends most of its life cycle underground in adjacent valley oak woodland or grassland habitat, primarily in rodent burrows. Breeding takes place following the first heavy winter rains.	**Low potential to occur.** Although potentially suitable aquatic breeding habitat exists approximately 0.65 mile east of the Project area, there are no documented occurrences of this species within 5 miles of the Project area, and agricultural conversion in the vicinity of the Project area likely precludes this species from occurring.
coast horned lizard	*Phrynosoma blainvillii*	None/SSC	Coast horned lizard prefers open areas within valley grasslands and foothill coniferous forests, woodlands, and chaparral that have sandy, loose soils and low vegetation. It is often found in lowlands along sandy washes with scattered shrubs, and along dirt roads.	**Not expected to occur.** Suitable habitat for this species is not present within or adjacent to the Project area.

Common Name	Scientific Name	Federal/State Status[1]	Habitat Associations	Potential to Occur in the Project Area[2]
giant gartersnake	*Thamnophis gigas*	Threatened/Threatened	Giant gartersnake is found in isolated populations restricted to the Central Valley of California. It is found in freshwater marshes, wetlands, irrigation ditches, low gradient streams (absent of predatory fish), and rice fields containing emergent vegetation. Adjacent upland grassland habitat is necessary for cover and aestivation.	**Low potential to occur.** Although potentially suitable aquatic habitat exists for this species within the agricultural ditch between the project parcels, there are no documented occurrences of this species within 5 miles of the Project area, and unsuitable agricultural conversion (i.e., non-rice crops) surrounding the site likely precludes this species from occurring.
western pond turtle	*Emys marmorata*	None/SSC	Western pond turtles are found in rivers, lakes, streams, ponds, wetlands, ephemeral creeks, reservoirs, agricultural ditches, estuaries, and brackish waters. Western pond turtles prefer areas that provide cover from predators, such as vegetation and algae, as well as basking sites for thermoregulation. Adults tend to favor deeper, slow-moving water, whereas hatchlings search for slow and shallow water that is slightly warmer. Terrestrial habitats are used for egg laying and wintering and usually consist of burrows in leaves and soil. They are rarely found at altitudes above 1,500 meters.	**Not expected to occur.** Suitable aquatic habitat for this species is not present within or adjacent to the Project area.
western spadefoot	*Spea hammondii*	None/SSC	Western spadefoot inhabits areas with slightly moist, friable soils in mostly treeless habitats. They are usually absent from narrow canyons and highly mesic habitats and require rain pools with little to no vegetation for spawning.	**Not expected to occur.** Suitable habitat for this species is not present within or adjacent to the Project area.
Birds				
burrowing owl	*Athene cunicularia*	None/SSC	Burrowing owl utilizes abandoned ground squirrel burrows in open habitats, grasslands, and disturbed areas, typically on levees, mounds or areas where there are unobstructed views of possible predators such as raptors or foxes. Prey items include insects, small mammals, reptiles and amphibians.	**Low potential to occur.** Although potentially suitable foraging habitat for this species exists in the Project area, no suitable California ground squirrel burrows were observed during the field survey, and the nearest documented occurrence of this species is approximately 5 miles northwest of the Project area.
mountain plover	*Charadrius montanus*	None/SSC	Mountain plover occurs in flat open plains, not mountains. Of all of the shorebirds, mountain plover is the most disconnected from the shore, generally living miles from water in areas of very short grass, including semi-arid plains, grasslands, and plateaus. In some areas, it nests mainly on bare ground found in large prairie-dog towns. Winter habitats include desert flats and plowed fields.	**Not expected to occur.** Suitable habitat for this species is not present within or adjacent to the Project area.

Common Name	Scientific Name	Federal/State Status[1]	Habitat Associations	Potential to Occur in the Project Area[2]
northern harrier	*Circus hudsonius*	None/SSC	Northern harrier utilizes marshes, fields, and prairies. It is found in many kinds of open terrain, in both wet and dry habitats where there is good ground cover. It is often found in marshes, especially in nesting season, but sometimes it will nest in dry open fields. It usually hunts by flying low over fields, scanning the ground.	**Present.** This species was observed flying over the Project area during the field survey.
Swainson's hawk	*Buteo swainsoni*	None/Threatened	Swainson's hawk spends the breeding season in the Central Valley of California and is commonly found in agricultural areas or open grasslands containing solitary trees for nesting. Diet consists of insects, small mammals and reptiles.	**Moderate potential to occur.** Suitable foraging habitat is present within and adjacent to the Project area for this species and suitable nest trees occur within 10 miles of the Project area.
tricolored blackbird	*Agelaius tricolor*	None/Threatened, SSC	Tricolored blackbird is a colonial species found almost exclusively in California. It utilizes wetlands, marshes and agricultural grain fields for foraging and nesting. The tricolored blackbird population has declined significantly in recent years due to habitat loss and harvest of grain fields before young have fledged.	**Not expected to occur.** Suitable wetland or marsh habitat for this species is not present within or adjacent to the Project area.
yellow-headed blackbird	*Xanthocephalus xanthocephalus*	None/SSC	Yellow-headed blackbird nests in noisy colonies in big cattail marshes of the west and midwest; when not nesting, they gather in flocks in open fields, often with other blackbirds. Forages mostly by walking on the ground in open fields or near the water's edge; also forages low in marsh vegetation.	**Not expected to occur.** Suitable habitat for this species is not present within or adjacent to the Project area.
Mammals				
American badger	*Taxidea taxus*	None/SSC	American badger is most abundant in drier open stages of most shrub, forest and grassland habitats with friable soils. It digs burrows for cover and will reuse burrows occasionally but may also dig new burrows each night in the summer. Its diet consists of rodents, small mammals, reptiles, insects, birds and carrion.	**Low potential to occur.** Although potentially suitable habitat exists for this species, there are no documented occurrences of this species within 6 miles of the Project area, and agricultural conversion surrounding the site likely precludes this species from occurring.

Common Name	Scientific Name	Federal/State Status[1]	Habitat Associations	Potential to Occur in the Project Area[2]
Fresno kangaroo rat	*Dipodomys nitratoides exilis*	Endangered/Endangered	Fresno kangaroo rat is one of three subspecies of San Joaquin kangaroo rats adapted for survival in an arid environment. They dig and shelter in burrows, or use previously existing burrows in relatively light, sandy soils in raised areas. There are usually two to five burrow entrances that slant gently underground, and one or more holes that open from a vertical shaft. Fresno kangaroo rats diet consists primarily of seeds, but they may also eat some types of green herbaceous vegetation and insects. Breeding is probably initiated in winter after the onset of the rainy season and young are born in the burrow, where they remain until they are fully furred and able to move about easily. A variety of predators, including the endangered San Joaquin kit fox, prey upon this species and their burrows are used extensively by the endangered blunt-nosed leopard lizard and other reptiles.	**Not expected to occur.** Suitable habitat for this species is not present within or adjacent to the Project area.
San Joaquin kit fox	*Vulpes macrotis mutica*	Endangered/Threatened	San Joaquin kit fox occurs in grasslands and agricultural areas along the edges of the San Joaquin Valley. It uses dens created by other mammals, as well as larger pipes and culverts for cover. It is primarily a nocturnal species and feeds on small mammals, birds and reptiles.	**Moderate potential to occur.** No suitably sized dens for this species were observed during the field survey, and the nearest documented occurrence is over 7 miles northwest of the Project area in the Merced Wildlife Refuge; however, the Project area provides suitable cover and foraging habitat for this species, and the agricultural areas surrounding the site could support breeding habitat for this species.

[1]**Status Legend**

SSC: Species of Special Concern (CDFW)
FP: Fully Protected (CDFW)

[2] **Definitions Regarding Potential for Occurrence**

- Not expected to occur – Habitat within and adjacent to the Project site is unsuitable for the species life history requirements (foraging, breeding, cover, range, elevation, hydrology, vegetation community, site history, and/or disturbance regime) There are no documented occurrences of the species in the vicinity of the Project site.
- Low – Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the Project site is unsuitable or of poor quality. The species is not likely to found within the Project site. Any documented occurrences are farther than likely possible for the species to occur in the Project site.
- Moderate – Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the Project site is unsuitable. There are documented occurrences in the near vicinity of the Project site and therefore, the species has a moderate probability of being found within the Project site.
- High – All of the habitat components meeting the species requirements are present, and/or most of the habitat on or adjacent to the Project site is highly suitable. There are documented occurrences of the species on or immediately adjacent to the Project site and therefore, the species has a high probability of being found within the Project site.
- Present – Species was observed within the Project site or has been recorded (i.e., CNDDB, or other reports) within the Project site recently.

Sources:

California Department of Fish and Wildlife (CDFW). 2022. California Natural Diversity Database (CNDDB). Rarefind, Version 5 (Commercial Subscription) dated April 2, 2021. Accessed January, 2022. https://apps.wildlife.ca.gov/rarefind/view/RareFind.aspx

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Appendix B
Special-Status Plant Species with Known or Potential Occurrence in the Vicinity of the East Cleveland Solar Project in Merced County, California.

Scientific Name	Common Name	Status (Federal/State, CRPR)	Life Form/Habitat Associations/ Elevation Range (feet)/Blooming Period/	Potential to Occur in the Project Area
Atriplex cordulata var. *cordulata*	heartscale	None/None, CRPR 1B.2	Annual herb. Saline or alkaline substrates in chenopod scrub, meadows and seeps, and sandy conditions in valley and foothill grassland. Elevation 0-1,700 feet. Blooms Apr-Oct.	**Low potential to occur.** Although there is a historically documented occurrence of this species from 1936 approximately two miles east of the site, the species is presumed extirpated from the vicinity of the Project area due to agricultural conversion. Additionally, the level of disturbance and presence of non-native species throughout the site likely precludes this species from occurring.
Atriplex minuscula	lesser saltscale	None/None, CRPR 1B.1	Annual herb. Affinity to sandy alkaline substrates in valley and foothill grassland, playas, and chenopod scrub. Elevation 50–700 feet. Blooms May–Oct	**Low potential to occur.** Although there is a historically documented occurrence of this species from 1936 approximately two miles east of the site, the species is presumed extirpated from the vicinity of the Project area due to agricultural conversion. Additionally, the level of disturbance and presence of non-native species throughout the site likely precludes this species from occurring.
Atriplex persistens	vernal pool smallscale	None/None, CRPR 1B.2	Annual herb. Found in vernal pools with alkaline substrate. Elevation 40-400 feet. Blooms Jan, Aug-Oct.	**Not expected to occur**. The Project area lacks suitable aquatic habitat for this species.
Atriplex subtilis	subtle orache	None/None, CRPR 1B.2	Annual herb. Affinity to alkaline substrates in valley and foothill grassland. Elevation 130–330 feet. Blooms Jun, Aug, Sep (Oct).	**Low potential to occur.** Although there is a historically documented occurrence of this species from 1936 approximately two miles east of the site, the species is presumed extirpated from the vicinity of the Project area due to agricultural conversion. Additionally, the level of disturbance and presence of non-native species throughout the site likely precludes this species from occurring.

Scientific Name	Common Name	Status (Federal/State, CRPR)	Life Form/Habitat Associations/ Elevation Range (feet)/Blooming Period/	Potential to Occur in the Project Area
Chloropyron palmatum	palmate-bracted salty bird's-beak	Endangered/Endangered, CRPR 1B.1	Annual herb. Valley and foothill grassland and chenopod scrub (alkaline soils). Elevation 0-465 feet. Blooms May-Oct.	**Low potential to occur.** Although there is potentially suitable habitat for this species within the Project area, there are no documented occurrences of this species within the 7.5-minute USGS El Nido quad.
Cryptantha hooveri	Hoover's cryptantha	None/None, CRPR 1A	Annual herb. Inland dunes and sandy valley and foothill grassland. Elevation 30-490 feet. Blooms Apr-May.	**Low potential to occur.** Although there is potentially suitable habitat for this species within the Project area, there are no documented occurrences of this species within the 7.5-minute USGS El Nido quad.
Delphinium recurvatum	recurved larkspur	None/None, CRPR 1B.2	Perennial herb found in alkaline soils within chenopod scrub, cismontane woodland, and valley and foothill grassland. Elevation 0-2,400 feet. Blooms Mar-Jun.	**Low potential to occur.** Although there is potentially suitable habitat for this species within the Project area, there are no documented occurrences of this species within the 7.5-minute USGS El Nido quad.
Eryngium racemosum	Delta button-celery	None/Endangered, CRPR 1B.1	Annual or perennial herb. Found in riparian scrub habitat, usually vernally mesic clay depressions. Elevation 10–100 feet. Blooms Jun–Oct.	**Not expected to occur**. The Project area lacks suitable riparian scrub habitat for this species.
Eryngium spinosepalum	spiny-sepaled button-celery	None/None, CRPR 1B.2	Annual or perennial herb. Vernal pools in valley and foothill grasslands. Elevation 260–3,200 feet. Blooms Apr–Jun.	**Not expected to occur**. The Project area lacks suitable vernal pool habitat for this species.
Lasthenia chrysantha	alkali-sink goldfields	None/None, CRPR 1B.1	Annual herb. Vernal pools. Elevation 1-655 feet. Blooms Feb-Apr.	**Not expected to occur**. The Project area lacks suitable vernal pool habitat for this species.
Neostapfia colusana	Colusa grass	Threatened/Endangered, CRPR 1B.1	Annual herb. Associates with vernal pools. Elevation 0–700 feet. Blooms May-Aug.	**Not expected to occur**. The Project area lacks suitable vernal pool habitat for this species.
Puccinellia simplex	California alkali grass	None/None, CRPR 1B.2	Annual herb. Vernally mesic alkaline substrates (sinks, flats, and lake margins) associated with chenopod scrub, meadows and seeps, and valley and foothill grassland. Elevation 0–3,000 feet. Blooms Mar–May.	**Low potential to occur.** Although there is potentially suitable habitat for this species within the Project area, there are no documented occurrences of this species within the 7.5-minute USGS El Nido quad.

Status Legend:
CRPR 1A: Plants Presumed Extirpated in California and Either Rare or Extinct Elsewhere
CRPR 1B: Plants Rare, Threatened, or Endangered in California and Elsewhere
CRPR 2A: Plants Presumed Extirpated in California, But More Common Elsewhere

CRPR 2B: Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere
.1 Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
.2 Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
.3 Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

Source:

California Native Plant Society (CNPS). 2022. Inventory of Rare and Endangered Plants (online edition, v8-02). California Native Plant Society. Sacramento, CA. Accessed January 2022.

APPENDIX D

San Joaquin Kit Fox Early Evaluation

McCORMICK
BIOLOGICAL, INC.
Biological Sciences – Inventory, Permitting, and Planning

August 1, 2022

Ms. Susan Dewar
Auburn Group Manager
Kleinfelder
435 Lincoln Way
Auburn, CA 95603

RE: RPCA Solar 7, LLC East Cleveland Road Solar Project – SJKF Early Evaluation

Ms. Dewar:

The purpose of this letter is to present the results of a preliminary assessment of the potential for San Joaquin kit fox (*Vulpes macrotis mutica*, SJKF) on the proposed RPCA Solar 7, LLC East Cleveland Road Solar Project ("Project") in Merced County, California (Attachment 1). Merced County is within the portion of SJKF range considered as the "northern range", requiring implementation of *U.S. Fish and Wildlife Service San Joaquin Kit Fox Survey Protocol for the Northern Range* ("Survey Protocol") (USFWS 1999). The methods and results included in this report are intended to fulfill the "Early Evaluation Requirements" of the Survey Protocol.

The proposed Project consists of a small-scale utility solar generating and energy storage project located on approximately 18.5 acres of a 37.8-acre parcel of land in the city of El Nido. The Project is located off South Arbor Way (APN # 075-072-008). Renewable Properties, LLC has entered into a long-term lease agreement with the property owner (Amita Prasad) to facilitate the development of a small-scale, utility solar power generation facility (Attachments 2-4). For purposes of this evaluation, the entire 37.8-acre parcel is the survey area.

The Project will generate a total of 3.0 megawatts (MW) alternating current (AC) {4.5MW direct current (DC)} of clean, reliable solar energy when complete. The Project will interconnect to PG&E's pre-existing electrical distribution system located on site. The power generated from this facility will be sold to PG&E through a long-term Power Purchase Agreement (PPA). Additionally, the project will be equipped with energy storage technology that will allow on site renewable energy generation to be stored and dispatched onto the grid when needed.

The East Cleveland Road Solar Project will utilize approximately 8,316 solar modules and 24 string inverters to convert the sun's energy into usable, AC power. Single-axis tracking technology will be utilized to allow the modules to efficiently track the sun throughout the day and maximize the efficiency of solar collection. The modules will be mounted on a steel racking system, which will be anchored into the ground using driven steel piers. The overall height of the array will be no more than 8-feet tall.

SJKF is federal-listed as endangered and state-listed as threatened. The species resembles a small, lanky dog in appearance, with disproportionately large ears containing an abundance of large white, inner guard hairs. The

SJKF is the largest subspecies of kit fox, with adults weighing 4.6 to 5 pounds (2–2.3 kilograms). Total length is about 30 to 32 inches (76-81 centimeters), including a bushy, black-tipped tail up to 12 inches (30 centimeters) long, and total height is about 12 inches (30 centimeters) (Grinnell et al. 1937 as cited in USFWS 1998). Coloration ranges from light buff to grayish along the back and tail; gray, rust, or yellowish along the sides; and white on the belly.

SJKF occur in a variety of open grassland, oak savannah, and shrub vegetation types/habitats as well as oil-producing and urban areas in Kern County. Predation is an appreciable cause of SJKF mortality, with urban kit foxes yielding higher survival rates due to lack of competition with large carnivores such as coyotes (USFWS 2010). In the southern San Joaquin Valley portion of the range, SJKF are generally found in sparse, annual grassland and scrub communities (e.g., valley sink scrub, saltbush scrub) with low annual precipitation. Home ranges for the taxon have been reported by several authors to range from 1 to 12 square miles (1.6–19 square kilometers) with large overlap in home ranges among individuals, though dens are restricted to a single family.

They change dens on a regular basis, likely due to prey depletion; in one study, a single SJKF was tracked to 70 dens during a 2-year period (Native Fish and Wildlife 1967; USFWS 1998). Dens are used for temperature regulation, shelter, reproduction, and safety from potential predators, but characteristics such as number of entrances varies across the taxon's range. In the southern portion of its range the taxon often creates dens with two entrances, and natal dens generally have multiple entrances. Entrances are usually 8 to 10 inches (20–25 centimeters) in diameter and are normally greater in height than width, but kit foxes can utilize dens with entrances as small as 4 inches (10 centimeters) in diameter. In the northern portion of the range, SJKF are often more cryptic and difficult to detect. Dens in the northern portion of the species' range typically lack the characteristic ramp or runway seen in more southern portions of the range. SJKF do not typically excavate their own dens, but rather enlarge the burrows of other species, such as California ground squirrels (*Otospermophilus beecheyi*) and American badgers (*Taxidea taxus*) or utilize human-made structures such as culverts and pipes (Orloff et al. 1986; Hall 1934 as cited in USFWS 1998).

The diet of this taxon consists largely of nocturnal kangaroo rats and other small mammals, though they may also eat ground-nesting birds or insects (USFWS 2010). Similar to many desert species, SJKF do not need drinking water and obtain hydration from their diet. Breeding season is December-March with pups typically born between February and March. Adult breeding pairs remain monogamous within the same year, but pairs may change between years (Morrell 1972; USFWS 1998).

SJKF are primarily nocturnal but can be seen during the day when activities on the surface get their attention or when pups are present and play outside of the den in late afternoon. Potential site occupation is in the northern SJKF range requires implementation of the USFWS Survey Protocol specific to this area (USFWS 1999).

Methods

In preparation for the site visit, the *Species Status Assessment Report for the San Joaquin kit fox (Vulpes macrotis mutica)* (USFWS 2020) was reviewed and with SJKF sighting records within a 10-mile radius of the Project. In addition, Google Earth aerial photography (imagery dates: 9/25/2020 and 4/21/2021) was evaluated to determine the extent of potentially suitable SJKF habitat in the project vicinity and to estimate the distance to substantially sized parcels of potential habitat in the 10-mile radius. During the site visit, the proposed Project site and accessible buffer area on the parcel were walked using pedestrian belt transects by a qualified biologist. Transects were approximately 75-feet wide with the intent of achieving 100% visual coverage of the survey area.

Results and Discussion

All work conducted for this early evaluation was conducted by Principal Biologist Randi McCormick (Attachment 5). A review of the California Natural Diversity Database SJKF records in the vicinity of the proposed Project was conducted on June 10, 2022. The pedestrian survey was conducted on June 18, 2022.

Three SJKF records were identified within 10 miles of the proposed Project (Table 1, Attachment 6 and 7). All of these records within the 10-mile radius as reported to the CNDDB are from greater than 20 years ago. The proposed project is outside of the identified historical range of the SJKF per USFWS (2020). However, the site is between two areas identified as part of the species' range.

The survey area is nearly level and is surrounded on all but one side by intensive agricultural land uses. One parcel containing grassland was observed east of the northeast corner of the property. This parcel measures approximately 24 acres. The nearest natural lands of suitable size with the potential to support SJKF are located approximately 1 mile north-northeast of the survey area. The combined parcels are a little over 800 acres in size and are interspersed with canals and water impoundments. Additional potential habitat is present approximately 2.3 miles north of the survey area. Combined these parcels measure over 5,000 acres. Additional parcels within 10 miles of the survey area that contain potentially suitable habitat include grassland along the Eastside Bypass (4.7 miles southwest) and Merced National Wildlife Refuge (6.9 miles west). All of the historic CNDDB SJKF records are in the vicinity of the Merced National Wildlife Refuge.

The survey area is located on a rural residential property, with a residence, outbuildings, corrals, and miscellaneous vehicles stored in the northeast corner of the parcel. Light livestock grazing was noted in the northern pasture and approximately 80 sheep were grazing in the southern pasture. Both pastures contain vegetation typical of California annual grassland series (red brome grassland). The grazing pressure was fairly heavy, and virtually no standing grass remained in the southern pasture. The Photo Exhibit contains representative photographs of the survey area. In terms of cover, the vegetation in both pastures was suitable for SJKF occurrence. In addition, soils were suitably friable for burrowing species and would not preclude SJKF.

No sign of SJKF nor any dens (potential, known, or natal) were observed during the survey. No California ground squirrel activity was observed in the survey area, although this species was observed on the adjacent grassland to the northeast. Very little evidence of potential small mammal prey species was found. Botta's pocket gopher (*Thomomys bottae*) burrows were sparse in the survey area and were primarily observed along fencelines. A single desert cottontail (*Sylvilagus audubonii*) was observed in the survey area. Wildlife observed during the site visit are shown in Table 2.

Based on these results, SJKF are not suspected of currently occupying the site. Given the extremely limited sign of any typical prey species, foraging quality is considered marginal. Therefore, direct adverse effects to SJKF are not expected to result from developing this project site as a solar facility. When considering the surrounding land uses and distance to substantial potential habitat, there is a low likelihood that SJKF forage near or on the site. However, this portion of Merced County is identified as a linkage in the *Recovery Plan for Upland Species of the San Joaquin Valley* (USFWS 1998). After site development, management and maintenance that limits the intensity and frequency of ground disturbance could allow the site to attain a state that is as valuable to SJKF after development as the current state. Using a raised fence (approximately 4") with a "knuckled" bottom would allow any SJKF that forage in the vicinity to have access to the open areas under and between panels. Vegetation management should be addressed to maintain low vegetation height and low

thatch level to retain value for SJKF. If the site remains accessible after construction is complete and appropriate management action are implemented, there would be no cumulative impacts to SJKF.

Respectfully,

Randi McCormick
Principal Biologist

Attachments

References

Morrell, S. (1972). Life history of the San Joaquin kit fox. California Fish and Game, 58(3), 162–174. Native fish and wildlife 1967

Orloff, S., F. Hall, and L. Spiegel (1986). Distribution and Habitat Requirements of the San Joaquin Kit Fox in the Northern Extreme of their Range. Transactions Western Section The Wildlife Society: 22: 60-70.

United States Fish and Wildlife Service (USFWS). (2020). Species Status Assessment Report for the San Joaquin kit fox (*Vulpes macrotis mutica*). Version 1.0 (August). 77 pp.

USFWS (2010). San Joaquin kit fox (*Vulpes macrotis mutica*) 5-year review: Summary and evaluation. Sacramento, CA: Author. 123 pp.

USFWS (1999). U.S. Fish and Wildlife Service San Joaquin Kit Fox Survey Protocol for the Northern Range. Sacramento, CA: Author. 12 pp.

USFWS. (1998). Recovery plan for upland species of the San Joaquin Valley, California. Portland, OR: Author. Retrieved from http://ecos.fws.gov/docs/recovery_plan/980930a.pdf

Tables

Table 1. SJKF Records within 10 miles of the East Cleveland Road Solar Project

Occurrence No.	Date Observed	Distance and Direction	Notes
47	3/23/2000	7.23 mi NNW	1 individual observed on the Alva Ranch holdings (southeast of and adjacent to the Lone Tree Road addition) in an alfalfa field
195	8/23-25/1999	7.92 mi NNW	One adult seen 8/23/1999, 2 adults seen 8/24/1999, 3 adults seen 8/25/1999 during spotlight surveys conducted 8/23-8/25/1999
602	8/2, 8/14, and 11/6/1986	8.35 mi NNW	1 individual observed 2 August, 2 individuals observed 14 August, and 3 individuals observed on 6 November 1986.

Table 2. Wildlife Observed During the East Cleveland Road Solar SJKF Site Visit

Scientific Name	Common Name
Birds	
Ardea alba	Great egret
Buteo jamaicensis	Red-tailed hawk
Charadrius vociferus	Killdeer
Corvus brachyrhynchos	American crow
Mimus polyglottos	Northern mockingbird
Passer domesticus	House sparrow
Sayornis nigricans	Black phoebe
Tyrannus verticalis	Western kingbird
Zenaida macroura	Mourning dove
Mammals	
Sylvilagus audubonii	Desert cottontail
Otospermophilus beecheyi	California ground squirrel (off site)

Figures and Photographs

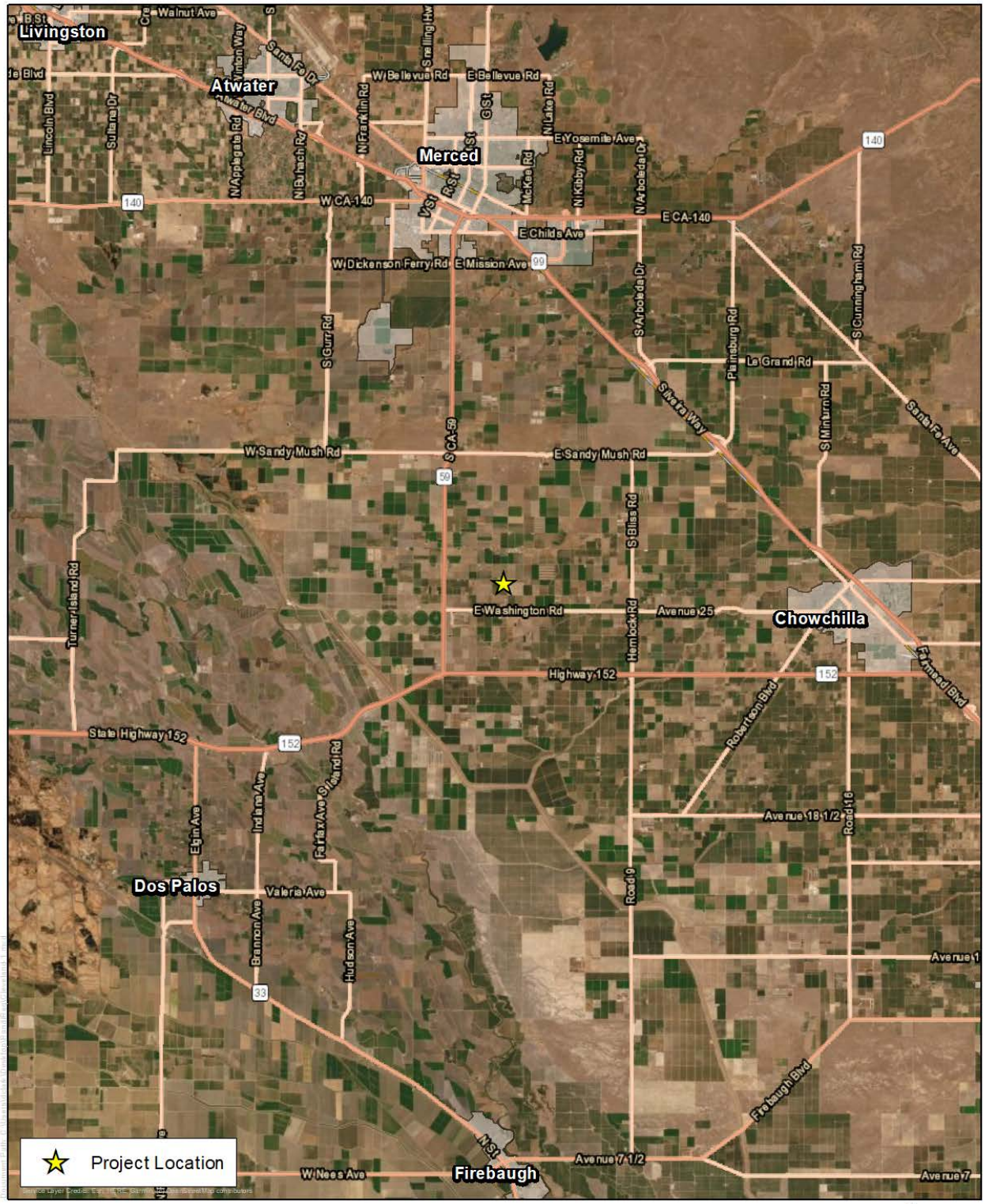

Figure 1: General Vicinity

East Cleveland Road Solar

McCORMICK BIOLOGICAL INC

N

0 Kilometers 5

0 Miles 3

Figure 2: Survey Area (Aerial)

East Cleveland Road Solar

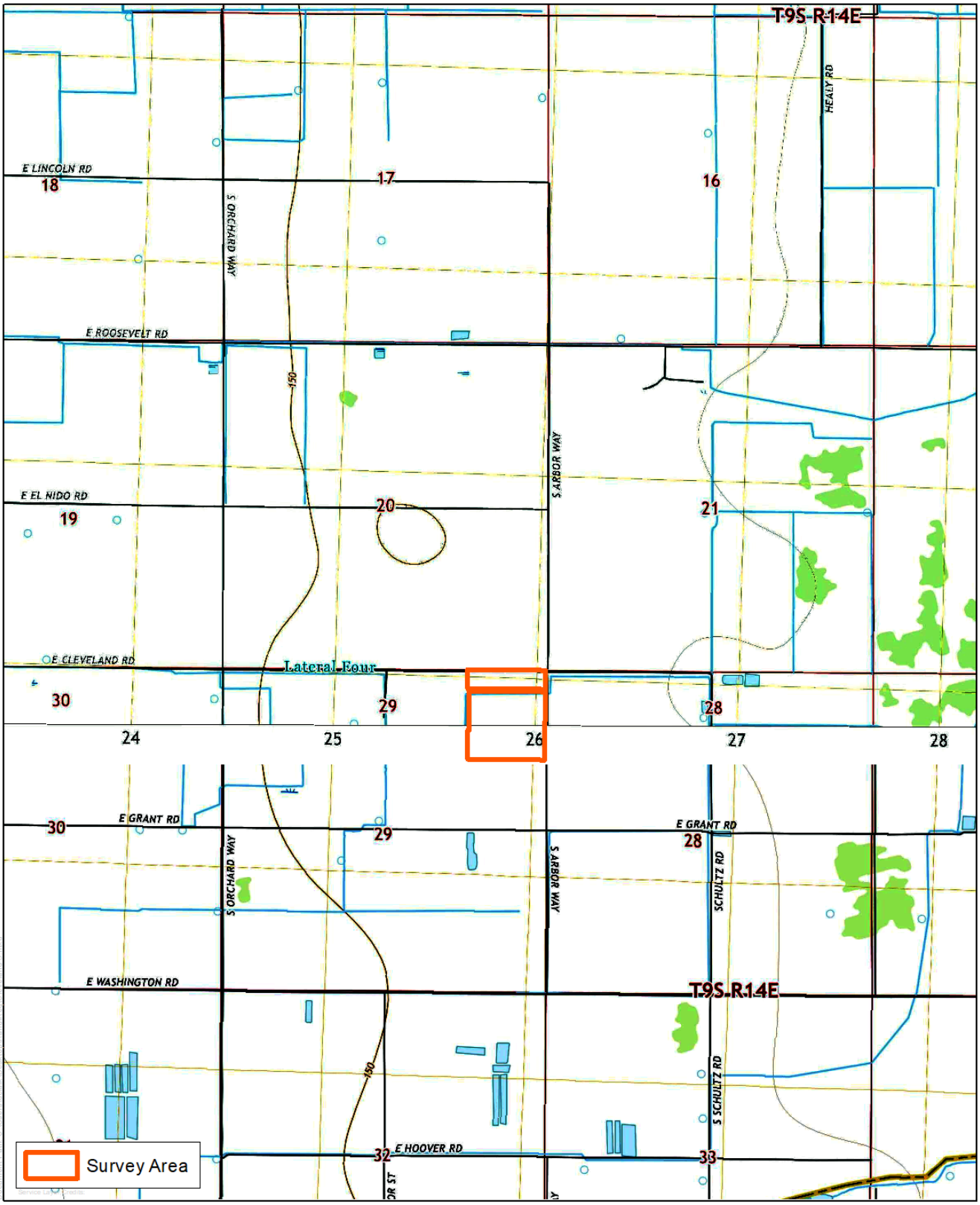

Figure 3: Survey Area
(USGS 7.5 min Topo - Bliss Ranch,CA & El Nido,CA)

East Cleveland Road Solar

N

0 Meters 500

0 Feet 1,600

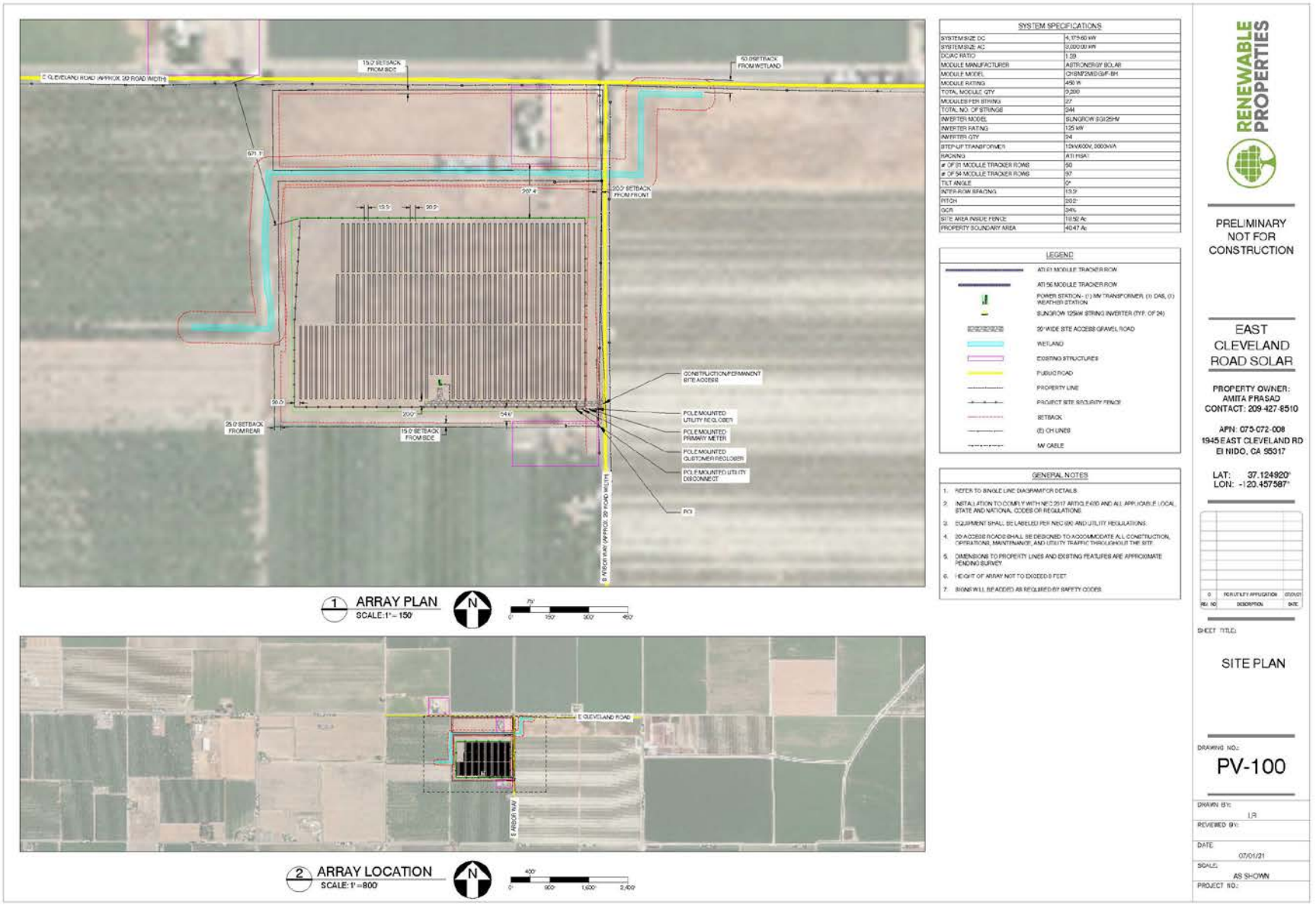

Figure 4: East Cleveland Road Solar Project Layout

Figure 5: Resume – Randi McCormick

Randi McCormick – McCormick Biological, Inc.

Education

B.S. Biology, California State University – Bakersfield, Bakersfield, CA, 1990

Civil Engineering/Geology, Texas A&M University – College Station, College Station, TX, 1980 – 1985 (no degree)

Trainings/Workshops

Bumble Bee Field Course (Rich Hatfield, Leif Richardson), Hastings Natural History Reservation, CA, 2022
This was a joint workshop presented by the Xerces Society and The Western Section of the Wildlife Society. Attendees were provided with a field-based introduction to the ecology and conservation of bumble bees. The workshop included field and laboratory techniques to identify the bumble bees of California, with a focus on the rare species petitioned for listing under the California Endangered Species Act (CESA). The workshop also featured Dr. Hillary Sardiñas and Dylan Winkler of California Department of Fish & Wildlife (CDFW), who explained the CDFW permitting process for bumble bees and other invertebrates. Field locations included the Hastings Reserve and Fort Ord natural areas.

Yellow-billed Cuckoo Survey Workshop and Training Session (Mary Whitfield), 2021
Sponsored by the Southern Sierra Research Station, this workshop was conducted during the spring breeding/nesting season in the South Fork Valley of the Kern River, Kern County, California. Topics included ecology of the species, field techniques, visual and aural identification methods, survey protocol, and field training. During the workshop, Ms. McCormick observed one yellow-billed cuckoo and heard calls during one of the field sessions.

Introduction to Tracking & Advanced Tracking Workshop, Earth Skills (Jim Lowery), Carrizo Plain, CA, 2018
Attendees learned differences between track, gaits and track patterns; interpretation of motion in tracks; survey methods; and track aging. San Joaquin kit fox tracking was emphasized during the workshop. Advanced tracking covered differences between track (San Joaquin kit fox vs. gray fox vs. red fox vs. domestic dog vs. coyote; cougar vs. domestic dog; bobcat vs. feral cat; rodent genera & fine points; feral pig vs. deer); differences between gaits and track patterns; interpretation of motion in tracks; survey methods; and track aging.

Buena Vista Lake Ornate Shrew Orientation (High Speed Rail), Hanford CA, 2017
Class was presented by Dr. Brian Cypher and covered basic habitat requirements, recent detection locations and habitat characteristics, and a comparison of detection techniques. The comparison of detection techniques included a review of historic efforts and recent best practices established by the Endangered Species Recovery Program (ESRP) at California State University – Stanislaus.

Level II California Red-legged Frog Field Workshop 2016 – 2017
This workshop consisted of five meeting dates over the course of a 13-month period timed to coincide with California red-legged frog life history stages, breeding/egg-laying, larval, post-metamorphic, and adult. Ms. McCormick attended 4 of the 5 sessions offered through October 2017. Instructors were Jeff Alvarez and Jeff Wilcox.

Natural Communities Conference, Bakersfield, CA (2015 – 2019; 2022)
An annual, 1-day conference hosted by the San Joaquin Chapter of The Wildlife Society. Presentations include the latest research and management of species within the San Joaquin Valley and surrounding areas.

Blunt-nosed Leopard Lizard Workshop, Bakersfield, CA, 2007, 2009, 2013, 2016, 2018, and 2022
Ms. McCormick served as an instructor for this workshop sponsored by the San Joaquin Valley Chapter of The Wildlife Society.

Western Section Annual Conference, 1989 – 2002, 2004 – 2008, 2010 – 2011, 2014 – 2022
An industry conference that attracts wildlife professionals, managers, students and academics who study and manage wildlife species. Attendees participate in poster sessions, roundtable discussions, and technical sessions, keeping individuals informed on current events in the world of wildlife biology.

Sensitive Small Mammal Species of the San Joaquin Valley, Bakersfield, CA, September 2010
Ms. McCormick served as an instructor for this workshop sponsored by the San Joaquin Valley Chapter of The Wildlife Society.

Raptor Symposium, Bakersfield, CA, February 2011
2-day workshop presenting recent research on raptor biology in California, including threats and status. A primary focus of the workshop focused on wind energy and gold eagle conservation planning.

Endangered Species Permitting: Strategies and Successful Negotiations, Chapman University, 2006
A comprehensive workshop sponsored by the Western Section of The Wildlife Society reviewing the Federal Endangered Species Act (FESA) history, amendments, sections, and enforcement. Taught within a relatively small group setting (approximately 50) with small group discussions and opportunities for questions and answer. Negotiation strategies using case studies were presented by practitioners within the law and consulting.

The Future of California Floristics and Systematics, Berkeley, CA, 1994
A Symposium given by the Friends of the Jepson Herbarium presenting recent research and updated methodologies for botany in California.

Relevant Certifications/Permit Authorizations

- California Department of Fish and Wildlife (CDFW) Scientific Collecting Permit (SCP) Number (No.) SC-009231, McCormick Biological, Inc. (MBI), *Independent field investigator, California red-legged frog; non-special-status species; Field Assistant, short-nosed kangaroo rat* (SNKR), 2015-present
- CDFW SCP No. SC-002411, Larry Saslaw, Principal Investigator; List Authorized Individuals, *Field Assistant: San Joaquin antelope squirrel (Ammospermophilus nelsoni)*
- Federal Fish and Wildlife Permit No. TE-59559C-1: List of Authorized Individuals to independently conduct activities: California red-legged frog (*Rana aurora draytonii*); Exp. 3/18/2023
- PG&E Panoche 30995749 G HPR Rebuild; CESA ITP No. 2081-2019-020-04; DB –San Joaquin antelope squirrel (*Ammospermophilus nelsoni*, SJAS), giant kangaroo rat (*Dipodomys ingens*, GKR); San Joaquin kit fox (*Vulpes macrotis mutica*, SJKF); 2022
- PG&E Investigative Dig 78/Spans 24 and 27, L-300 (Kleinfelder); CESA ITP No. 2081-2019-020-04; DB –SJAS, GKR; SJKF; 2021-2022

- Southern California Gas Company Line 85 Milepost 75.75/75.94 Pipe Recoat Project; CESA ITP No. 2081-2020-043-04; DB – SJAS, Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*, TKR)
- Metropolitan Bakersfield Habitat Conservation Plan (MBHCP) California Endangered Species Act (CESA) Incidental Take Permit (ITP) No. 2081-2013-058-04; Designated Biologist (DB) - SJKF, 2014-present
- Cymric Surface Expression Emergency Cleanup CESA ITP No. 2081-2019-034-04; DB SJKF, GKR, and SJAS
- California High Speed Rail Fresno to Bakersfield:
    - CESA ITP No. 2081-2015-024-04; Project Biologist approved for all species, 2017-present
    - Federal Endangered Species Act (FESA) Biological Opinion (BO) File No. 08ESMF00-2021-F-0247 – Approved Biologist: SJKF, blunt-nosed leopard lizard (*Gambelia sila*; BNLL), TKR, 2017-present
- Berry Petroleum Company; CESA ITP No. 2081-2011-037-04; DB – SJKF, SJAS, GKR, 2013-present
- CED Lost Hills Solar; CESA ITP No. 2081-2015-054-04; DB – SJKF, SJAS, 2018
- Panoche Valley Solar Project; CESA ITP No. 2081-2014-035-04 (FESA BO File No. 2009-00443S); – SJAS, SJKF, GKR, 2015-2018
- Topaz Solar Project; CESA ITP No. 2081-2011-041-04 (FESA BO File No. 81420-2011-F-0625); DB – SJKF, 2013
- Cymric Well 1913N Well Blowout Remediation; CESA ITP No. 2081-2008-011-04; DB – SJKF, SJAS, 2008
- CDFW–Plant Voucher Collecting Permit No. 2081(a)-12-84-V

Selected San Joaquin Kit Fox Experience

Project:	Metropolitan Bakersfield area SJKF known den monitoring and excavations
Project Description:	Habitat Conservation Plan and CESA ITP (2014) covering SJKF, SJAS, TKR, and Bakersfield cactus that applies to urban development projects within the City of Bakersfield and limited surrounding areas of Kern County.
Location:	Bakersfield, CA
Duration:	1987 – Present
Permit #:	CESA ITP No. 2081-2013-058-04; Metropolitan Bakersfield Habitat Conservation Plan (HCP)
Lead Biologist:	Randi McCormick, 661.589.4065, rmccormick@mcbioinc.com
Reference:	Erika Noel, 661.589.4065
Work Description:	Beginning with the interim MBHCP SJKF protective measures (circa 1987), Ms. McCormick has monitored and excavated at least 100 known SJKF dens in the Metropolitan Bakersfield area under the MBHCP and subsequent ITP. Although dates are not available and property owners have changed, Ms. McCormick was responsible for monitoring and excavation of known kit fox dens while employed by Quad Consultants (1987 – 1990), The Planning Center (1990 – 1994), and as an independent consultant (1994 – 2001), as well as overseeing the MBHCP compliance activities at MBI (2001 – Present). Several of the dens were excavated following active discouragement of SJKF

use with agency coordination. All excavations were undertaken with United States Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW, formerly California Department of Fish and Game) coordination through the MBHCP Interim Agreement or subsequent MBHCP implementation. She has greater than **400 hours** of survey experience and at least **20 hours** of spotlighting experience on MBHCP projects. She has recorded at least 25 SJKF direct observations during MBHCP projects. Project examples:

- Athlete's Advantage Academy Physical Fitness Facility (2016) – 2 natal den complexes were located within 500 feet of a proposed commercial development project site. Due to SJKF activity within the project work area, MBI coordinated with the CDFW to request a buffer reduction to allow storage of building materials within the project footprint.

  Estimated Survey Hours: 1
  Dens Observed: 2 natal

- Legacy Homes Westwind Tract 6336 (2015-2016) – Ms. McCormick supervised biologists conducting mechanically assisted excavation of one previously occupied natal den after permission was received from USFWS and the CDFW. SJKF returned to the parcel and dug new dens in nearby locations after the initial excavation. During a portion of the den monitoring, Ms. McCormick and others on the monitoring team donned night-vision goggles to monitor SJKF activity within the residential tract that was under construction. During this portion of the monitoring, Ms. McCormick observed 2 individual SJKF that were foraging in the vicinity of the tract. Dens on this tract were monitored multiple times over a 2-year period and excavated following agency-accepted methods until SJKF discontinued use of the site.

  Estimated Survey Hours: 20
  Estimated Monitoring Hours: 20
  Individuals Observed: SJKF
  Dens Observed: 3 known; 2 natal/pupping

- Southwest of the intersection of Ming Avenue and Gosford Road (about 1990) – Ms. McCormick supervised the mechanically assisted excavation of three occupied den complexes at night with permission from the USFWS and the CDFW while SJKF were out foraging. SJKF returned to the den site and dug new dens in the same location after the initial excavation. Some of the hours on this project are included in the spotlighting hours estimated above. These dens were monitored over multiple periods and excavated following agency-accepted methods until SJKF discontinued use of the site.

  Estimated Survey Hours: 4
  Estimated Monitoring Hours: 20
  Individuals Observed: SJKF
  Dens Observed: 3 known

- Southwest of the intersection of Camino Media and Scarlet Oak Boulevard (about 1990) – occupied den excavated at night after SJKF left to forage, similar to project above.

  Estimated Survey Hours: 1
  Estimated Monitoring Hours: 10
  Individuals Observed: SJKF
  Dens Observed: 1 known

- Near McInnes Boulevard and St. Gobain Street (about 1991) – several occupied dens were discovered; during excavation process, one SJKF was captured and relocated by USFWS- and CDFG-authorized personnel.

  Estimated Survey Hours: 2
  Estimated Monitoring Hours: 40
  Individuals Observed: SJKF
  Dens Observed: 5 known (estimated)

- West of the intersection of Parkview and Mill Oak Run (about 1989) – occupied den excavated after following accepted methods to discourage use.

  Estimated Survey Hours: 1
  Estimated Monitoring Hours: 8
  Individuals Observed: SJKF
  Dens Observed: 1 known

- South of Ming Avenue between Old River Road and Buena Vista Road (about 1989) – Pipe entrances were monitored via spotlighting then subsequently monitored during removal of several thousand feet of previously occupied irrigation pipe.

  Estimated Survey Hours 20
  Estimated Monitoring Hours: 40+ (Including spotlighting)
  Individuals Observed: SJKF
  Dens Observed: Several thousand feet of previously occupied irrigation pipe was removed; at least 4 entrances where SJKF use was verified within the pipe system. One of the dens was an unoccupied pupping den.

- Seven Oaks Tract and Golf Course Development (about 1988) – Known dens were monitored and excavated with the aid of a backhoe over the course of several weeks.

  Estimated Survey Hours: 40+
  Estimated Monitoring Hours: 40+
  Individuals Observed: SJKF
  Dens Observed: 5 – 10 (estimate)

Project:	**Wind Wolves Preserve SJKF Tasks**
Project Description:	Assisting Wind Wolves Preserve by monitoring SJKF habitat use and enhancement projects
Location:	Wind Wolves Preserve in annual grassland located on southern end of the San Joaquin Valley.
Duration:	May 2019; January and July 2020; August 2021; July 2022
Permit #:	N/A
Lead Biologist:	Randi McCormick, 661.589.4065, rmccormick@mcbioinc.com
Reference:	Ashleigh Pryor, 661.589.4065, apryor@mcbioinc.com
Work Description:	Ms. McCormick trains biologists in nighttime spotlighting techniques. The training includes instruction regarding the methods and expectations for spotlight surveying with species review. Ms. McCormick teaches both spotlighting and identification of wildlife using binoculars. She verified all sightings and identifications. Other wildlife identified during spotlighting included burrowing owl (*Athene cunicularia*), black-tailed jackrabbit, barn owl, desert cottontail, and coyote. In January 2020, Ms. McCormick led a crew of biologists during installation of artificial dens on the preserve. The project was being conducted under a federal grant for habitat enhancement at the Preserve. She instructed staff on den site selection and use of hand tools to excavate and install 3 multiple entrance artificial dens.
Estimated Spotlighting Hours:	10
Den Installation Hours	7
Individuals Observed:	13 adult observations (during spotlighting)

Project:	**Althouse and Meade/ESRP, Topaz Solar Farm**
Project Description:	Construction of a solar power generating facility
Location:	San Luis Obispo County, CA
Duration:	2013 – 2014
Permit #:	CESA ITP No. 2081-2011-041-04; FESA BO File No. 81420-2011-F-0625
Lead Biologist:	Brian Cypher, 559.906.7807, bcypher@esrp.csustan.edu Daniel Meade, 805.237.9626
Work Description:	Ms. McCormick was part of a team of CDFW-approved DBs conducting all kit fox mitigation and avoidance measures during project construction. Her duties included overseeing pre-construction surveys, project site inspections; and implementation of the ITP, the BO, and the San Luis Obispo County Mitigation Monitoring Plan. In addition, she conducted radio telemetry monitoring of previously collared SJKF both on the project site and in adjacent conservation lands.
Estimated Survey Hours:	40+
Estimated Monitoring Hours:	200 (approximately 40 hours of telemetry)
Individuals Observed:	20+
Dens Observed:	10+ known; 2 natal

Project:	**EMC Planning Group Monterey County SJKF Study**
Project Description:	Monterey County General Plan Implementation
Location:	Southern and eastern Monterey County, CA
Duration:	July 2013 – September 2013

Permit #:	N/A
Lead Biologist:	Randi McCormick, 661.589.4065, rmccormick@mcbioinc.com
Work Description:	Ms. McCormick led this survey effort that included spotlighting and deploying scent and remote-sensing camera stations targeting SJKF. She was responsible for evaluating habitat within the portions of Monterey County that were publicly accessible and identifying areas that were potentially occupied by SJKF. She selected spotlighting routes, led spotlighting efforts, selected and deployed remote sensing cameras, produced maps, interpreted photos, and produced the working draft of the technical report.
Estimated Survey Hours:	30 (includes camera site selection and deployment, spotlighting route evaluation)
Estimated Spotlighting Hours	18 hours
Observations:	1 SJKF was detected via camera; Other predator detections: gray fox (road-kill); coyote (spotlighting and camera station); American badger (spotlighting and camera); bobcat (
Project:	**Kern County Waste Management Bena Sanitary Landfill**
Project Description:	Baseline surveys during landfill environmental permitting phase prior to construction
Location:	East of Bakersfield in Kern County, CA
Duration:	1989-1990
Permit #:	N/A
Lead Biologist:	Ty Stillman (retired)
Reference:	N/A
Work Description:	Ms. McCormick was on a team of biologists that conducted den surveys, scent stations, trapping (SJKF and nocturnal small mammal), plant surveys, and spotlighting on the approximately 2,800-acre proposed landfill site. Trapping was conducted by CDFG personnel (Bill Asserson) with Ms. McCormick accompanying during trap checks.
Estimated Survey Hours:	100+
Estimated Spotlighting Hours:	20

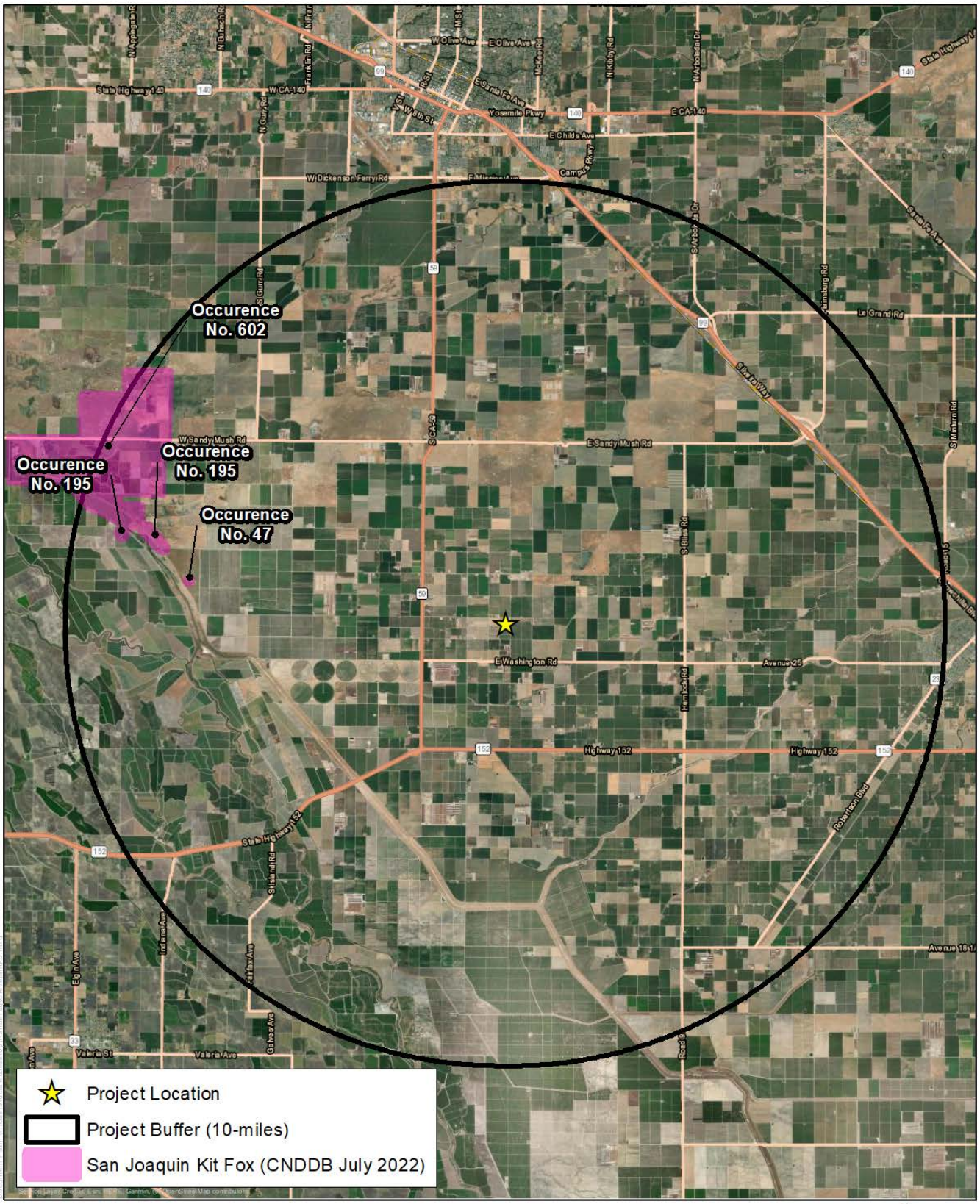

Figure 6: San Joaquin Kit Fox Records

East Cleveland Road Solar

N

Kilometers 0 4

Miles 0 2

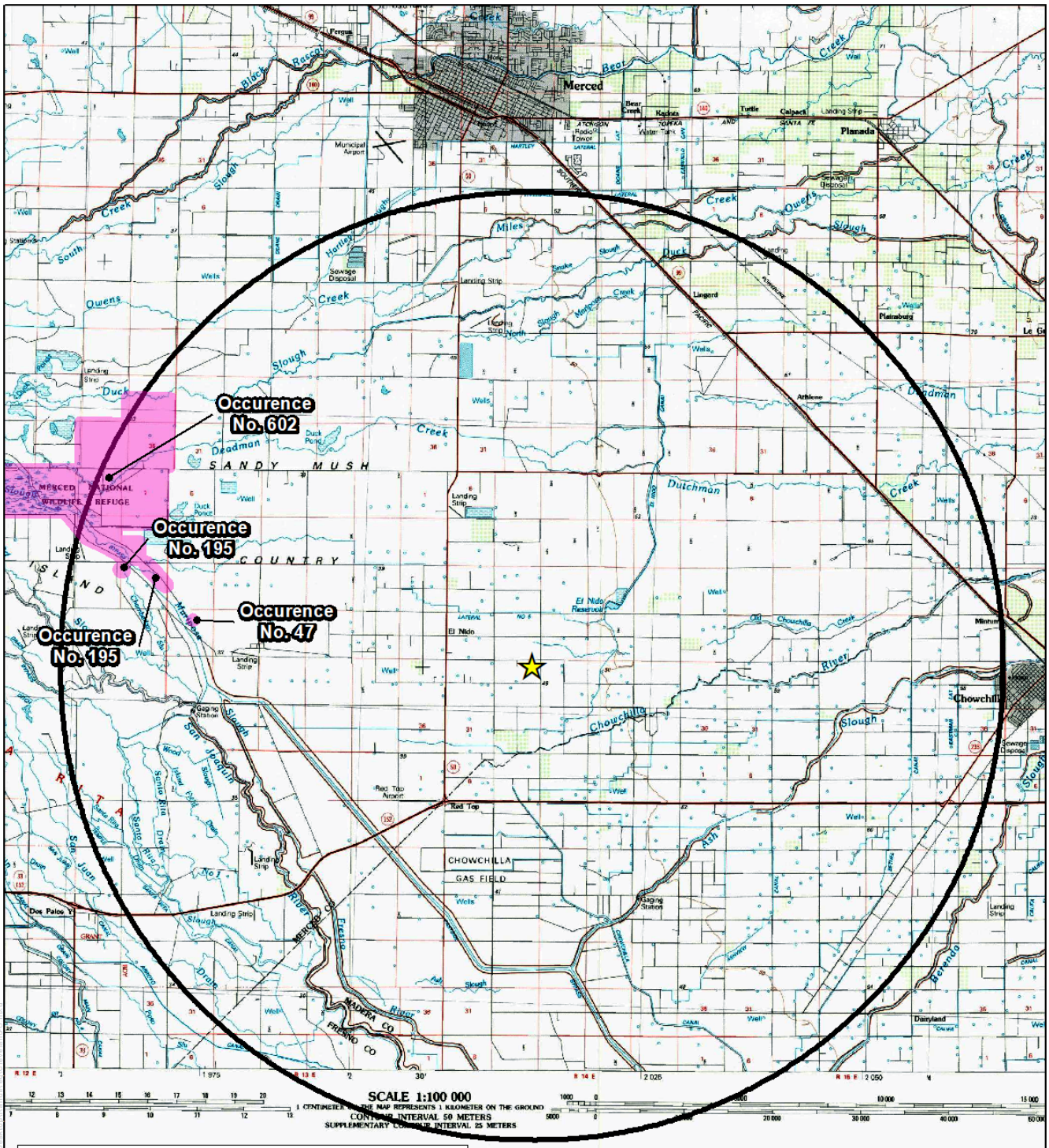

Figure 7: San Joaquin Kit Fox Records (USGS 100k Topo - Merced)

East Cleveland Road Solar

N

Kilometers 0 4

Miles 0 2

Photo Exhibit: East Cleveland Road Survey Area – Representative Photographs

Photo 1. Southern Parcel - view north from southeast corner

Photo 2. Southern Parcel – view northwest from southeast corner

Photo Exhibit: East Cleveland Road Survey Area – Representative Photographs

Photo 3. Southern Parcel - view east from northwest corner

Photo 4. Southern Parcel – view southeast from northwestern corner

Photo Exhibit: East Cleveland Road Survey Area – Representative Photographs

Photo 5. Northern Parcel – view southwest from northeast corner (west of residence)

Photo 6. Northern Parcel – view southeast from northwest corner

APPENDIX E

Geotechnical Evaluation

GEOTECHNICAL • ENVIRONMENTAL • GEOLOGY • MATERIALS TESTING & INSPECTION • FORENSIC • LABORATORY

SALEM
engineering group, inc.

GEOTECHNICAL ENGINEERING INVESTIGATION

PROPOSED GROUND MOUNT SOLAR ARRAY
EAST CLEVELAND ROAD AND SOUTH ARBOR WAY (37.1249, -120.4576)
MERCED, CALIFORNIA

SALEM PROJECT NO. 1-222-0227
MAY 2, 2022

PREPARED FOR:

MS. ERIN TAKATA
RENEWABLE PROPERTIES
879 SANCHEZ STREET
SAN FRANCISCO, CALIFORNIA 94114

PREPARED BY:

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May 2, 2022 Project No. 1-222-0227

Ms. Erin Takata
Renewable Properties
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Fresno, California 93730

Subject: GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED GROUND MOUNT SOLAR ARRAY
EAST CLEVELAND ROAD AND SOUTH ARBOR WAY (37.1249, -120.4576)
MERCED, CALIFORNIA

Dear Ms. Takata:

At your request and authorization, SALEM Engineering Group, Inc. (SALEM) has prepared this geotechnical engineering investigation report for the proposed ground mount solar array planned near South Arbor Way at coordinates 37.1249, -120.4576 in Merced, California. The project will consist of the installation of a fixed PV solar array.

The accompanying report presents our findings, conclusions, and recommendations regarding the geotechnical aspects of designing and constructing the project as presently proposed. In our opinion, the proposed project is feasible from a geotechnical viewpoint provided our recommendations are incorporated into the design and construction of the project.

We appreciate the opportunity to assist you with this project. Should you have questions regarding this report or need additional information, please contact the undersigned at (559) 271-9700.

Respectfully Submitted,

SALEM ENGINEERING GROUP, INC.

Joshua R. Marroquin, EIT
Geotechnical Staff Engineer

Dean B. Ledgerwood II, EIT, PG, CEG
Geotechnical Manager
PG 8725 / CEG 2613

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GEOTECHNICAL ENGINEERING INVESTIGATION
PROPOSED GROUND MOUNT SOLAR ARRAY
EAST CLEVELAND ROAD AND SOUTH ARBOR WAY (37.1249, -120.4576)
MERCED, CALIFORNIA

1. PURPOSE AND SCOPE

This report presents the results of our geotechnical engineering investigation for the proposed ground mount solar array to be located near South Arbor Way at coordinates 37.1249, -120.4576 in Merced, California as depicted on Figure 1, Vicinity Map.

The purpose of our geotechnical engineering investigation was to observe and sample the subsurface conditions encountered at the site, and provide conclusions and recommendations relative to the geotechnical aspects of constructing the project as presently proposed.

The scope of this investigation included a field exploration, laboratory testing, engineering analysis and the preparation of this report. The recommendations presented herein are based on analysis of the data obtained during the investigation and our experience with similar soil and geologic conditions.

If project details vary significantly from those described herein, SALEM should be contacted to determine the necessity for review and possible revision of this report. Earthwork and Pavement Specifications are presented in Appendix C. If text of the report conflict with the specifications in Appendix C, the recommendations in the text of the report have precedence.

2. PROJECT DESCRIPTION

We understand that the project includes the installation of a new ground mount solar array in a vacant field located near South Arbor Way and East Cleveland Road intersection in Merced, California. The proposed solar improvements will include a ground mount solar array, planned in an area of about 20.2 acres. The proposed ground mount solar array is anticipated to be supported on small diameter driven piles with transformers to be supported on concrete equipment pads.

Structural load information and other final details pertaining to the structures are unavailable. Foundation dead loads (DL) are light to moderate. Governing loads in foundation design for the solar panels would be lateral loads and uplift loads. A maximum deflection of 1 inch at ground level should be considered in pile design.

A site grading plan was not available at the time of preparation of this report. It is anticipated that minimal cuts and/or fills may be required for the project. In the event that changes occur in the nature or design of the project, the conclusions and recommendations contained in this report will not be considered valid unless the changes are reviewed and the conclusions of our report are modified.

The site configuration and locations of proposed improvements are shown on the Site Plan, Figure 2.

3. SITE LOCATION AND DESCRIPTION

The project site is located approximately 170 yards south of the intersection of South Arbor Way and Eeast Cleveland Road at coordinates 37.1249, -120.4576, in the unincorporated area of Merced in Merced County, California. The site is bounded to the north, south, west and east by agricultural land.

The area designated for the solar array is rectangular in shape and will cover an area of approximately 20.2 acres. At the time of field reconnaissance, the area of the proposed solar array appeared to previously support livestock grazing. The overall vicinity is primarily surrounded by agricultural land including fallow fields, orchards, and dirt access roads.

The site has an elevation of approximately 148 feet above mean sea level (AMSL) based on Google Earth Imagery and is located at latitude 37.1249 and longitude -120.4576.

4. FIELD EXPLORATION

4.1. Drilling Test Borings

Our field exploration included site surface reconnaissance and subsurface exploration. The exploratory test borings (B-1 through B-14) were drilled on April 1 & 4, 2022 within or near the proposed solar array area to depths ranging from about 20 feet to the maximum depth explored of about 26.5 feet BSG. The approximate locations of the test borings are shown on Figure No. 2, Site Plan. The test borings were advanced with 6 5/8-inch hollow-stem auger rotated by a truck-mounted CME-45C drill rig.

The materials encountered in the test borings were visually classified in the field, and logs were recorded by a field engineer at that time. Visual classification of the materials encountered in the test borings was generally made in accordance with the Unified Soil Classification System (ASTM D2487).

A soil classification chart and key to sampling is presented on the Unified Soil Classification Chart, in Appendix A. The test boring logs are presented in Appendix A. Subsurface soil samples were obtained by driving a Modified California sampler (MCS) or a Standard Penetration Test (SPT) sampler.

Penetration resistance blow counts were obtained by dropping a 140-pound automated trip hammer through a 30-inch free fall to drive the sampler to a maximum penetration of 18 inches. The number of blows required to drive the last 12 inches, or less if very dense or hard, is recorded as Penetration Resistance (blows/foot) on the logs of borings.

Soil samples were obtained from the test borings at the depths shown on the test boring logs. The MCS samples were recovered and capped at both ends to preserve the samples at their natural moisture content; SPT samples were recovered and placed in a sealed bag to preserve their natural moisture content. At the completion of drilling and sampling, the test borings were backfilled with drill cuttings, thus some settlement should be anticipated.

4.2. Field Resistivity Testing

Field electrical resistivity was performed on April 1, 2022, following 2 consecutive days of dry weather within the limits of the project area. The field electrical resistivity was conducted using the 4-Point Wenner Array method. The probe spacing was performed at A-spacing distances of 2, 5, 10, 20, 30, and 50 feet as specified by the client, with two (2) perpendicular lines in general orientations of the N-S and E-W cardinal

directions. It should be noted that some of the planned A-spacings were out of range of the capability of the reading device.

The measurements collected along the orthogonal soundings at each location are generally consistent, which suggests the presence of homogeneous conditions in the vicinity of the testing areas. In most cases, variations between orthogonal soundings occurred in the near surface readings, likely related to previous site activities. The locations of the resistivity lines are depicted on Figure No. 2 at the end of this report. The results of the field resistivity testing are included at the end of this report

5. LABORATORY TESTING

Laboratory tests were performed on selected soil samples to evaluate their physical characteristics and engineering properties. The laboratory-testing program was formulated with emphasis on the evaluation of natural moisture, shear strength, consolidation, optimum moisture/density, expansion index, Atterberg Limits, thermal resistivity, and gradation of the materials encountered.

In addition, chemical tests were performed to evaluate the corrosivity of the soils to buried concrete and metal; including soluble sulfate, chloride, pH, and soil resistivity. Details of the laboratory test program and the results of laboratory test are summarized in Appendix B. This information, along with the field observations, were used to prepare the final boring logs in Appendix A.

6. SOIL AND GROUNDWATER CONDITIONS

6.1 Subsurface Conditions

The subsurface conditions encountered appear typical of those found in the geologic region of the site. In general, the near surface soils encountered predominantly consisted of silty sands underlain by interbedded layers of clayey sand, well graded sand with silt, silty clay, silt, lean clay, and silty clayey sand, to the maximum depth explored of 26½ feet below site grade.

Two (2) consolidation tests performed on near surface samples, resulted in about 3¾ and 4¼ percent consolidation under a load of 8 kips per square foot. When wetted under a load of 2 kips per square foot, these samples exhibited less than 1 percent collapse. Two (2) direct shear tests were performed and resulted in internal angles of friction of 39 and 39 with cohesion values of 207 and 227 pounds per square foot, respectively. Three (3) Atterberg limits test resulted in plasticity indexes of 6, 3, and 9, with liquid limit values of 26, 21, and 31, respectively. An expansion index test performed on a near surface sample resulted in non-expansive soils (EI = 0).

Soil conditions described in the previous paragraphs are generalized. Therefore, the reader should consult exploratory boring logs included in Appendix A for soil type, color, moisture, consistency, and USCS classification of the materials encountered at specific locations and elevations.

6.2 Groundwater

The boring locations were checked for the presence of groundwater during and after the drilling operations. Free groundwater was not encountered in the borings drilled as part of this investigation.

Based on review of available records from the Department of Water Resources Water Well Data Library website (http://www.water.ca.gov/) State Well Number: 09S14E20Q001M located approximately 280 yards

northwest of the project site, reported a historical high groundwater depth of approximately 55 feet below site grade in March 1959.

It should be recognized that water table elevations may fluctuate with time, being dependent upon seasonal precipitation, irrigation, land use, localized pumping, and climatic conditions as well as other factors. Therefore, water level observations at the time of the field investigation may vary from those encountered during the construction phase of the project. The evaluation of such factors is beyond the scope of this report.

6.3 Soil Corrosion Screening

Excessive sulfate in either the soil or native water may result in an adverse reaction between the cement in concrete and the soil. The 2019 Edition of ACI 318 (ACI 318) has established criteria for evaluation of sulfate and chloride levels and how they relate to cement reactivity with soil and/or water. A soil sample was obtained from the project site and was tested for the evaluation of the potential for concrete deterioration or steel corrosion due to attack by soil-borne soluble salts and soluble chloride. The water-soluble sulfate concentration in the saturation extract from the soil samples was detected to be less than 50 mg/kg.

ACI 318 Tables 19.3.1.1 and 19.3.2.1 outline exposure categories, classes, and concrete requirements by exposure class. ACI 318 requirements for site concrete based upon soluble sulfate are summarized in Table 6.3 below.

TABLE 6.3
WATER SOLUBLE SULFATE EXPOSURE REQUIREMENTS

Dissolved Sulfate (SO_4) in Soil % by Weight	Exposure Severity	Exposure Class	Maximum w/cm Ratio	Minimum Concrete Compressive Strength	Cementitious Materials Type (ASTM C150)
< 0.005	N/A	S0	N/A	2,500 psi	No Restriction

The water-soluble chloride concentration detected in saturation extract from the soil samples was 70 mg/kg. In addition, testing performed on a near surface soil resulted in a minimum resistivity value of 9,456 ohm-centimeters. Based on the results, these soils would be considered to have a “mildly corrosive” potential to buried metal objects (per National Association of Corrosion Engineers, Corrosion Severity Ratings).

It is recommended that, at a minimum, applicable manufacturer’s recommendations for corrosion protection of buried metal pipe be closely followed. Corrosion is dependent upon a complex variety of conditions, which are beyond the Geotechnical practice. Consequently, a qualified corrosion engineer should be consulted if the owner desires more specific recommendations. In addition, redox potential, total sulfide, and pH tests were requested and tested. The test results are attached to Appendix B, at the end of this report.

6.4 Thermal Resistivity Testing

Thermal resistivity tests (ASTM D5334) were conducted on a set of near surface samples collected at depths of around 3 feet BSG. The samples were remolded to a dry density of about 95 percent of the maximum dry density determined in accordance with the standard proctor (ASTM D1557) and to in-situ dry density, then were tested for thermal resistivity at the saturated moisture content, 0 percent moisture, and four (4) intermediate moisture contents. The results of the thermal resistivity tests are provided in Table No. 6.4 below and included in Appendix B of this report**.**

TABLE 6.4
RESULTS OF THERMAL RESISTIVITY TESTING

Location	Depth, Feet BSG	Dry Density, PCF*	Moisture Content, %	Thermal Resistivity, ˚C-cm/W
B-4	0-3	112.4	0.4	248.7
		117.1	3.7	225.7
		119.6	6.3	73.0
		119.6	8.5	69.4
		118.1	12.4	59.5

7. GEOLOGIC SETTING

The San Joaquin Valley, which includes the Merced County area, is a topographic and structural basin that is bounded on the east by the Sierra Nevada and on the west by the Coast Ranges. The Sierra Nevada, a fault block dipping gently southwestward, is made up of igneous and metamorphic rocks of pre-Tertiary age that comprise the basement complex beneath the Valley. The Coast Ranges contain folded and faulted sedimentary rocks of Mesozoic and Cenozoic age, which are similar to those rocks that underlie the Valley at depth and non-conformably overlie the basement complex; gently dipping to nearly horizontal sedimentary rocks of Tertiary and Quaternary age overlie the older rocks. The Great Valley Province is an alluvial plain, drained by the Sacramento River in the north and the San Joaquin Valley in the south, each join and flow out the San Francisco Bay. The Great Valley is an asymmetric trough, extending about 50 miles wide and 400 miles long. The southern portion of the Great Valley includes San Joaquin Valley filled with Pleistocene and Holocene alluvium derived from the Sierra Nevada and Coast Ranges. Sediments in the Great Valley are reportedly up to 40,000 feet thick.

Based on review of the Geologic Map of the San Francisco-San Jose quadrangle[1], the site is located in an area mapped as Modesto Formation deposits (Qm).

8. GEOLOGIC HAZARDS

8.1 Faulting and Seismicity

Based on the proximity of several dominant active faults and seismogenic structures, as well as the historic seismic record, the area of the subject site is considered subject to relatively moderate seismicity. The project area is not within an Alquist-Priolo Earthquake Fault (Special Studies) Zone and will not require a special site investigation by an Engineering Geologist. Soils on site are classified as Site Class D in accordance with Chapter 16 of the California Building Code. The proposed structures are determined to be in Seismic Design Category D.

To determine the distance of known active faults within 100 miles of the site, we used the United States Geological Survey (USGS) web-based application *2008 National Seismic Hazard Maps - Fault Parameters*. Site latitude is 37.1249° North; site longitude is -120.4576° West. The ten closest active faults are summarized below in Table 8.1.

[1] Wagner, D.L., Bortugno, E.J., and McJunkin, R.D., 1991, Geologic map of the San Francisco-San Jose quadrangle, California, 1:250,000: California Division of Mines and Geology, Regional Geologic Map 5A, scale 1:250,000

TABLE 8.1
REGIONAL FAULT SUMMARY

Fault Name	Distance to Site (miles)	Maximum Earthquake Magnitude, M_w
Great Valley 9	25.48	6.8
Great Valley 10	27.98	6.5
Great Valley 8	29.63	6.8
Ortigalita	33.55	7.1
Great Valley 11	35.07	6.6
Great Valley 12	44.43	6.4
Great Valley 7	45.14	6.9
Quien Sabe	48.99	6.6
Great Valley 13 (Coalinga)	53.30	7.1
San Andreas fault - creeping segment	54.86	N/A

The faults tabulated above and numerous other faults in the region are sources of potential ground motion. However, earthquakes that might occur on other faults throughout California are also potential generators of significant ground motion and could subject the site to intense ground shaking.

8.2 Surface Fault Rupture

Based on mapping and historical seismicity, the seismicity of the area, has been generally considered moderate by the scientific community. The site is not within a currently established State of California Earthquake Fault Zone for surface fault rupture hazards, therefore, a site specific fault study investigation by an Engineering Geologist is not required by the current building code.

8.3 Ground Shaking

Based on the 2019 CBC, a Site Class D was selected for the site based on soil conditions with standard penetration resistance, N-values, averaging between 15 and 50 blows per foot. Table 9.6.1 includes design seismic coefficients and spectral response parameters, based on the 2019 California Building Code (CBC) for the project foundation design.

Based on Office of Statewide Health Planning and Development (OSHPD) Seismic Design Maps, the estimated design peak ground acceleration adjusted for site class effects (PGA_M) was determined to be 0.360g (based on both probabilistic and deterministic seismic ground motion).

8.4 Liquefaction

Soil liquefaction is a state of soil particles suspension caused by a complete loss of strength when the effective stress drops to zero. Liquefaction normally occurs under saturated conditions in soils such as sand in which the strength is purely frictional. Primary factors that trigger liquefaction are: moderate to strong ground shaking (seismic source), relatively clean, loose granular soils (primarily poorly graded sands and silty sands), and saturated soil conditions (shallow groundwater). Due to the increasing overburden pressure with depth, liquefaction of granular soils is generally limited to the upper 50 feet of a soil profile. However, liquefaction has occurred in soils other than clean sand.

A 50 foot deep boring to evaluate the potential for liquefaction/seismic settlement was not included in the scope of this investigation. Based on the relatively high seismic shaking and historic groundwater depths

reported at 50 feet BSG, seismic settlement due to liquefiable soils may occur due to a design level seismic event. However, based on our understanding of the proposed construction, mitigation of impacts due to settlement caused by liquefaction/seismic shaking is not required by the 2019 CBC.

8.5 Lateral Spreading

Lateral spreading is a phenomenon in which soils move laterally during seismic shaking and is often associated with liquefaction. The amount of movement depends on the soil strength, duration and intensity of seismic shaking, topography, and free face geometry. Due to the low potential for liquefaction and relatively flat site topography, we judge the likelihood of lateral spreading to be low.

8.6 Landslides

There are no known landslides located at the site, nor is the site in the path of any known or potential landslides. We do not consider the potential for a landslide to be a hazard to this project.

8.7 Tsunamis and Seiches

The site is not located within a coastal area. Therefore, tsunamis (seismic sea waves) are not considered a significant hazard at the site.

Seiches are large waves generated in enclosed bodies of water in response to ground shaking. No major water-retaining structures are located immediately up gradient from the project site. Flooding from a seismically-induced seiche is considered unlikely.

9. CONCLUSIONS AND RECOMMENDATIONS

9.1 General

9.1.1 Based upon the data collected during this investigation, and from a geotechnical engineering standpoint, it is our opinion that the site is suitable for the proposed construction as planned, provided the recommendations contained in this report are incorporated into the project design and construction. Conclusions and recommendations provided in this report are based on our review of available literature, analysis of data obtained from our field exploration and laboratory testing program, and our understanding of the proposed development at this time.

9.1.2 The following recommendations were prepared based on the geotechnical engineering data obtained from the borings and laboratory testing conducted as part of this investigation. It is our understanding that pile load test data may be used to assess the capacities of the soil and the effects of soil-pile interaction. From a geotechnical engineering perspective, in-situ pile testing may be conducted and used as a basis for design, provided that the testing, design analysis and selection of safety factors are conducted in a rational method determined by the design engineer for the lightly loaded shallow piles supporting the PV systems.

9.1.3 The site is suitable for support of the proposed improvements utilizing either conventional shallow spread foundations or small diameter driven pile foundations. The primary geotechnical concerns identified for the site is the potential for isolated areas of loose soils from the previous livestock activities. Areas of disturbed soils where former livestock were present should be over-excavated and backfilled with on-site soils compacted engineered fill.

9.1.4 In general, the near surface soils encountered predominantly consisted of silty sands underlain by interbedded layers of clayey sand, well graded sand with silt, silty clay, silt, lean clay, and silty clayey sand, to the maximum depth explored of 26½ feet below site grade.

9.1.5 Based on the laboratory testing performed, the soils encountered were determined to have low compressibility, slight collapse potential, and negligible expansion potential.

9.1.6 For proposed improvements supported on shallow foundations or concrete equipment slabs on grade, to provide uniform bearing support for these improvements, this report recommends shallow foundations and concrete slabs on grade be supported on a uniform layer of aggregate base material over moisture conditioned on-site soils compacted engineered fill.

9.1.7 Provided that foundations are constructed as described herein, we estimate settlement due to static loads utilizing conventional shallow foundations or driven piles will be about 1 inch total and ½ inch differential settlement in 30 feet or between piers (whichever is less).

9.1.8 Chemical testing indicated the near surface soils have a "negligible" potential for sulfate attack on concrete and a "mildly corrosive" potential to buried metal objects.

9.1.9 Based on the results of laboratory testing, negligible expansive soils were encountered at the site, and are considered a low risk for post construction movement.

9.1.10 All references to relative compaction and optimum moisture content in this report are based on ASTM D 1557 (latest edition).

9.1.11 SALEM Engineering Group, Inc. should be retained to review the project plans as they develop further, provide engineering consultation as-needed, and perform geotechnical observation and testing services during construction.

9.2 Surface Drainage

9.2.1 Proper surface drainage is critical to the future performance of the project. Uncontrolled infiltration of irrigation excess and storm runoff into the soils can adversely affect the performance of the planned improvements. Saturation of a soil can cause it to lose internal shear strength and increase its compressibility, resulting in a change to important engineering properties. Proper drainage should be maintained at all times.

9.2.2 All site drainage should be collected and transferred away from improvements in non-erosive drainage devices. Drainage should not be allowed to pond anywhere on the site, and especially not against any foundations or retaining walls. Drainage should not be allowed to flow uncontrolled over any descending slope. The proposed structures should be provided with roof gutters. Discharge from downspouts, roof drains and scuppers are not permitted onto unprotected soils within five feet of the structure perimeter. Planters which are located adjacent to foundations should be sealed or properly drained to prevent moisture intrusion into the materials providing foundation support. Landscape irrigation within 5 feet of the new footings should be kept to a minimum to just support vegetative life.

9.2.3 Positive site drainage should be provided away from structures, pavement, and the tops of slopes to swales or other controlled drainage structures. The equipment pads should be fine graded such

that water is not allowed to pond. Final soil grade should slope a minimum of 2% away from structures.

9.3 Grading

9.3.1 A representative of our firm should be present during all site clearing and grading operations to test and observe earthwork construction. This testing and observation is an integral part of our service as acceptance of earthwork construction is dependent upon compaction of the material and the stability of the material. The Geotechnical Engineer may reject any material that does not meet compaction and stability requirements. Further recommendations of this report are predicated upon the assumption that earthwork construction will conform to recommendations set forth in this section as well as other portions of this report.

9.3.2 A pre-construction conference should be held at the site prior to the beginning of grading operations with the owner, contractor, civil engineer and geotechnical engineer in attendance.

9.3.3 If required, site grading activities shall include removal of all vegetation, and demolition of surface obstructions not intended to be incorporated into final site design. In addition, underground buried structures and/or utility lines encountered during demolition and construction should be properly removed and the resulting excavations backfilled with Engineered Fill. After removal and demolition activities, it is recommended that disturbed soils be compacted as engineered fill.

9.3.4 Site preparation should begin with removal of existing surface/subsurface structures, underground utilities (as required), any existing uncertified fill, and debris. Excavations or depressions resulting from site clearing operations, or other existing excavations or depressions, should be restored with Engineered Fill in accordance with the recommendations of this report.

9.3.5 Surface vegetation (if encountered) should be removed by stripping to a sufficient depth to remove organic-rich topsoil. The upper 2 to 4 inches of the soils containing, vegetation, roots and other objectionable organic matter encountered at the time of grading should be stripped and removed from the surface. Deeper stripping may be required in localized areas. In addition, existing concrete and asphalt materials (if any) shall be removed from areas of proposed improvements and stockpiled separately from excavated soil material. The stripped vegetation, will not be suitable for use as Engineered Fill or within 5 feet of construction pads or within pavement areas. However, stripped topsoil may be stockpiled and reused in landscape or non-structural areas or exported from the site.

9.3.6 If desired, as an alternative to driven steel piles, the solar arrays could be supported on shallow spread foundations. Areas of proposed shallow foundations should be prepared by over-excavation to a minimum of 24 inches below preconstruction site grade or 18 inches below the bottom of foundations, or to the depth required to remove disturbed soils from previous agricultural activities, whichever is greater. If encountered, additional over-excavation of loose/disturbed soils will be required. Upon approval, the bottom of excavation should be scarified an additional 8 inches, worked until uniform and free from large clods, moisture conditioned to slightly above optimum moisture content, and compacted as Engineered Fill. The over-excavation for shallow foundations should extend to a minimum of 5 feet beyond the horizontal limits of the proposed foundation.

9.3.7 Following stripping operations, the upper soils in the equipment pads (if any) should be over-excavated to a minimum of 12 inches below the recommended aggregate base section or 12 inches below preconstruction site grade, whichever is greater. Equipment pad areas should be considered as areas including the entire slab, and areas extending to a minimum of 3 feet beyond the edge of slabs or to a horizontal distance equal to depth of engineered fills, whichever is greater. The resulting bottom of excavation should be scarified an additional 8 inches, worked until uniform and free from large clods, moisture conditioned to slightly above optimum moisture content, and compacted as Engineered Fill.

Equipment pads should be supported on a minimum of 4 inches of Class 2 Aggregate Base compacted to a minimum of 95 percent relative compaction (ASTM D1557) over moisture conditioned engineered fill prepared in accordance with the recommendations above.

9.3.8 An integral part of satisfactory fill placement is the stability of the placed lift of soil. If placed materials exhibit excessive instability as determined by a SALEM field representative, the lift will be considered unacceptable and shall be remedied prior to placement of additional fill material. Additional lifts should not be placed if the previous lift did not meet the required dry density or if soil conditions are not stable.

9.3.9 The most effective site preparation alternatives will depend on site conditions prior to grading. We should evaluate site conditions and provide supplemental recommendations immediately prior to grading, if necessary.

9.3.10 We do not anticipate groundwater or seepage to adversely affect construction if conducted during the drier months of the year (typically summer and fall). However, groundwater and soil moisture conditions could be significantly different during the wet season (typically winter and spring) as surface soil becomes wet; perched groundwater conditions may develop. Grading during this time period will likely encounter wet materials resulting in possible excavation and fill placement difficulties. Project site winterization consisting of placement of aggregate base and protecting exposed soils during construction should be performed. If the construction schedule requires grading operations during the wet season, we can provide additional recommendations as conditions warrant.

9.3.11 In the event that wet unstable conditions are encountered, typical remedial measures include: discing and aerating the soil during dry weather; mixing the soil with dryer materials; removing and replacing the soil with an approved fill material or placement of crushed rocks or aggregate base material; or mixing the soil with an approved lime or cement product.

The most common remedial measure of stabilizing the bottom of the excavation due to wet soil condition is to reduce the moisture of the soil to near the optimum moisture content by having the subgrade soils scarified and aerated or mixed with drier soils prior to compacting. However, the drying process may require an extended period of time and delay the construction operation. To expedite the stabilizing process, crushed rock may be utilized for stabilization provided this method is approved by the owner for the cost purpose.

If the use of crushed gravel/rock is considered, it is recommended that the upper soft and wet soils be replaced by 6 to 24 inches of ¾-inch to 1-inch crushed rocks. The thickness of the rock layer depends on the severity of the soil instability. The recommended 6 to 24 inches of crushed rock material will provide a stable platform. It is further recommended that lighter compaction equipment be utilized for compacting the crushed rock. In the event that open graded crushed

gravel or rock is used, these materials will be required to be fully encapsulated in a layer of geofabric, such as Mirafi 140N or equivalent, to minimize migration of soil particles into the voids of the crushed rock, resulting in soil movement. Although it is not required, the use of geogrid (e.g. Tensar BX 1100, BX 1200 or TX 160) below the crushed rock will enhance stability and reduce the required thickness of crushed rock necessary for stabilization.

Our firm should be consulted prior to implementing remedial measures to provide appropriate recommendations.

9.4 Soil and Excavation Characteristics

9.4.1 Based on the soil conditions encountered in our borings, the onsite soils can be excavated with moderate effort using conventional excavation equipment.

9.4.2 It is the responsibility of the contractor to ensure that all excavations and trenches are properly shored and maintained in accordance with applicable Occupational Safety and Health Administration (OSHA) rules and regulations to maintain safety and maintain the stability of adjacent existing improvements. Temporary excavations are further discussed in a later Section of this report.

9.4.3 The near surface soils identified during our investigation are generally moist. Earthwork operations may encounter very moist unstable soils which may require removal to a stable bottom. Exposed native soils exposed as part of site grading operations shall not be allowed to dry out and should be kept continuously moist prior to placement of subsequent fill.

9.5 Materials for Fill

9.5.1 On-site soils are considered for use as engineered fill below the aggregate base section of slabs on grade provided these materials do not contain deleterious matter, organic material, or material larger than 3 inches in maximum dimension.

9.5.2 Imported Engineered Fill soil, should be well-graded, low-to-non-expansive slightly cohesive silty sand or sandy silt. A clean sand or very sandy soil is not acceptable for this purpose. A sandy soil will allow the surface water to drain into the potentially expansive soils below, which may result in unacceptable swelling. This material should be approved by the Engineer prior to use and should typically possess the soil characteristics summarized below in Table 9.5.2.

TABLE 9.5.2
IMPORT FILL REQUIREMENTS

Percent Passing 3-inch Sieve	100
Percent Passing No.4 Sieve	75-100
Percent Passing No 200 Sieve	15-40
Maximum Plasticity Index	15
Maximum Expansion Index (ASTM D4829)	20

Prior to importing the Contractor should demonstrate to the Owner that the proposed import meets the requirements for import fill specified in this report. In addition, the material should be verified

by the Contractor that the soils do not contain any environmental contaminates as regulated by local, state, or federal agencies, as applicable.

9.5.3 The preferred materials specified for Imported Engineered Fill are suitable for most applications with the exception of exposure to erosion. Project site winterization and protection of exposed soils during the construction phase should be the sole responsibility of the Contractor, since they have complete control of the project site.

9.5.4 Environmental characteristics and corrosion potential of import soil materials should also be considered.

9.5.5 Proposed import materials should be sampled, tested, and approved by SALEM prior to its transportation to the site.

9.5.6 On-Site soils used as Engineered Fill should be placed, moisture conditioned to slightly above optimum moisture content, and compacted to 92 percent relative compaction (ASTM D 1557).

9.5.7 Imported Engineered Fill should be placed, moisture conditioned to slightly above optimum moisture content, and compacted to 92 percent relative compaction.

9.5.8 All Engineered Fill should be placed in lifts no thicker than will allow for adequate bonding and compaction (typically a maximum of 6 to 8 inches in loose thickness).

9.5.9 Caltrans Class 2 Aggregate Base shall meet the minimum requirements of Section 26 of the Caltrans Standard Specifications (Current Edition). Prior to importing, the Contractor should provide documentation that the aggregate base meets the requirements for Class 2 aggregate base (i.e. gradation, durability, R-value, sand equivalent, etc.) to the Owner and Salem for review. All aggregate base should be compacted to a minimum of 95 percent relative compaction.

9.5.10 Open graded gravel and rock material (i.e. ¾ inch or ½ inch crushed gravel) should not be used as backfill including utility trenches. If required by local agency or for use in subgrade stabilization, to prevent migration of fines, open graded materials should be fully encapsulated in a geotextile fabric such as Mirafi 140N or equivalent. Open graded rock should be placed in loose lifts no greater than about 6 to 8 inches, and vibrated in-place to a firm non-yielding condition.

9.6 Seismic Design Criteria

9.6.1 For seismic design of the structures, and in accordance with the seismic provisions of the 2019 CBC, our recommended parameters are shown below. These parameters were determined using Office of Statewide Health Planning and Development (OSHPD) Seismic Design Maps by location website (https://seismicmaps.org/), in accordance with the 2019 CBC. The Site Class was determined based on the soils encountered during our field exploration.

TABLE 9.6.1
2019 CBC SEISMIC DESIGN PARAMETERS

Seismic Item	Symbol	Value	2016 ASCE 7 or 2019 CBC Reference
Site Coordinates (Datum = NAD 83)		37.1249 Lat -120.4576 Lon	
Site Class	--	D	ASCE 7-16 Table 20.3
Soil Profile Name	--	"Stiff Soil"	ASCE 7-16 Table 20.3
Risk Category	--	I/II	CBC Table 1604.5
Site Coefficient for PGA	F_{PGA}	1.329	ASCE 7-16 Table 11.8-1
Peak Ground Acceleration (adjusted for Site Class effects)	PGA_M	0.360 g	ASCE 7-16 Equation 11.8-1
Seismic Design Category	SDC	D	ASCE 7-16 Table 11.6-1 & 2
Mapped Spectral Acceleration (Short period - 0.2 sec)	S_S	0.641 g	CBC Figure 1613.3.1(1-6)
Mapped Spectral Acceleration (1.0 sec. period)	S_1	0.255 g	CBC Figure 1613.3.1(1-6)
Site Class Modified Site Coefficient	F_a	1.287	CBC Table 1613.3.3(1)
Site Class Modified Site Coefficient	F_v	**2.090 ***	CBC Table 1613.3.3(2)
MCE Spectral Response Acceleration (Short period - 0.2 sec) $S_{MS} = F_a S_S$	S_{MS}	0.825 g	CBC Equation 16-37
MCE Spectral Response Acceleration (1.0 sec. period) $S_{M1} = F_v S_1$	S_{M1}	**0.533 g***	CBC Equation 16-38
Design Spectral Response Acceleration $S_{DS}=\frac{2}{3}S_{MS}$ (short period - 0.2 sec)	S_{DS}	0.550 g	CBC Equation 16-39
Design Spectral Response Acceleration $S_{D1}=\frac{2}{3}S_{M1}$ (1.0 sec. period)	S_{D1}	**0.355 g***	CBC Equation 16-40
Short Period Transition Period (S_{D1}/S_{DS}), Seconds	T_S	0.646	ASCE 7-16, Section 11.4.6
Long Period Transition Period (seconds)	T_L	12	ASCE 7-16, Figures 22-14 through 22-17

Note: * Determined per ASCE Table 11.4.-2 for use in calculating T_S only.
Site Specific Ground Motion Analysis was not included in the scope of this investigation. Per ASCE 11.4.8, Structures on Site Class D, with S_1 greater than or equal to 0.2 may require Site Specific Ground Motion Analysis. However, a site specific ground motion analysis may not be required based on Exceptions listed in ASCE 11.4.8. The Structural Engineer should verify whether Exceptions included under ASCE 7-16, Section 11.4.8 are valid for the proposed construction. In the event a site specific ground motion analysis is required, SALEM should be contacted for these services.

9.6.2 Conformance to the criteria in the above table for seismic design does not constitute any kind of guarantee or assurance that significant structural damage or ground failure will not occur if a large earthquake occurs. The primary goal of seismic design is to protect life, not to avoid all damage, since such design may be economically prohibitive.

9.7 Shallow Foundations for Proposed Ground Mounted Solar Array

9.7.1 The site is suitable for use of conventional shallow foundations consisting of isolated spread footings supported on Engineered Fill as recommended in Section 9.3 of this report. Footing concrete should be placed into a neat excavation. The bottom of footing excavations should be maintained free of loose and disturbed soil.

9.7.2 Shallow foundations for support of solar array should be a minimum of 18 inches wide and extend to a minimum depth of 24 inches below the lowest adjacent grade.

9.7.3 Shallow foundations supported on engineered fill prepared in accordance with the recommendations included in this report may be designed based on an allowable bearing capacity of 2,000 pounds per square foot. This value may be increased by 1/3 for wind and seismic loading.

9.7.4 For design purposes, total settlement about 1 inch and differential static settlement of about ½ inch in 30 feet is anticipated.

9.7.5 Resistance to lateral footing displacement can be computed using an allowable coefficient of friction factor of 0.38 acting between the base of foundations and engineered fill.

9.7.6 Lateral resistance for footings can alternatively be developed using an allowable equivalent fluid passive pressure of 350 pounds per cubic foot acting against the appropriate vertical native footing faces. The upper 1 foot of subgrade soils should be neglected in design. The frictional and passive resistance of the soil may be combined provided that a 50% reduction of the frictional resistance factor is used in determining the total lateral resistance.

9.7.7 The foundation subgrade should be maintained at a moist condition prior to placement of any concrete placement. Prior to placing rebar reinforcement, foundation excavations should be evaluated by a representative of SALEM for appropriate support characteristics and moisture content. Moisture conditioning may be required for the materials exposed at footing bottom, particularly if foundation excavations are left open for an extended period.

9.8 Small Diameter Driven Steel Pile Foundations for Proposed Solar Array

9.8.1 Solar arrays may be supported using driven steel piles (small diameter H-piles, C-Shape Piles, etc.) using a downward allowable side friction as showing in the table below. **Driven piles should have a minimum embedment depth of 6 feet BSG. The upper 1 foot should be neglected in design**.

9.8.2 Driven piles embedded a minimum of 6 feet BSG shall be designed based on an allowable skin friction value of 300 pounds per square foot. The effective area in calculating the pile capacity should be the outer perimeter dimensions of the pile section (e.g, for a W6 x 6 x 15, the effective side friction area should be 4 sides multiplied by 6" per foot of pile length embedded into the soil). This value is for dead-plus-live loads. An increase of one-third may be applied when using the alternate load combination in Section 1605.3.2 of the 2019 CBC that includes wind or earthquake loads. Although not encountered, if refusal is encountered due to dense soils, a pilot hole may be drilled with a diameter that is 25% less than that of the piles used to support the solar panels.

Uplift loads can be resisted by piles using 60 percent of the allowable downward side friction value plus the weight of the pile.

9.8.3 The total settlement of the pile is not expected to exceed 1 inch. Differential settlement between adjacent piles should be less than ½ inch.

9.8.4 Passive resistance in the upper portion of the driven piles, to a depth of 1 foot, should be neglected in design. The driven piles may be designed for an allowable lateral capacity of 350 pounds per square foot per foot of depth below the lowest adjacent grade to a maximum of 3,500 psf. The passive pressure for driven piles spaced at a minimum of three (3) pile diameters may be applied over a width equal to two (2) pile diameters. No other increases should be applied to the allowable passive pressure.

9.8.5 If desired, the driven piles may be designed using LPILE and the parameters presented in Table 9.8.5.

TABLE 9.8.5
LPILE PARAMETERS

USCS Soil Type	Design N-Value	Effective Unit Weight (pcf)	Angle of Internal Friction (degrees)	Undrained Shear Strength, Cohesion, (psf)	Static Modulus of Subgrade Reaction, K (pci)	Soil Strain Ratio, ε_{50}
SM/SC	15	115	39	200	90	--
CL/ML	13	120	33	100	500	0.007

The upper 1 foot should be neglected in design

9.9 Equipment Concrete Slabs-on-Grade

9.9.1 Slab thickness and reinforcement should be determined by the structural engineer based on the anticipated loading.

9.9.2 Equipment slabs may be supported on a minimum of 4 inches of Class 2 aggregate base over moisture conditioned engineered fill soils extending to the depth recommended in Section 9.3 of this report.

9.9.3 Equipment slabs should be designed with thickened edges extending to a minimum of 12 inches below the bottom of slab.

9.9.4 Prior to placement of the aggregate base section, the subgrade soils should be verified to be above optimum moisture content.

9.9.5 Resistance to lateral footing displacement can be computed using an allowable coefficient of friction factor of 0.38 acting between the base of foundations and the supporting native subgrade or Engineered Fill.

9.9.6 Lateral resistance can be developed using an allowable equivalent fluid passive pressure of 380 pounds per cubic foot acting against the appropriate vertical native footing faces. The upper 1 foot of subgrade soils should be neglected in design. The frictional and passive resistance of the soil may be combined provided that a 50% reduction of the frictional resistance factor is used in determining the total lateral resistance.

9.9.7 Proper finishing and curing should be performed in accordance with the latest guidelines provided by the American Concrete Institute, Portland Cement Association, and ASTM.

9.10 Lateral Earth Pressures and Frictional Resistance

9.10.1 Lateral earth pressures, friction coefficient, and in-place density of soils against footings and walls are summarized in the Table 9.10.1 below.

TABLE 9.10.1
GEOTECHNICAL DESIGN PARAMETERS

Lateral Earth Pressure	Soil Equivalent Fluid Pressure
Active Pressure, Drained, pcf	26
At-Rest Pressure, Drained, pcf	43
Allowable Passive Pressure, psf	375
Allowable Coefficient of Friction	0.38
Maximum Unit Weight (pcf) [γ_{max}]	125
Minimum Unit Weight (pcf) [γ_{min}]	95

9.10.2 Active pressure applies to walls, which are free to rotate. At-rest pressure applies to walls, which are restrained against rotation. The preceding lateral earth pressures assume sufficient drainage behind retaining walls to prevent the build-up of hydrostatic pressure. The top one-foot of adjacent subgrade should be deleted from the passive pressure computation.

9.10.3 For lateral stability against seismic loading conditions, we recommend a minimum safety factor of 1.1.

9.10.4 For dynamic seismic lateral loading the following equation shall be used:

Dynamic Seismic Lateral Loading Equation
Dynamic Seismic Lateral Load = $\frac{3}{8}\gamma K_h H^2$
Where: γ = Maximum In-Place Soil Density (Section 9.10.1 above)
K_h = Horizontal Acceleration = $\frac{2}{3}PGA_M$ (Section 9.6.1 above)
H = Wall Height

9.11 Temporary Excavations

9.11.1 We anticipate that the majority of the sandy site soils will be classified as Cal-OSHA "Type C" soil when encountered in excavations during site development and construction. Excavation sloping, benching, the use of trench shields, and the placement of trench spoils should conform to the latest applicable Cal-OSHA standards. The contractor should have a Cal-OSHA-approved "competent person" onsite during excavation to evaluate trench conditions and make appropriate recommendations where necessary.

9.11.2 It is the contractor's responsibility to provide sufficient and safe excavation support as well as protecting nearby utilities, structures, and other improvements which may be damaged by earth movements. All onsite excavations must be conducted in such a manner that potential surcharges from existing structures, construction equipment, and vehicle loads are resisted. The surcharge area may be defined by a 1:1 projection down and away from the bottom of an existing foundation or vehicle load.

9.11.3 Temporary excavations and slope faces should be protected from rainfall and erosion. Surface runoff should be directed away from excavations and slopes.

9.11.4 Open, unbraced excavations in undisturbed soils should be made according to the slopes presented in Table 9.11.4 below.

TABLE 9.11.4
RECOMMENDED EXCAVATION SLOPES

Depth of Excavation (ft)	Slope (Horizontal : Vertical)
3-5	1:1
5-10	1½:1
10-15	2:1

9.11.5 If, due to space limitation, excavations near existing structures are performed in a vertical position, braced shorings or shields may be used for supporting vertical excavations. Therefore, in order to comply with the local and state safety regulations, a properly designed and installed shoring system would be required to accomplish planned excavations and installation. A Specialty Shoring Contractor should be responsible for the design and installation of such a shoring system during construction.

9.11.6 Braced shorings should be designed for a maximum pressure distribution of 20H, (where H is the depth of the excavation in feet). The foregoing does not include excess hydrostatic pressure or surcharge loading. Fifty percent of any surcharge load, such as construction equipment weight, should be added to the lateral load given herein. Equipment traffic should concurrently be limited to an area at least 3 feet from the shoring face or edge of the slope.

9.11.7 The excavation and shoring recommendations provided herein are based on soil characteristics derived from the borings within the area. Variations in soil conditions will likely be encountered during the excavations. SALEM should be afforded the opportunity to provide field review to evaluate the actual conditions and account for field condition variations not otherwise anticipated in the preparation of this recommendation. Slope height, slope inclination, or excavation depth

should in no case exceed those specified in local, state, or federal safety regulation, (e.g. OSHA) standards for excavations, 29 CFR part 1926, or Assessor's regulations.

9.12 Underground Utilities

9.12.1 Underground utility trenches should be backfilled with properly compacted material. The material excavated from the trenches should be adequate for use as backfill provided it does not contain deleterious matter, vegetation or rock larger than 3 inches in maximum dimension. Trench backfill should be placed in loose lifts not exceeding 8 inches and compacted to at least 92 percent relative compaction at or above optimum moisture content. The upper 12 inches of trench backfill within asphalt or concrete paved areas shall be moisture conditioned to at or above optimum moisture content and compacted to at least 95 percent relative compaction.

9.12.2 Bedding and pipe zone backfill typically extends from the bottom of the trench excavations to approximately 12 inches above the crown of the pipe. Pipe bedding, haunches and initial fill extending to 1 foot above the pipe should consist of a clean well graded sand with 100 percent passing the #4 sieve, a maximum of 15 percent passing the #200 sieve, and a minimum sand equivalent of 20.

9.12.3 It is suggested that underground utilities crossing beneath new or existing structures be plugged at entry and exit locations to the new structures to prevent water migration. Trench plugs can consist of on-site clay soils, if available, or sand cement slurry. The trench plugs should extend 2 feet beyond each side of individual perimeter foundations.

9.12.4 The contractor is responsible for removing all water-sensitive soils from the trench regardless of the backfill location and compaction requirements. The contractor should use appropriate equipment and methods to avoid damage to the utilities and/or structures during fill placement and compaction.

10. PLAN REVIEW, CONSTRUCTION OBSERVATION AND TESTING

10.1 Plan and Specification Review

10.1.1 SALEM should review the project plans and specifications prior to final design submittal to assess whether our recommendations have been properly implemented and evaluate if additional analysis and/or recommendations are required.

10.2 Construction Observation and Testing Services

10.2.1 The recommendations provided in this report are based on the assumption that we will continue as Geotechnical Engineer of Record throughout the construction phase. It is important to maintain continuity of geotechnical interpretation and confirm that field conditions encountered are similar to those anticipated during design. If we are not retained for these services, we cannot assume any responsibility for others interpretation of our recommendations, and therefore the future performance of the project.

10.2.2 SALEM should be present at the site during site preparation to observe site clearing, preparation of exposed surfaces after clearing, and placement, treatment and compaction of fill material. SALEM's observations should be supplemented with periodic compaction tests to establish

substantial conformance with these recommendations. Moisture content of footings and slab subgrade should be tested immediately prior to concrete placement.

10.2.3 SALEM should observe foundation excavations prior to placement of reinforcing steel or concrete to assess whether the actual bearing conditions are compatible with the conditions anticipated during the preparation of this report.

11. LIMITATIONS AND CHANGED CONDITIONS

The analyses and recommendations submitted in this report are based upon the data obtained from the borings excavated at the approximate locations shown on the Site Plan, Figure 2. The report does not reflect variations which may occur between borings. The nature and extent of such variations may not become evident until construction is initiated. If variations then appear during construction, a re-evaluation of the recommendations of this report will be necessary after performing on-site observations during the excavation period and noting the characteristics of such variations. The findings and recommendations presented in this report are valid as of the present and for the proposed construction.

If site conditions change due to natural processes or human intervention on the property or adjacent to the site, or changes occur in the nature or design of the project, or if there is a substantial time lapse between the submission of this report and the start of the work at the site, the conclusions and recommendations contained in our report will not be considered valid unless the changes are reviewed by SALEM and the conclusions of our report are modified or verified in writing. The validity of the recommendations contained in this report is also dependent upon an adequate testing and observations program during the construction phase. Our firm assumes no responsibility for construction compliance with the design concepts or recommendations unless we have been retained to perform the on-site testing and review during construction. SALEM has prepared this report for the exclusive use of the owner and design consultants.

SALEM does not practice in the field of corrosion engineering. It is recommended that a qualified corrosion engineer be consulted regarding protection of buried steel or ductile iron piping and conduit or, at a minimum, that manufacturer's recommendations for corrosion protection be closely followed. Further, a corrosion engineer may be needed to incorporate the necessary precautions to avoid premature corrosion of concrete slabs and foundations in direct contact with native soil. The importation of soil and or aggregate materials to the site should be screened to determine the potential for corrosion to concrete and buried metal piping. The report has been prepared in accordance with generally accepted geotechnical engineering practices in the area. No other warranties, either express or implied, are made as to the professional advice provided under the terms of our agreement and included in this report.

If you have any questions, or if we may be of further assistance, please do not hesitate to contact our office at (559) 271-9700.

Respectfully Submitted,
SALEM ENGINEERING GROUP, INC.

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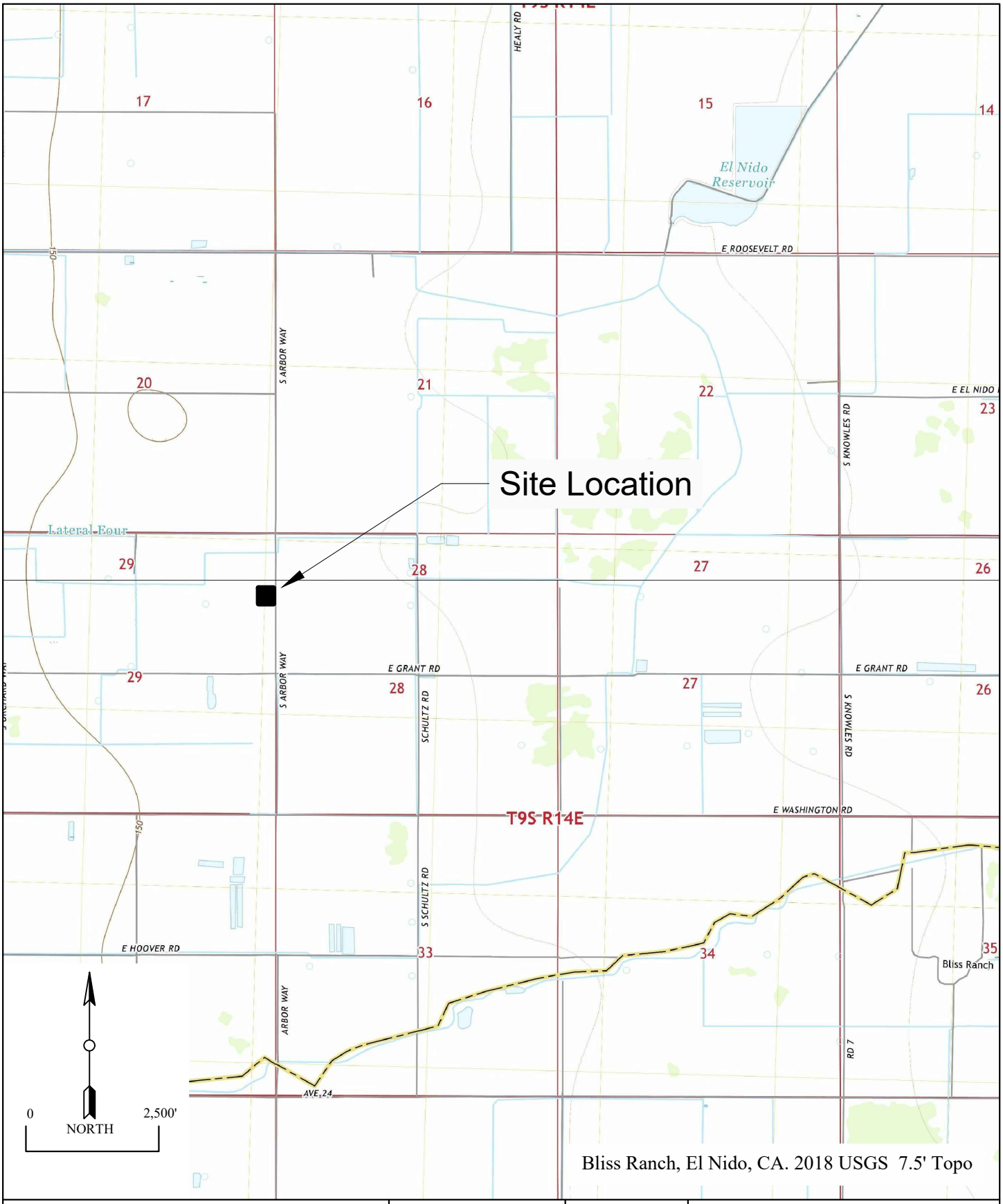


Bliss Ranch, El Nido, CA. 2018 USGS 7.5' Topo

VICINITY MAP	SCALE: 1 : 2500'	DATE: Apr. 2022	SALEM engineering group, inc.
PROPOSED GROUND MOUNT SOLAR ARRAY NEAR EAST CLEVELAND ROAD MERCED, CALIFORNIA	DRAWN BY: VT	APPROVED BY: DL	
	PROJECT NO. 1-222-0227	FIGURE NO. 1	

SITE PLAN	SCALE: 1" = 200'	DATE: Apr. 2022	
PROPOSED GROUND MOUNT SOLAR ARRAY NEAR EAST CLEVELAND ROAD MERCED, CALIFORNIA	DRAWN BY: VT	APPROVED BY: DL	
	PROJECT NO. 1-222-0227	FIGURE NO. 2	

SALEM
engineering group, inc.

APPENDIX

A

APPENDIX A

FIELD EXPLORATION

Fieldwork for our investigation was conducted on April 1 & 4, 2022 and included a site visit, subsurface exploration, and soil sampling. The locations of the exploratory borings are shown on the Site Plan, Figure 2. Boring logs for our exploration are presented in figures following the text in this appendix. Borings were located in the field using existing reference points. Therefore, actual boring locations may deviate slightly.

Our borings were drilled using a truck-mounted CME-45C drilling rig. Sampling was accomplished by driving a 2-inch Standard Penetration Test (SPT) sampler and/or a 3-inch outside diameter Modified California Sampler (MCS) 18 inches into the soil. Penetration and/or Resistance tests were performed at selected depths. The resistance/N-Value obtained from driving was recorded based on the number of blows required to penetrate the last 12 inches. The driving energy was provided by an auto-trip hammer weighing 140 pounds, falling 30 inches. Relatively undisturbed MCS soil samples were obtained while performing this test. Bag samples of the disturbed soil were obtained from the SPT samples and auger cuttings. All samples were returned to our Fresno laboratory for evaluation. The test borings were backfilled with excavated soil upon completion of drilling and sampling.

Subsurface conditions encountered in the test borings were visually examined, classified and logged in general accordance with the American Society for Testing and Materials (ASTM) Practice for Description and Identification of Soils (Visual-Manual Procedure D2488). This system uses the Unified Soil Classification System (USCS) for soil designations. The logs depict soil and geologic conditions encountered and depths at which samples were obtained. The logs also include our interpretation of the conditions between sampling intervals. Therefore, the logs contain both observed and interpreted data. We determined the lines designating the interface between soil materials on the logs using visual observations, excavation characteristics and other factors. The transition between materials may be abrupt or gradual. Where applicable, the field logs were revised based on subsequent laboratory testing.

SALEM engineering group, inc.

Test Boring: B-1 **Page** 1 **Of:** 1

Project Number: 1-222-0227

Date: 04/01/2022

Client: Renewable Properties

Project: Proposed Ground Mount Solar Array

Location: Near East Cleveland Road, Merced, California

Drilled By: Salem Engineering Group, Inc. **Logged By:** BM

Drill Type: CME 45C **Elevation:** 148ft. AMSL

Auger Type: 6 5/8in Hollow Stem Auger **Initial Depth to Groundwater:** N/E

Hammer Type: Automatic Trip - 140lbs./30in. **Final Depth to Groundwater:** N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	N-Values blows/ft.	Moisture Content %	Dry Density, PCF	Remarks
0 / 145	10/6 6/6 6/6	SM	Silty SAND; medium dense, brown, moist, medium to fine grained.	12	4.5	--	
	10/6 8/6 8/6		Grades as above.	16	7.8	107.8	
5 / 140	5/6 10/6 11/6		Grades as above.	21	8.6	114.2	
10 / 135	5/6 6/6 7/6	SC	Clayey sand; medium dense, brown, moist, medium to fine grained.	13	13.2	--	
15 / 130	5/6 8/6 14/6		Grades as above; grey to brown.	22	12.7	--	
20 / 125	5/6 7/6 9/6	SP-SM	Poorly Gradeded SAND with Silt; medium dense, light brown, damp, medium to fine grained.	16	2.4	--	
25 / 120	4/6 8/6 8/6		Grades as above.	16	2.0	--	
			End of boring at 26.5ft. BSG				

Notes:

Figure Number A-1

SALEM engineering group, inc.

Test Boring: B-2 **Page** 1 **Of:** 1

Project Number: 1-222-0227

Date: 04/04/2022

Client: Renewable Properties

Project: Proposed Ground Mount Solar Array

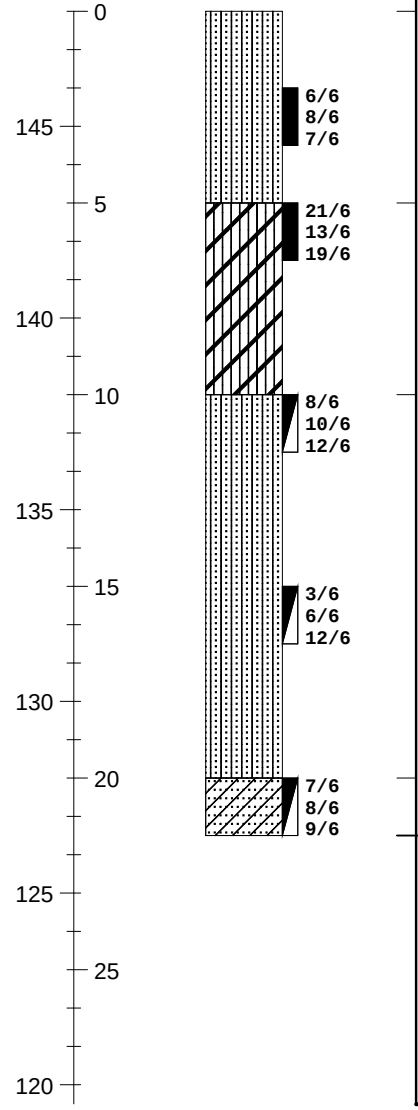
Location: Near East Cleveland Road, Merced, California

Drilled By: Salem Engineering Group, Inc. **Logged By:** BM

Drill Type: CME 45C **Elevation:** 148ft. AMSL

Auger Type: 6 5/8in Hollow Stem Auger **Initial Depth to Groundwater:** N/E

Hammer Type: Automatic Trip - 140lbs./30in. **Final Depth to Groundwater:** N/E



ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	N-Values blows/ft.	Moisture Content %	Dry Density, PCF	Remarks
		SM	Silty SAND; loose, brown, moist, fine to medium grained.	15	2.7	90.1	
		CL-ML	Sandy Silty CLAY; very stiff, light brown, moist, low plasticity.	32	14.1	113.0	
		SM	Silty SAND; medium dense, brown, moist, medium to fine grained.	22	8.2	--	
			Grades as above.	18	5.1	--	
		SC	Clayey SAND; medium dense, brown, moist, fine grained.	17	15.3	--	
			End of boring at 21.5ft. BSG				

Notes:

Figure Number A-2

SALEM engineering group, inc.

Test Boring: B-3 **Page** 1 **Of:** 1

Project Number: 1-222-0227

Date: 04/04/2022

Client: Renewable Properties

Project: Proposed Ground Mount Solar Array

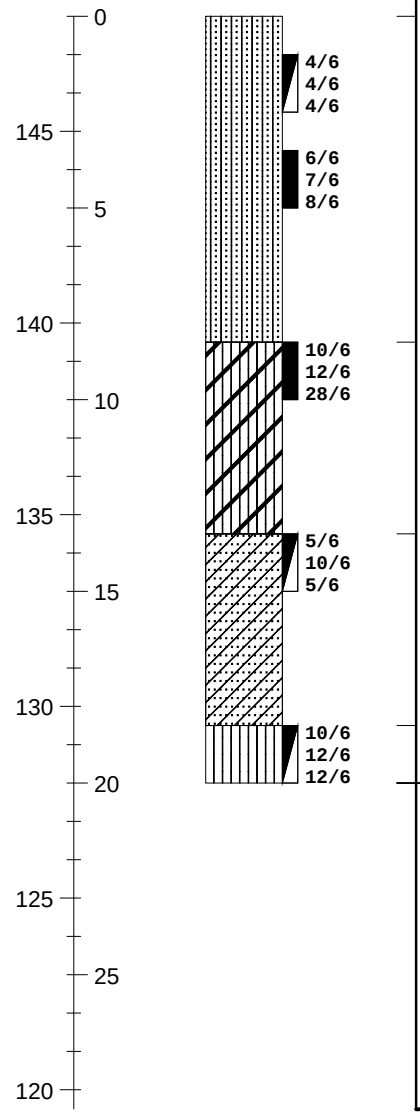
Location: Near East Cleveland Road, Merced, California

Drilled By: Salem Engineering Group, Inc. **Logged By:** BM

Drill Type: CME 45C **Elevation:** 148ft. AMSL

Auger Type: 6 5/8in Hollow Stem Auger **Initial Depth to Groundwater:** N/E

Hammer Type: Automatic Trip - 140lbs./30in. **Final Depth to Groundwater:** N/E



ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	N-Values blows/ft.	Moisture Content %	Dry Density, PCF	Remarks
		SM	Silty SAND; loose, brown, moist, fine to medium grained.	8	3.3	--	
			Grades as above.	15	1.4	89.4	
		CL-ML	Sandy silty clay; hard, light brown, moist, low plasticity.	40	15.8	109.0	
		SC	Clayey SAND; medium dense, light brown, moist, fine grained.	15	12.8	--	
		ML	Sandy SILT; very stiff, brown, moist, slight plasticity.	24	11.2	--	
			End of boring at 20ft. BSG				

Notes:

Figure Number A-3

Test Boring: B-4 **Page** 1 **Of:** 1

Project Number: 1-222-0227

Date: 04/01/2022

Client: Renewable Properties

Project: Proposed Ground Mount Solar Array

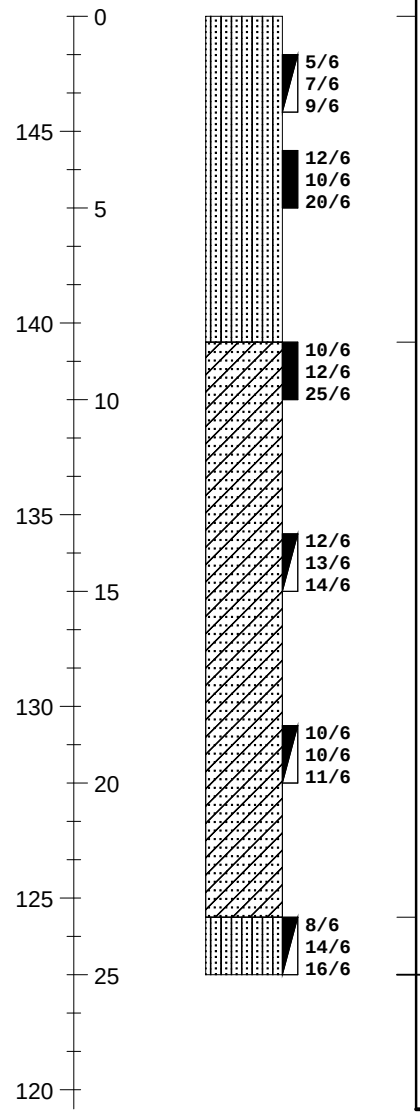
Location: Near East Cleveland Road, Merced, California

Drilled By: Salem Engineering Group, Inc. **Logged By:** BM

Drill Type: CME 45C **Elevation:** 148ft. AMSL

Auger Type: 6 5/8in Hollow Stem Auger **Initial Depth to Groundwater:** N/E

Hammer Type: Automatic Trip - 140lbs./30in. **Final Depth to Groundwater:** N/E



ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	N-Values blows/ft.	Moisture Content %	Dry Density, PCF	Remarks
		SM	Silty SAND; medium dense, light brown, damp, fine to coarse grained.	16	2.7	--	
			Grades as above.	30	2.7	108.2	
		SC	Clayey SAND; medium dense, light brown, damp, medium to fine grained.	37	9.3	109.1	
			Grades as above; brown.	27	6.2	--	
			Grades as above.	21	12.8	--	
		SM	Silty SAND; medium dense, brown, moist, fine to coarse grained.	30	7.6	--	
			End of boring at 25ft. BSG				

Notes:

Figure Number A-4

SALEM
engineering group, inc.

Test Boring: B-5 **Page** 1 **Of:** 1

Project Number: 1-222-0227

Date: 04/04/2022

Client: Renewable Properties

Project: Proposed Ground Mount Solar Array

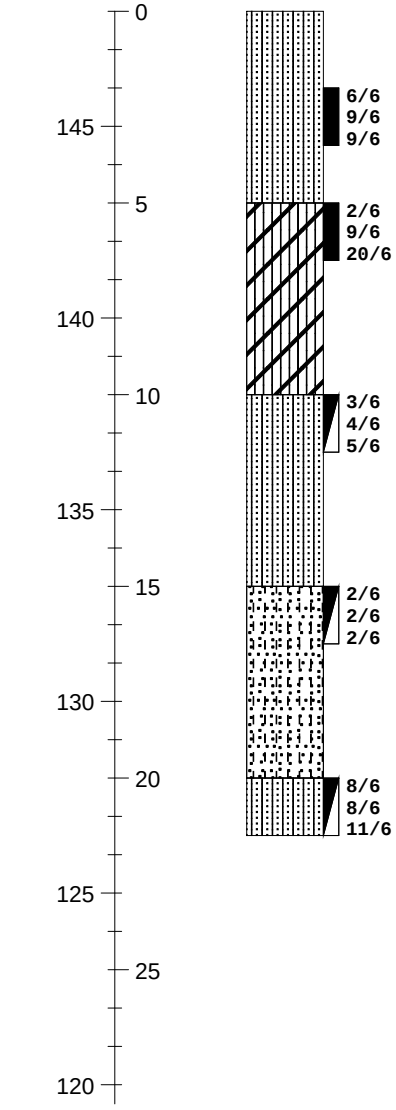
Location: Near East Cleveland Road, Merced, California

Drilled By: Salem Engineering Group, Inc. **Logged By:** BM

Drill Type: CME 45C **Elevation:** 148ft. AMSL

Auger Type: 6 5/8in Hollow Stem Auger **Initial Depth to Groundwater:** N/E

Hammer Type: Automatic Trip - 140lbs./30in. **Final Depth to Groundwater:** N/E



ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	N-Values blows/ft.	Moisture Content %	Dry Density, PCF	Remarks
		SM	Silty SAND; medium dense, brown, moist, fine to medium grained.	18	3.8	105.4	
		CL-ML	Silty CLAY with Sand; very stiff, brown, moist, low plasticity.	29	8.3	100.4	
		SM	Silty SAND: loose, light brown, moist, fine to medium grained.	9	8.2	--	
		SP-SM	Poorly Graded SAND with Silt; loose, brown, moist.	4	4.6	--	
		SM	Silty SAND; medium dense, brown, moist, fine to medium grained.	19	4.3	--	
			End of boring at 21.5ft. BSG				

Notes:

Figure Number A-5

SALEM engineering group, inc.

Test Boring: B-6 **Page** 1 **Of:** 1

Project Number: 1-222-0227

Date: 04/04/2022

Client: Renewable Properties

Project: Proposed Ground Mount Solar Array

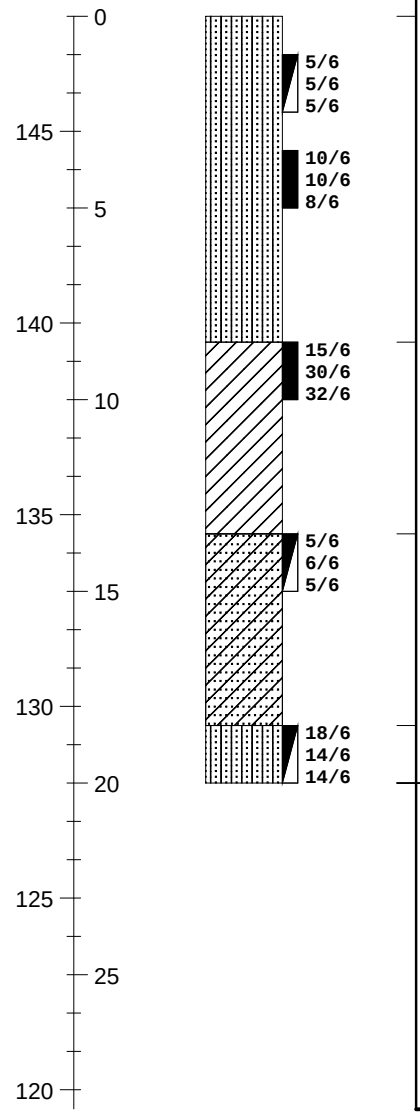
Location: Near East Cleveland Road, Merced, California

Drilled By: Salem Engineering Group, Inc. **Logged By:** BM

Drill Type: CME 45C **Elevation:** 148ft. AMSL

Auger Type: 6 5/8in Hollow Stem Auger **Initial Depth to Groundwater:** N/E

Hammer Type: Automatic Trip - 140lbs./30in. **Final Depth to Groundwater:** N/E



ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	N-Values blows/ft.	Moisture Content %	Dry Density, PCF	Remarks
		SM	Silty SAND; loose, brown, moist, fine grained.	10	4.8	--	
			Grades as above; medium dense.	18	5.4	107.3	
		CL	Sandy lean clay; hard, light brown, moist, low plasticity.	62	18.6	96.7	
		SC	Clayey SAND; medium dense, light brown, moist, medium to fine grained.	11	16.9	--	
		SM	Silty SAND; medium dense, light brown, moist, medium to fine grained.	28	10.2	--	
			End of boring at 20ft. BSG				

Notes:

Figure Number A-6

SALEM engineering group, inc.

Test Boring: B-7 **Page** 1 **Of:** 1

Project Number: 1-222-0227

Date: 04/04/2022

Client: Renewable Properties

Project: Proposed Ground Mount Solar Array

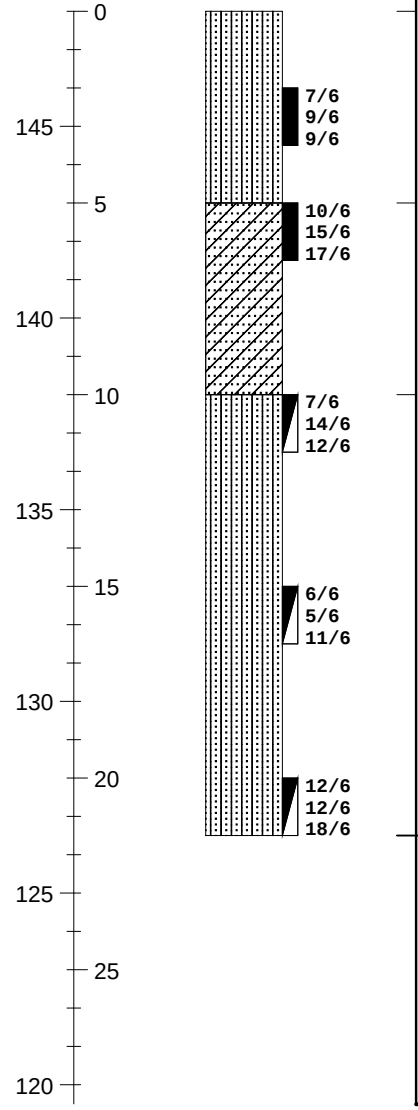
Location: Near East Cleveland Road, Merced, California

Drilled By: Salem Engineering Group, Inc. **Logged By:** BM

Drill Type: CME 45C **Elevation:** 148ft. AMSL

Auger Type: 6 5/8in Hollow Stem Auger **Initial Depth to Groundwater:** N/E

Hammer Type: Automatic Trip - 140lbs./30in. **Final Depth to Groundwater:** N/E



ELEVATION/ DEPTH (feet)	USCS	Soil Description	N-Values blows/ft.	Moisture Content %	Dry Density, PCF	Remarks
0	SM	Silty SAND; medium dense, brown, moist, fine grained.	18	6.2	110.1	
5	SC	Clayey sand; medium dense, brown, moist, medium to fine grained.	32	14.6	75.6	
10	SM	Silty sand; medium dense, brown, moist, medium to fine grained.	26	9.8	--	
15		Grades as above.	16	10.8	--	
20		Grades as above.	30	8.1	--	
21.5		End of boring at 21.5ft. BSG				

Notes:

Figure Number A-7

SALEM engineering group, inc.

Test Boring: B-8 **Page** 1 **Of:** 1

Project Number: 1-222-0227

Date: 04/04/2022

Client: Renewable Properties

Project: Proposed Ground Mount Solar Array

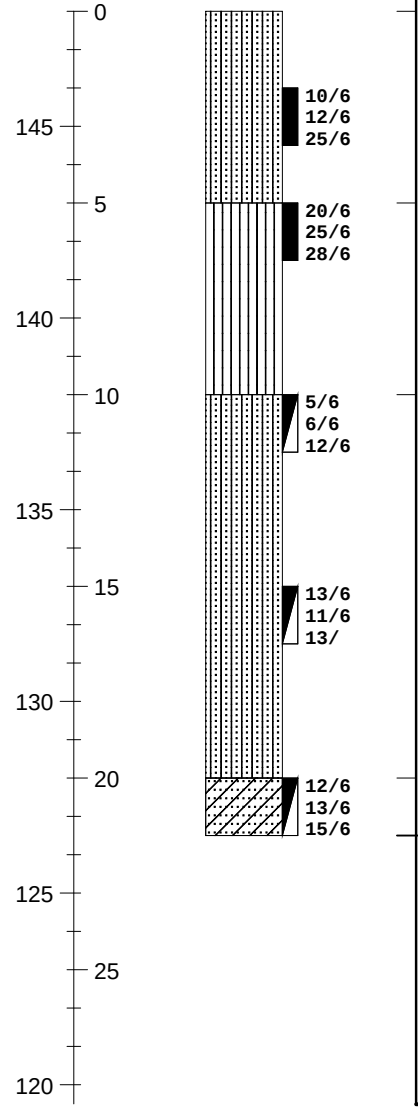
Location: Near East Cleveland Road, Merced, California

Drilled By: Salem Engineering Group, Inc. **Logged By:** BM

Drill Type: CME 45C **Elevation:** 148ft. AMSL

Auger Type: 6 5/8in Hollow Stem Auger **Initial Depth to Groundwater:** N/E

Hammer Type: Automatic Trip - 140lbs./30in. **Final Depth to Groundwater:** N/E



ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	N-Values blows/ft.	Moisture Content %	Dry Density, PCF	Remarks
		SM	Silty SAND; loose to medium dense, brown, moist, fine to medium grained.	37	2.6	112.8	
		ML	Sandy SILT; hard, light brown, moist, slight plasticity.	53	10.1	102.9	
		SM	Silty SAND; medium dense, brown, moist, medium to fine grained.	18	5.7	--	
			Grades as above.	24	7.4	--	
		SC	Clayey sand; medium dense, brown, moist, fine grained.	28	22.9	--	
			End of boring at 21.5ft. BSG				

Notes:

Figure Number A-8

SALEM engineering group, inc.

Test Boring: B-9 **Page** 1 **Of:** 1

Project Number: 1-222-0227

Date: 04/04/2022

Client: Renewable Properties

Project: Proposed Ground Mount Solar Array

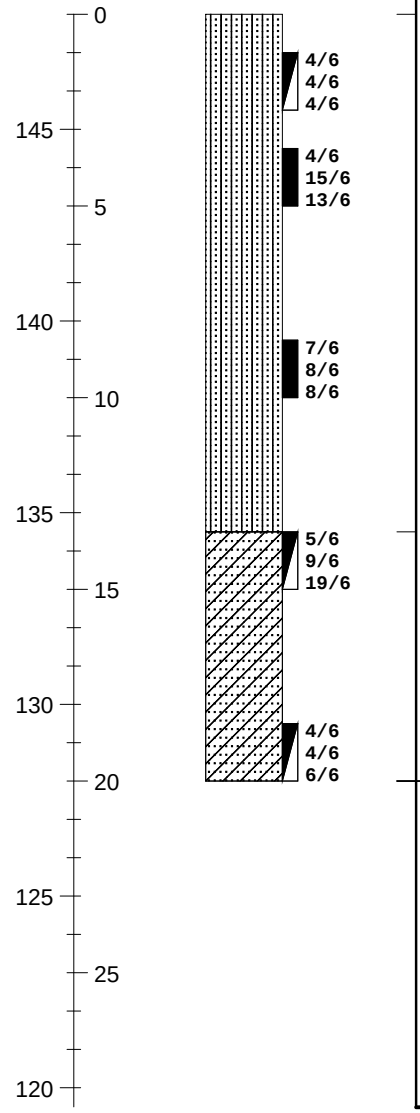
Location: Near East Cleveland Road, Merced, California

Drilled By: Salem Engineering Group, Inc. **Logged By:** BM

Drill Type: CME 45C **Elevation:** 148ft. AMSL

Auger Type: 6 5/8in Hollow Stem Auger **Initial Depth to Groundwater:** N/E

Hammer Type: Automatic Trip - 140lbs./30in. **Final Depth to Groundwater:** N/E



ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	N-Values blows/ft.	Moisture Content %	Dry Density, PCF	Remarks
		SM	Silty SAND; loose, brown, moist, fine to medium grained.	8	2.8	--	
			Grades as above; medium dense.	28	3.6	110.3	
			Grades as above.	16	3.4	91.8	
		SC	Clayey sand; medium dense, brown, moist, fine grained.	28	16.9	--	
			Grades as above.	10	14.4	--	
			End of boring at 20ft. BSG				

Notes:

Figure Number A-9

SALEM
engineering group, inc.

Test Boring: B-10 **Page** 1 **Of:** 1

Project Number: 1-222-0227

Date: 04/04/2022

Client: Renewable Properties

Project: Proposed Ground Mount Solar Array

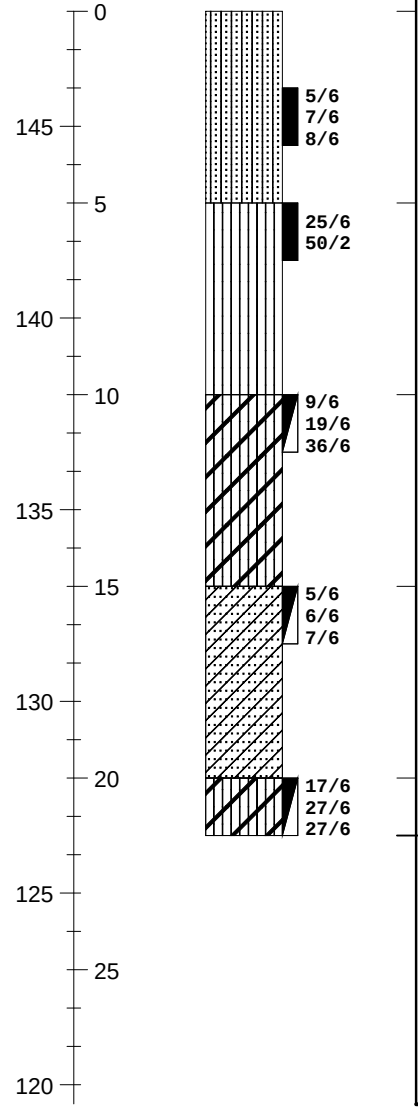
Location: Near East Cleveland Road, Merced, California

Drilled By: Salem Engineering Group, Inc. **Logged By:** BM

Drill Type: CME 45C **Elevation:** 148ft. AMSL

Auger Type: 6 5/8in Hollow Stem Auger **Initial Depth to Groundwater:** N/E

Hammer Type: Automatic Trip - 140lbs./30in. **Final Depth to Groundwater:** N/E



ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	N-Values blows/ft.	Moisture Content %	Dry Density, PCF	Remarks
		SM	Silty SAND; loose, brown, moist, fine to medium grained.	15	5.5	109.6	
		ML	Sandy SILT; very dense, brown, moist, fine grained.	>50	14.4	98.4	
		CL-ML	Silty CLAY; hard, light brown, moist.	55	11.7	--	
		SC	Clayey SAND; medium dense, light brown, moist, fine grained.	13	11.0	--	
		CL-ML	Sandy Silty CLAY; hard, light brown, moist, low plasticity.	54	13.4	--	
			End of boring at 21.5ft. BSG				

Notes:

Figure Number A-10

SALEM
engineering group, inc.

Test Boring: B-11 **Page** 1 **Of:** 1

Project Number: 1-222-0227

Date: 04/01/2022

Client: Renewable Properties

Project: Proposed Ground Mount Solar Array

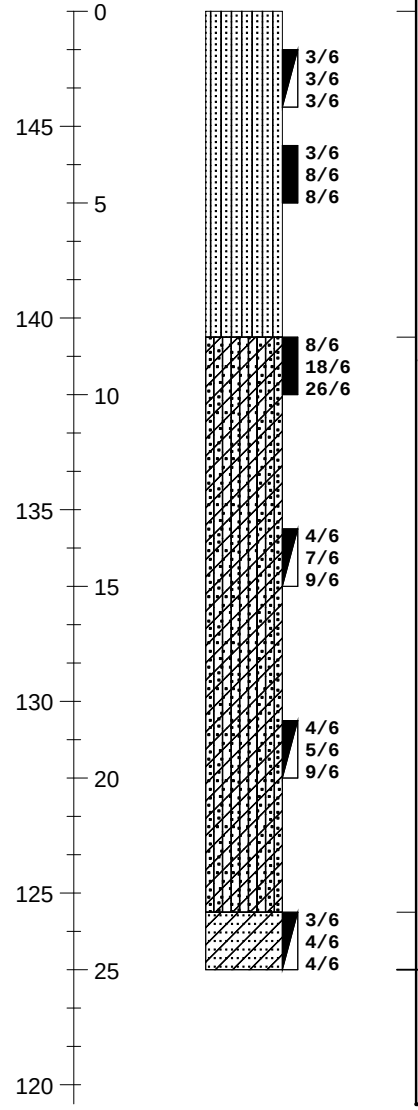
Location: Near East Cleveland Road, Merced, California

Drilled By: Salem Engineering Group, Inc. **Logged By:** BM

Drill Type: CME 45C **Elevation:** 148ft. AMSL

Auger Type: 6 5/8in Hollow Stem Auger **Initial Depth to Groundwater:** N/E

Hammer Type: Automatic Trip - 140lbs./30in. **Final Depth to Groundwater:** N/E



ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	N-Values blows/ft.	Moisture Content %	Dry Density, PCF	Remarks
		SM	Silty SAND; loose, brown, dry, fine to coares grained.	6	3.2	--	
			Grades as above; medium dense.	16	2.4	111.3	
		SC-SM	Silty, Clayey SAND; dense, brown, moist, fine to medium grained.	44	12.0	111.2	
			Grades as above; grey to brown.	16	15.4	--	
			Grades as above; brown.	14	15.6	--	
		SC	Clayey SAND; medium dense, brown, moist, fine grained.	8	21.4	--	
			End of boring at 25ft. BSG				

Notes:

Figure Number A-11

SALEM engineering group, inc.

Test Boring: B-12 **Page** 1 **Of:** 1

Project Number: 1-222-0227

Date: 04/04/2022

Client: Renewable Properties

Project: Proposed Ground Mount Solar Array

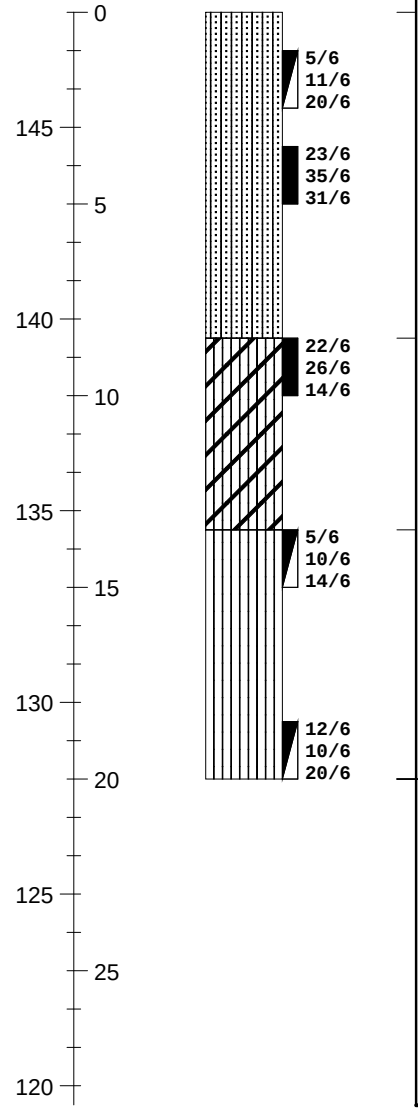
Location: Near East Cleveland Road, Merced, California

Drilled By: Salem Engineering Group, Inc. **Logged By:** BM

Drill Type: CME 45C **Elevation:** 148ft. AMSL

Auger Type: 6 5/8in Hollow Stem Auger **Initial Depth to Groundwater:** N/E

Hammer Type: Automatic Trip - 140lbs./30in. **Final Depth to Groundwater:** N/E



ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	N-Values blows/ft.	Moisture Content %	Dry Density, PCF	Remarks
		SM	Silty SAND; medium dense, light brown, moist, fine grained.	31	6.5	--	
			Grades as above; very dense.	66	6.6	105.0	
		CL-ML	Sitly CLAY; very stiff, light brown, moist, low plasticity.	40	22.0	98.7	
		ML	SILT with Sand; medium dense, light brown, moist.	24	17.1	--	
			Sandy SILT; medium dense, light brown, moist.	30	18.2	--	
			End of boring at 20ft. BSG				

Notes:

Figure Number A-12

SALEM engineering group, inc.

Test Boring: B-13 **Page** 1 **Of:** 1

Project Number: 1-222-0227

Date: 04/04/2022

Client: Renewable Properties

Project: Proposed Ground Mount Solar Array

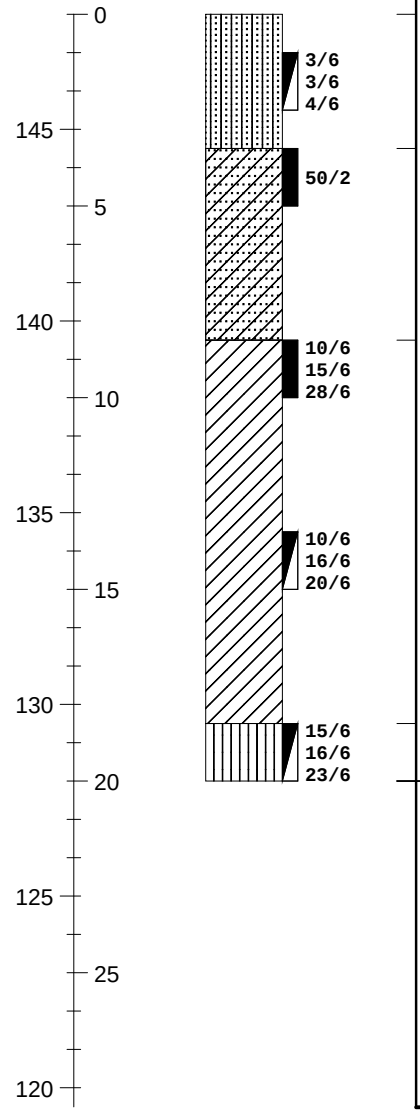
Location: Near East Cleveland Road, Merced, California

Drilled By: Salem Engineering Group, Inc. **Logged By:** BM

Drill Type: CME 45C **Elevation:** 148ft. AMSL

Auger Type: 6 5/8in Hollow Stem Auger **Initial Depth to Groundwater:** N/E

Hammer Type: Automatic Trip - 140lbs./30in. **Final Depth to Groundwater:** N/E



ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	N-Values blows/ft.	Moisture Content %	Dry Density, PCF	Remarks
		SM	Silty SAND; loose, light brown, moist, fine grained.	7	5.7	--	
		SC	Clayey sand; very dense, brown, moist, fine grained.	>50	10.4	93.1	
		CL	Sandy lean clay; hard, brown moist, low plasticity.	43	13.5	96.2	
			Lean CLAY w/sand; hard, brown, moist, low plasticity.	36	11.0	--	
		ML	Sandy SILT; dense, light brown, moist, with trace clay.	39	8.9	--	
			End of boring at 20ft. BSG				

Notes:

Figure Number A-13

SALEM engineering group, inc.

Test Boring: B-14 **Page** 1 **Of:** 1

Project Number: 1-222-0227

Date: 04/01/2022

Client: Renewable Properties

Project: Proposed Ground Mount Solar Array

Location: Near East Cleveland Road, Merced, California

Drilled By: Salem Engineering Group, Inc. **Logged By:** BM

Drill Type: CME 45C **Elevation:** 148ft. AMSL

Auger Type: 6 5/8in Hollow Stem Auger **Initial Depth to Groundwater:** N/E

Hammer Type: Automatic Trip - 140lbs./30in. **Final Depth to Groundwater:** N/E

ELEVATION/ DEPTH (feet)	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Soil Description	N-Values blows/ft.	Moisture Content %	Dry Density, PCF	Remarks
0 / 145	3/6 3/6 5/6	SM	Silty SAND; loose, brown, moist, fine to coarse grained.	8	2.9	--	
	7/6 10/6 12/6		Grades as above; medium dense, fine to medium grained.	22	8.4	108.8	
5 / 140	50/5	SC	Clayey sand; very dense, brown, moist, medium to fine grained.	>50	9.6	99.1	
10 / 135	8/6 10/6 12/6	CL	Sandy lean clay; very stiff, brown, moist, low plasticity.	22	11.4	--	
15 / 130	3/6 4/6 5/6		Grades as above; loose.	9	19.7	--	
20 / 125	4/6 7/6 12/6		Grades as above; medium dense, increase clay.	19	16.5	--	
25 / 120	5/6 6/6 9/6	SC	Clayey sand; medium dense, brown, moist, medium to fine grained.	15	13.9	--	
			End of boring at 26.5ft. BSG				

Notes:

Figure Number A-14

KEY TO SYMBOLS

Symbol Description

Strata symbols

Silty sand

Clayey Sand

Poorly graded sand with silt

Silty low plasticity clay

Silt

Lean Clay

Silty, Clayey SAND

Soil Samplers

Standard penetration test

California sampler

Notes:

Granular Soils
Blows Per Foot (Uncorrected)

	MCS	SPT
Very loose	<5	<4
Loose	5-15	4-10
Medium dense	16-40	11-30
Dense	41-65	31-50
Very dense	>65	>50

Cohesive Soils
Blows Per Foot (Uncorrected)

	MCS	SPT
Very soft	<3	<2
Soft	3-5	2-4
Firm	6-10	5-8
Stiff	11-20	9-15
Very Stiff	21-40	16-30
Hard	>40	>30

MCS = Modified California Sampler
SPT = Standard Penetration Test Sampler

RESITIVITY SOUNDING DATA SHEET

Job Number: 1-222-0227 Electrode Configuration: Wenner (4-point) Array

Job Name: Prasad Solar

Location: 37.1237, -120.4554 Merced, CA

Test No.: RL-1 East-West line

Date: 04/01/22 Personnel: BM

Spacing (Ft)		Inst. Reading			App. Resist *	App. Resist
A	B	R (Ohms)	AB Dist (ft)	AB/2	ρ (ohm-ft)	ρ (ohm-cm)
2.0		1992.00			25031.5	762959.3
5.0		1845.00			57960.7	1766641.4
10.0		1680.00			105554.4	3217298.1
20.0		980.00			123146.8	3753514.5
30.0		2000.00			376980.0	11490350.4
50.0		1831.00			575208.7	17532359.7

* Apparent Resistivity = 6.283*A*R

Notes: A-spacing of 30' was out of range

RESITIVITY SOUNDING DATA SHEET

Job Number: 1-222-0227 Electrode Configuration: Wenner (4-point) Array

Job Name: Prasad Solar

Location: 37.1237, -120.4554 Merced, CA

Test No.: RL-1 North-South line

Date: 04/01/22 Personnel: BM

Spacing (Ft)		Inst. Reading			App. Resist *	App. Resist
A	B	R (Ohms)	AB Dist (ft)	AB/2	ρ (ohm-ft)	ρ (ohm-cm)
2.0		1570.00			19728.6	601328.3
5.0		1280.00			40211.2	1225637.4
10.0		1156.00			72631.5	2213807.5
20.0		2000.00			251320.0	7660233.6
30.0		2000.00			376980.0	11490350.4
50.0		1120.00			351848.0	10724327.0

* Apparent Resistivity = 6.283*A*R

Notes: A-spacing of 20' and 30' was out of range

RESITIVITY SOUNDING DATA SHEET

Job Number: 1-222-0227 Electrode Configuration: Wenner (4-point) Array

Job Name: Prasad Solar

Location: 37.1237, -120.4554 Merced, CA

Test No.: RL-2 East-West line

Date: 04/01/22 Personnel: BM

Spacing (Ft)		Inst. Reading			App. Resist *	App. Resist
A	B	R (Ohms)	AB Dist (ft)	AB/2	ρ (ohm-ft)	ρ (ohm-cm)
2.0		2000.00			25132.0	766023.4
5.0		1418.00			44546.5	1357776.4
10.0		1345.00			84506.4	2575753.5
20.0		1425.00			179065.5	5457916.4
30.0		1050.00			197914.5	6032434.0
50.0		1283.00			403054.5	12285099.6

* Apparent Resistivity = 6.283*A*R

Notes:

RESITIVITY SOUNDING DATA SHEET

Job Number: 1-222-0227 Electrode Configuration: Wenner (4-point) Array

Job Name: Prasad Solar

Location: 37.1237, -120.4554 Merced, CA

Test No.: RL-2 North-South line

Date: 04/01/22 Personnel: BM

Spacing (Ft)		Inst. Reading			App. Resist *	App. Resist
A	B	R (Ohms)	AB Dist (ft)	AB/2	ρ (ohm-ft)	ρ (ohm-cm)
2.0		1582.00			19879.4	605924.5
5.0		1867.00			58651.8	1787707.0
10.0		1350.00			84820.5	2585328.8
20.0		1550.00			194773.0	5936681.0
30.0		1270.00			239382.3	7296372.5
50.0		1722.00			540966.3	16488652.8

* Apparent Resistivity = 6.283*A*R

Notes:

APPENDIX

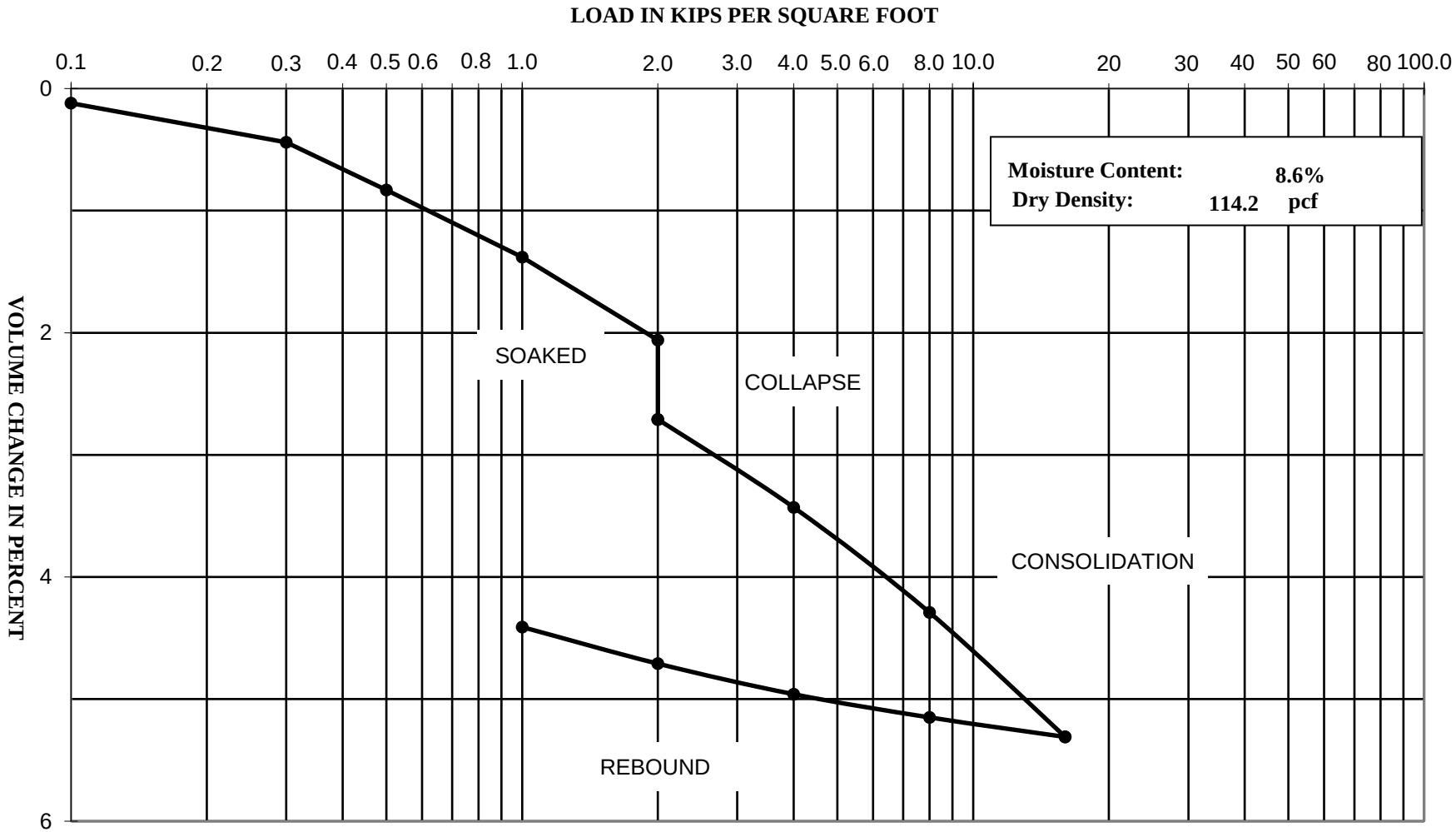
B

APPENDIX B

LABORATORY TESTING

Laboratory tests were performed in accordance with generally accepted test methods of the American Society for Testing and Materials (ASTM), Caltrans, or other suggested procedures. Selected samples were tested for in-situ moisture content, shear strengths, consolidation, optimum moisture/density, expansion index, Atterberg limits, and grain size distribution. The corrosivity testing included soluble sulfate, chloride, pH, and soil resistivity. The results of the laboratory tests are summarized in the following figures.

CONSOLIDATION - PRESSURE TEST DATA
ASTM D2435



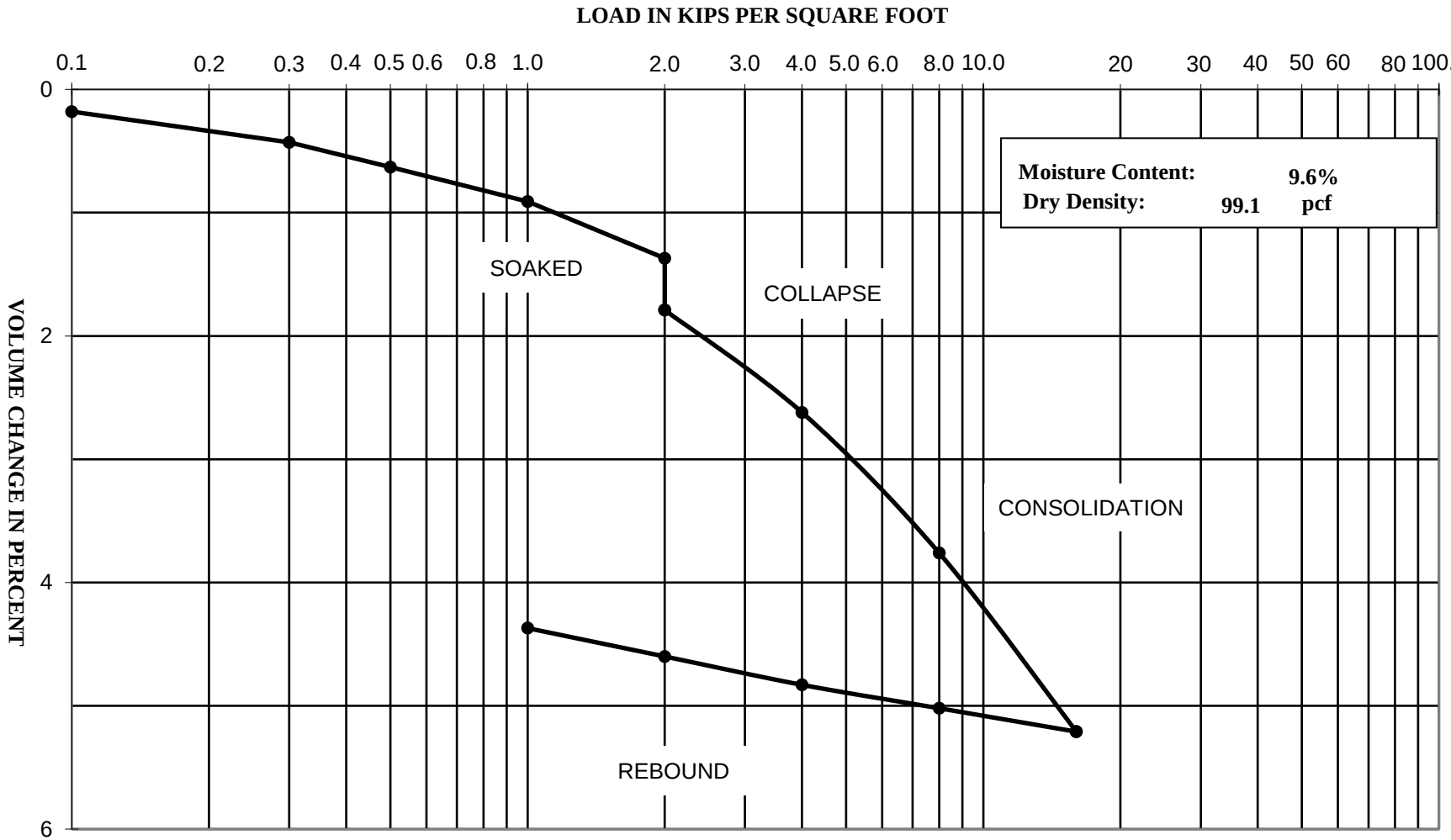
Project Name: Ground Mount Solar Array - Merced, CA

Project Number: 1-222-0227

Boring: B-1 @ 5'

SALEM engineering group, inc.

CONSOLIDATION - PRESSURE TEST DATA
ASTM D2435



Project Name: Ground Mount Solar Array - Merced, CA

Project Number: 1-222-0227

Boring: B-14 @ 5'

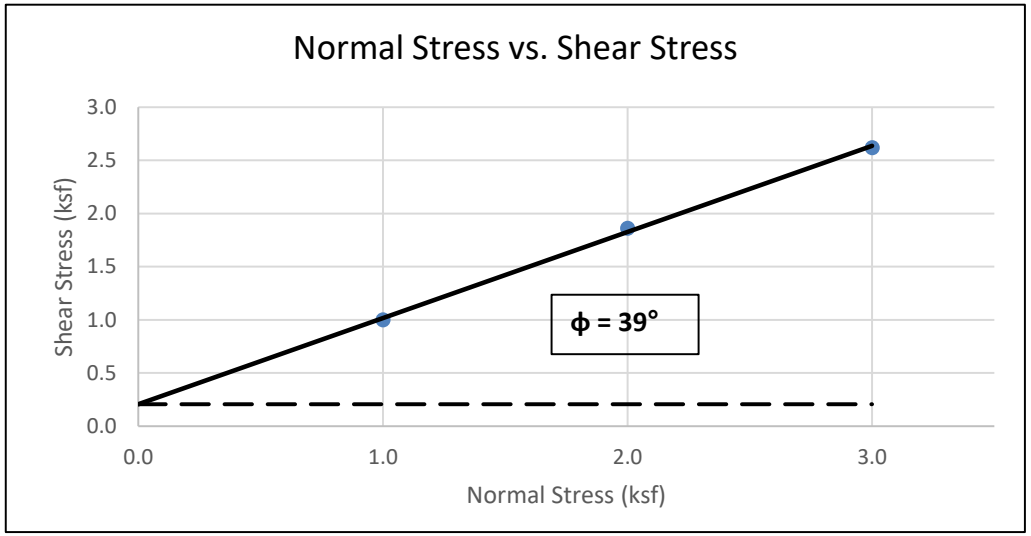
SALEM engineering group, inc.

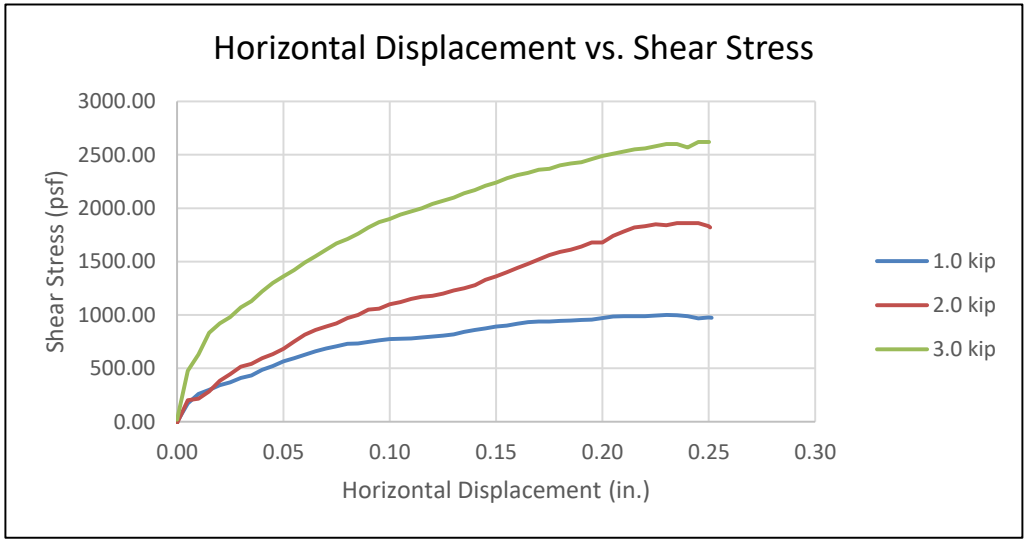
Direct Shear Test (ASTM D3080)

Project Name: Ground Mount Solar Array - Merced, CA
Project Number: 1-222-0227
Client: Renewable Properties
Boring: B-4 @ 3.5'
Soil Type: Silty sand
Sample Type: Undisturbed Ring
Tested By: AC / NL
Reviewed By: JRM
Date of Test: 4/14/22
Test Equipment: GeoComp ShearTrac II

	Loading		
	1.0 kip	**2.0 kip**	**3.0 kip**
Normal Stress (ksf)	1.00	2.00	3.00
Shear Rate (in/min)	0.0040	0.0040	0.0040
Peak Shear Stress (ksf)	1.00	1.86	2.62

Initial Height of Sample (in)	1.000	1.000	1.000
Post-Consol. Sample Height (in.)	0.923	0.890	0.817
Post-Shear Sample Height (in.)	0.895	0.862	0.779
Diameter of Sample (in)	2.4	2.4	2.4
Initial (pre-shear) Values			
Moisture Content (%)	2.7		
Dry Density (pcf)	103.4	108.5	103.1
Saturation %	11.6	13.3	11.6
Void Ratio	0.62	0.55	0.63
Consolidated Void Ratio	0.50	0.38	0.33
Final (post-shear) Values			
Final Moisture Content (%)	23.5	23.9	36.9
Dry Density (pcf)	105.9	112.8	106.4
Saturation %	84.6	105.3	143.7
Void Ratio	0.75	0.61	0.69





Peak Shear Strength Values	
Slope	0.81
Friction Angle	39
Cohesion (psf)	207

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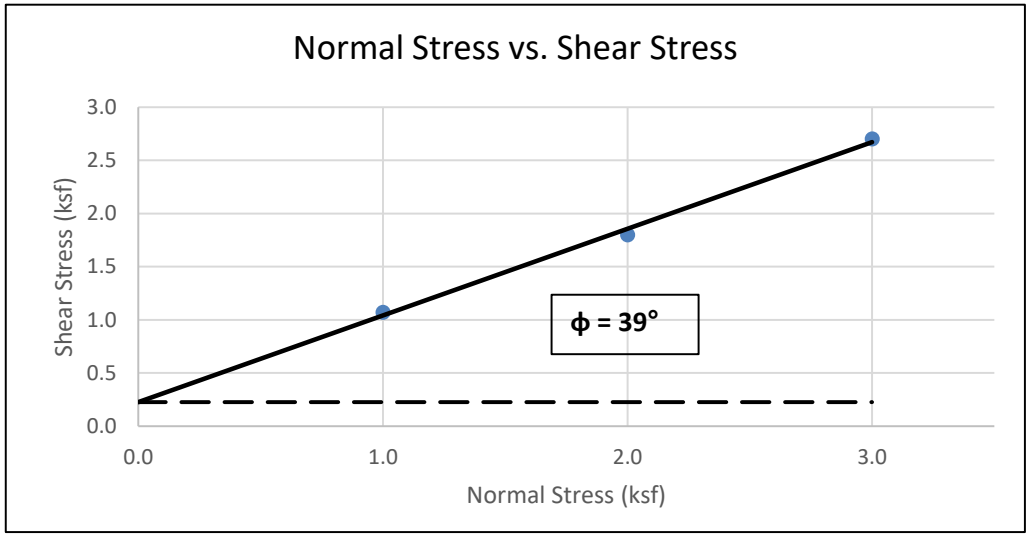
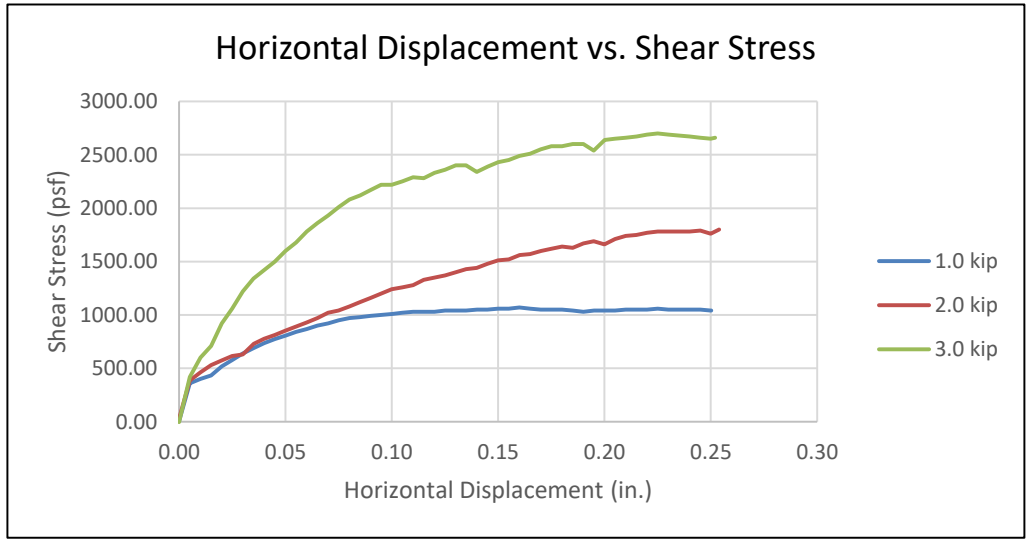
Direct Shear Test (ASTM D3080)

Project Name: Ground Mount Solar Array - Merced, CA
Project Number: 1-222-0227
Client: Renewable Properties
Boring: B-11 @ 3.5'
Soil Type: Silty sand
Sample Type: Undisturbed Ring
Tested By: AC / NL
Reviewed By: JRM
Date of Test: 4/13/22
Test Equipment: GeoComp ShearTrac II

	Loading		
	1.0 kip	**2.0 kip**	**3.0 kip**
Normal Stress (ksf)	1.00	2.00	3.00
Shear Rate (in/min)	0.0040	0.0040	0.0040
Peak Shear Stress (ksf)	1.07	1.80	2.70

Initial Height of Sample (in)	1.000	1.000	1.000
Post-Consol. Sample Height (in.)	0.974	0.952	0.959
Post-Shear Sample Height (in.)	0.967	0.931	0.944
Diameter of Sample (in)	2.4	2.4	2.4
Initial (pre-shear) Values			
Moisture Content (%)	2.4		
Dry Density (pcf)	109.6	107.2	106.5
Saturation %	12.1	11.3	11.1
Void Ratio	0.53	0.57	0.58
Consolidated Void Ratio	0.49	0.49	0.51
Final (post-shear) Values			
Final Moisture Content (%)	18.2	18.9	17.6
Dry Density (pcf)	107.7	110.1	106.8
Saturation %	69.0	73.3	66.7
Void Ratio	0.71	0.69	0.71





Peak Shear Strength Values	
Slope	0.82
Friction Angle	39
Cohesion (psf)	227

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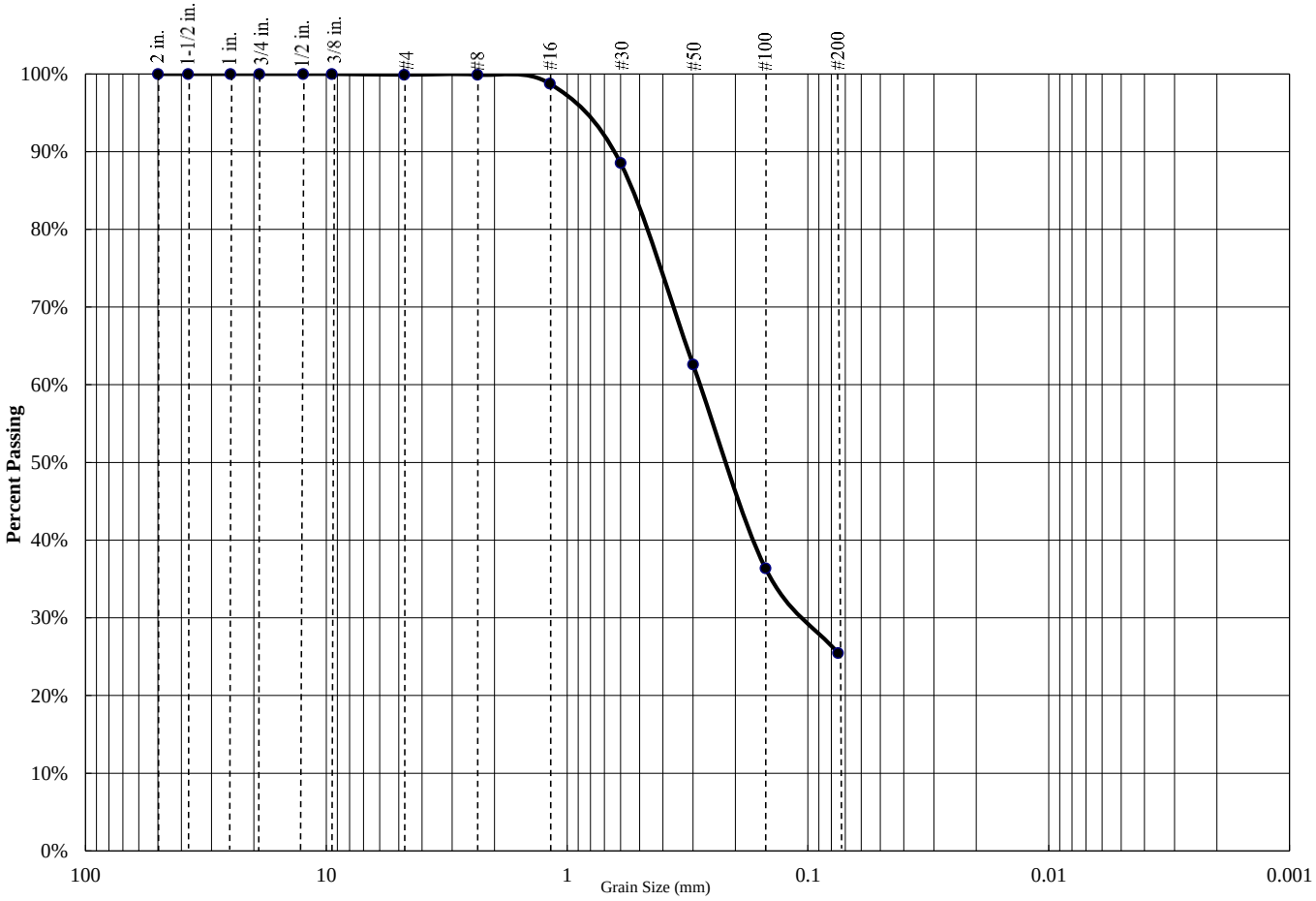
PARTICLE SIZE DISTRIBUTION DIAGRAM

GRADATION TEST - ASTM C136



Percent Gravel	Percent Sand	Percent Silt/Clay
0%	75%	25%

Sieve Size	Percent Passing
3/4 inch	100.0%
1/2 inch	100.0%
3/8 inch	100.0%
#4	99.9%
#8	99.9%
#16	98.8%
#30	88.5%
#50	62.6%
#100	36.4%
#200	25.5%

Atterberg Limits					
PL=	n/a	**LL=**	n/a	**PI=**	n/a

Coefficients					
D_{85}=	0.52	**D_{60}=**	0.29	**D_{50}=**	0.22
D_{30}=	0.12	**D_{15}=**	n/a	**D_{10}=**	n/a
C_u=	N/A	**C_c=**	N/A		

USCS CLASSIFICATION
Silty sand

Project Name: Ground Mount Solar Array - Merced, CA

Project Number: 1-222-0227

Boring: B-1 @ 5'

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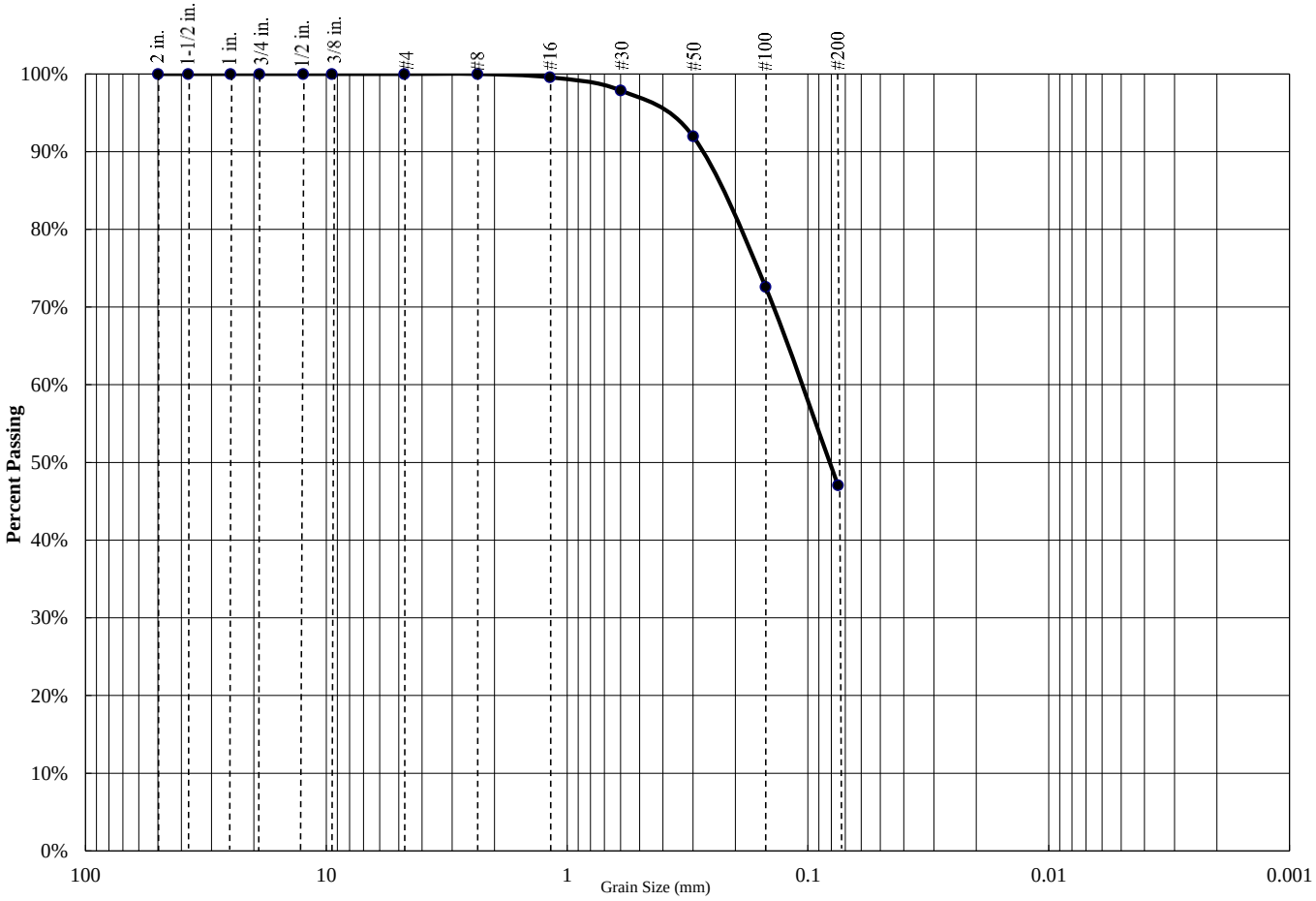
PARTICLE SIZE DISTRIBUTION DIAGRAM

GRADATION TEST - ASTM C136



Percent Gravel	Percent Sand	Percent Silt/Clay
0%	53%	47%

Sieve Size	Percent Passing
3/4 inch	100.0%
1/2 inch	100.0%
3/8 inch	100.0%
#4	100.0%
#8	100.0%
#16	99.6%
#30	97.9%
#50	92.0%
#100	72.6%
#200	47.0%

Atterberg Limits					
PL=	n/a	**LL=**	n/a	**PI=**	n/a

Coefficients					
D_{85}=	0.22	**D_{60}=**	0.11	**D_{50}=**	0.08
D_{30}=	n/a	**D_{15}=**	n/a	**D_{10}=**	n/a
C_u=	N/A	**C_c=**	N/A		

USCS CLASSIFICATION
Clayey sand

Project Name: Ground Mount Solar Array - Merced, CA

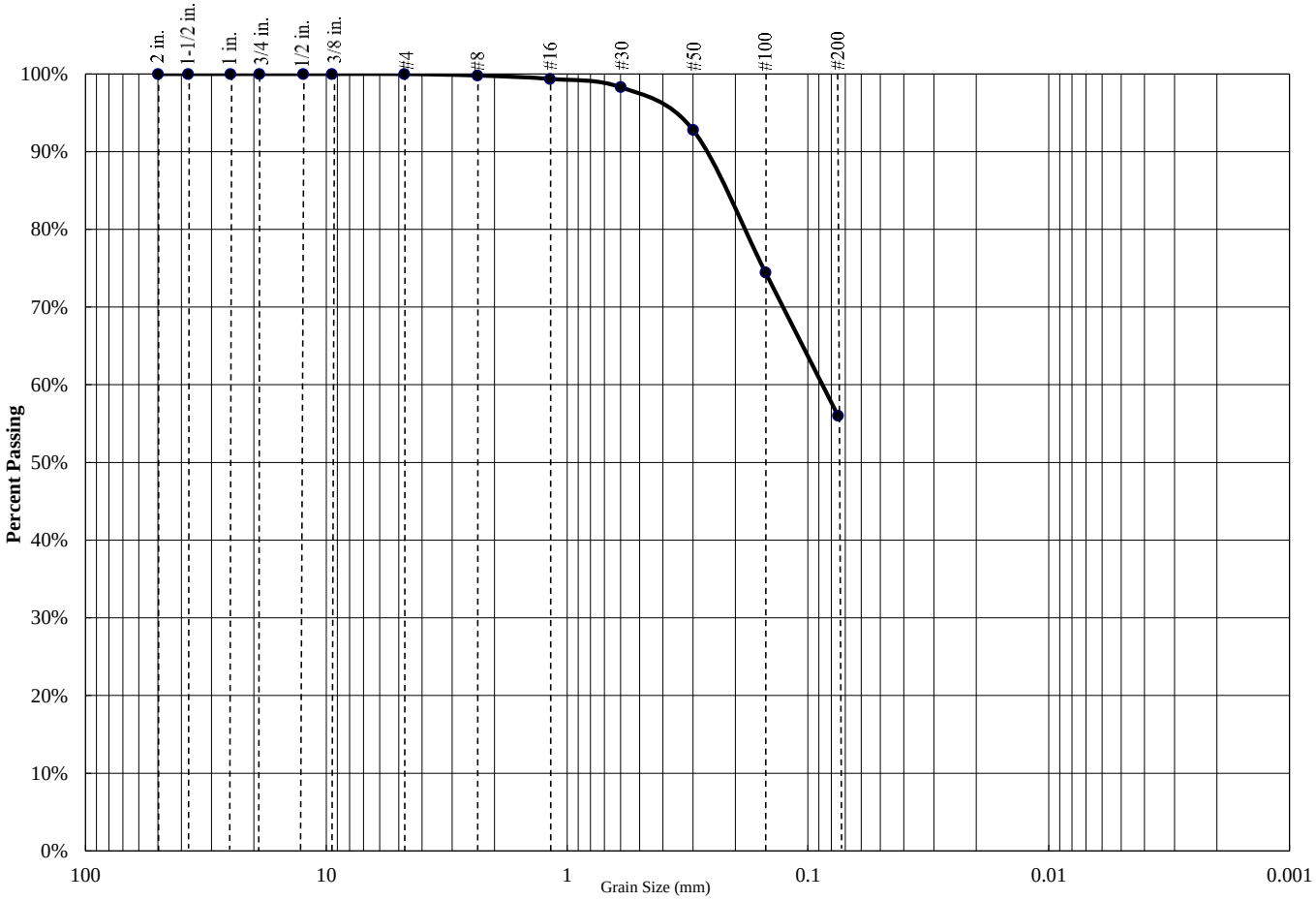
Project Number: 1-222-0227

Boring: B-1 @ 10'

SALEM engineering group, inc.

PARTICLE SIZE DISTRIBUTION DIAGRAM

GRADATION TEST - ASTM C136



Percent Gravel	Percent Sand	Percent Silt/Clay
0%	44%	56%

Sieve Size	Percent Passing
3/4 inch	100.0%
1/2 inch	100.0%
3/8 inch	100.0%
#4	100.0%
#8	99.8%
#16	99.4%
#30	98.3%
#50	92.8%
#100	74.5%
#200	56.0%

Atterberg Limits					
PL=	n/a	**LL=**	n/a	**PI=**	n/a

Coefficients					
D_{85}=	2.2	**D_{60}=**	0.09	**D_{50}=**	n/a
D_{30}=	n/a	**D_{15}=**	n/a	**D_{10}=**	n/a
C_u=	N/A	**C_c=**	N/A		

USCS CLASSIFICATION
Sandy silty clay

Project Name: Ground Mount Solar Array - Merced, CA

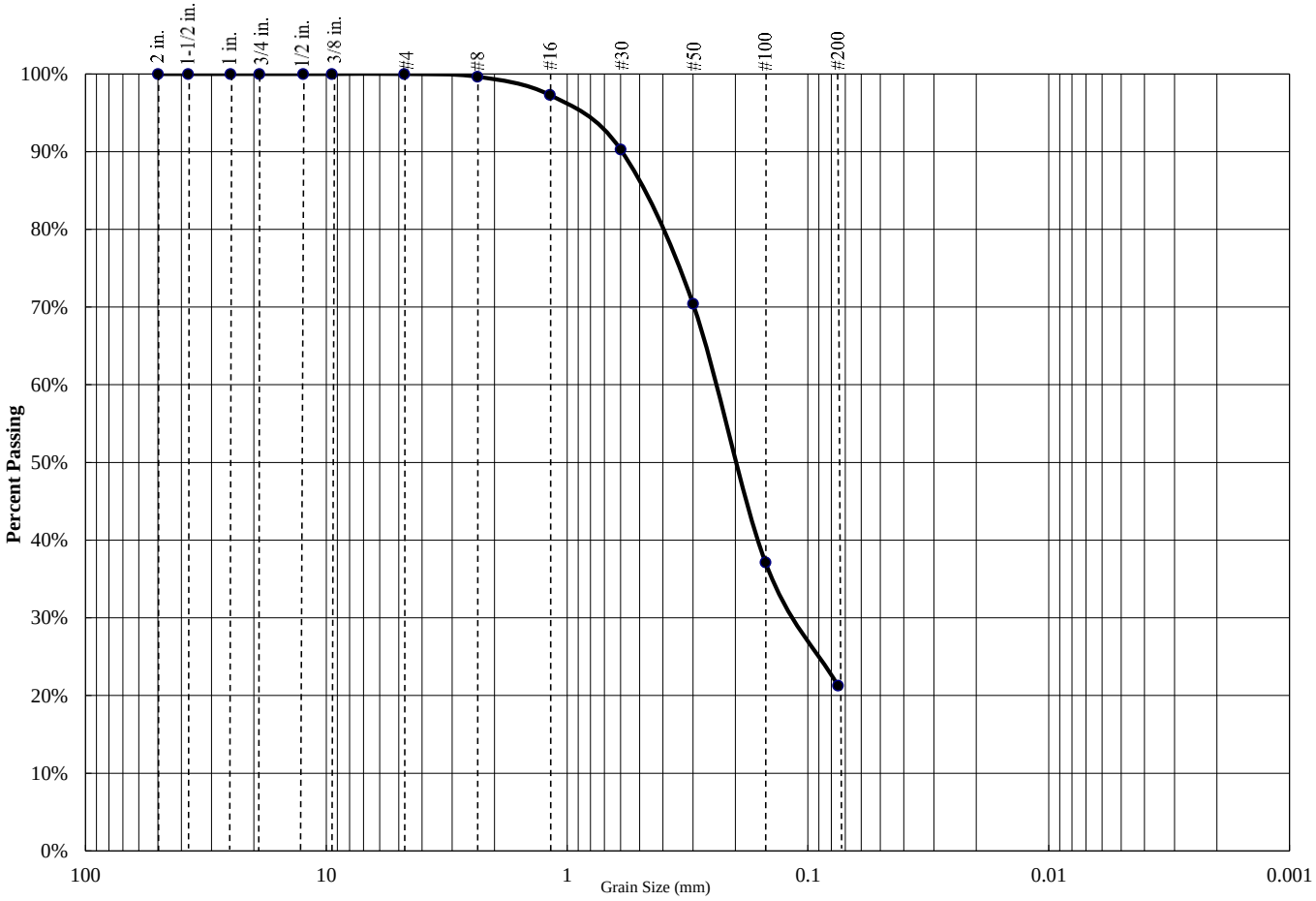
Project Number: 1-222-0227

Boring: B-2 @ 5'

SALEM engineering group, inc.

PARTICLE SIZE DISTRIBUTION DIAGRAM

GRADATION TEST - ASTM C136



Percent Gravel	Percent Sand	Percent Silt/Clay
0%	79%	21%

Sieve Size	Percent Passing
3/4 inch	100.0%
1/2 inch	100.0%
3/8 inch	100.0%
#4	100.0%
#8	99.7%
#16	97.3%
#30	90.3%
#50	70.4%
#100	37.1%
#200	21.3%

Atterberg Limits					
PL=	n/a	**LL=**	n/a	**PI=**	n/a

Coefficients					
D_{85}=	0.48	**D_{60}=**	0.25	**D_{50}=**	0.2
D_{30}=	0.13	**D_{15}=**	n/a	**D_{10}=**	n/a
C_u=	N/A	**C_c=**	N/A		

USCS CLASSIFICATION
Silty sand

Project Name: Ground Mount Solar Array - Merced, CA

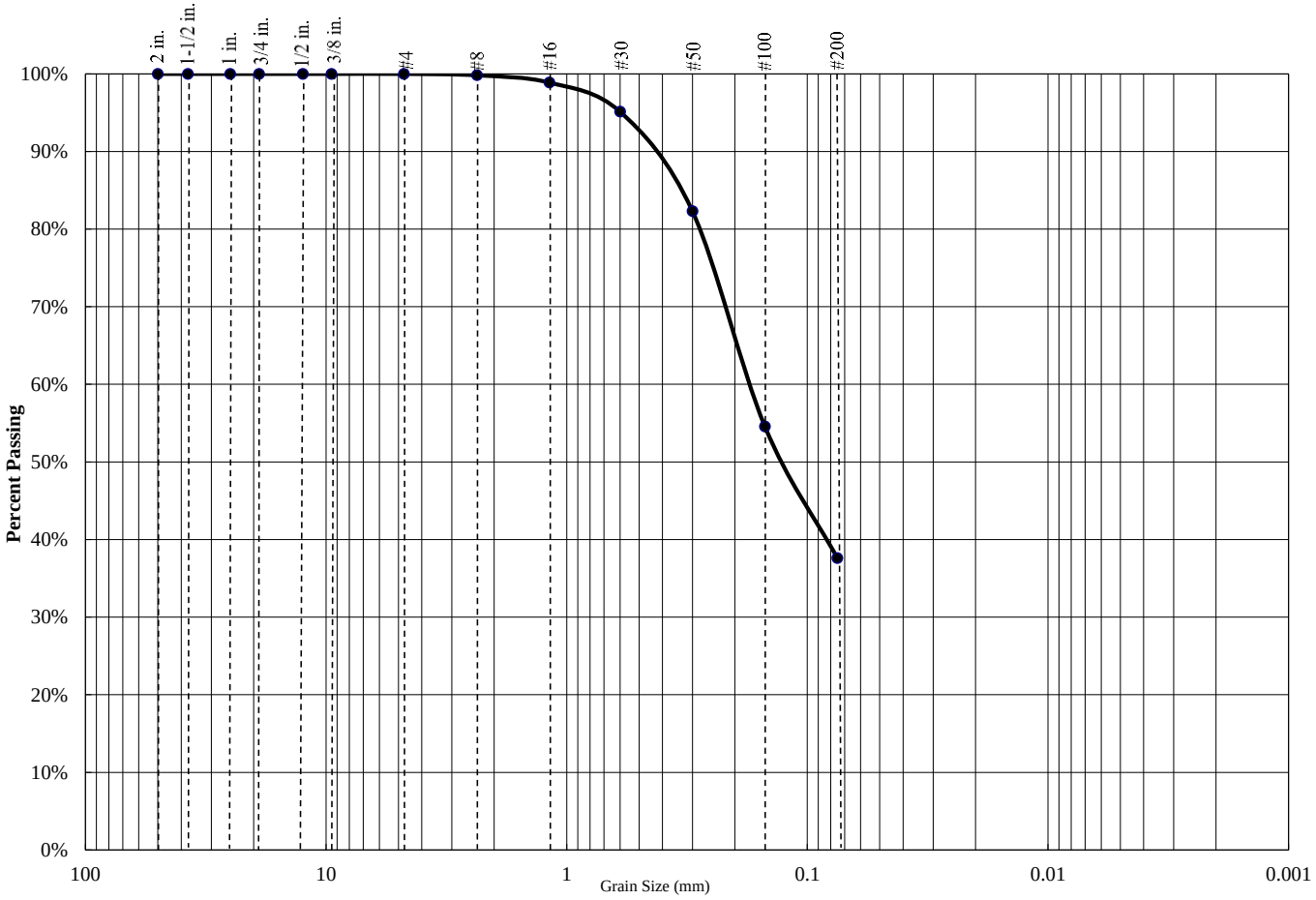
Project Number: 1-222-0227

Boring: B-4 @ 3.5'

SALEM engineering group, inc.

PARTICLE SIZE DISTRIBUTION DIAGRAM

GRADATION TEST - ASTM C136



Percent Gravel	Percent Sand	Percent Silt/Clay
0%	62%	38%

Sieve Size	Percent Passing
3/4 inch	100.0%
1/2 inch	100.0%
3/8 inch	100.0%
#4	100.0%
#8	99.8%
#16	98.9%
#30	95.1%
#50	82.3%
#100	54.6%
#200	37.6%

Atterberg Limits					
PL=	n/a	**LL=**	n/a	**PI=**	n/a

Coefficients					
D_{85}=	3.4	**D_{60}=**	0.18	**D_{50}=**	0.14
D_{30}=	n/a	**D_{15}=**	n/a	**D_{10}=**	n/a
C_u=	N/A	**C_c=**	N/A		

USCS CLASSIFICATION
Silty sand

Project Name: Ground Mount Solar Array - Merced, CA

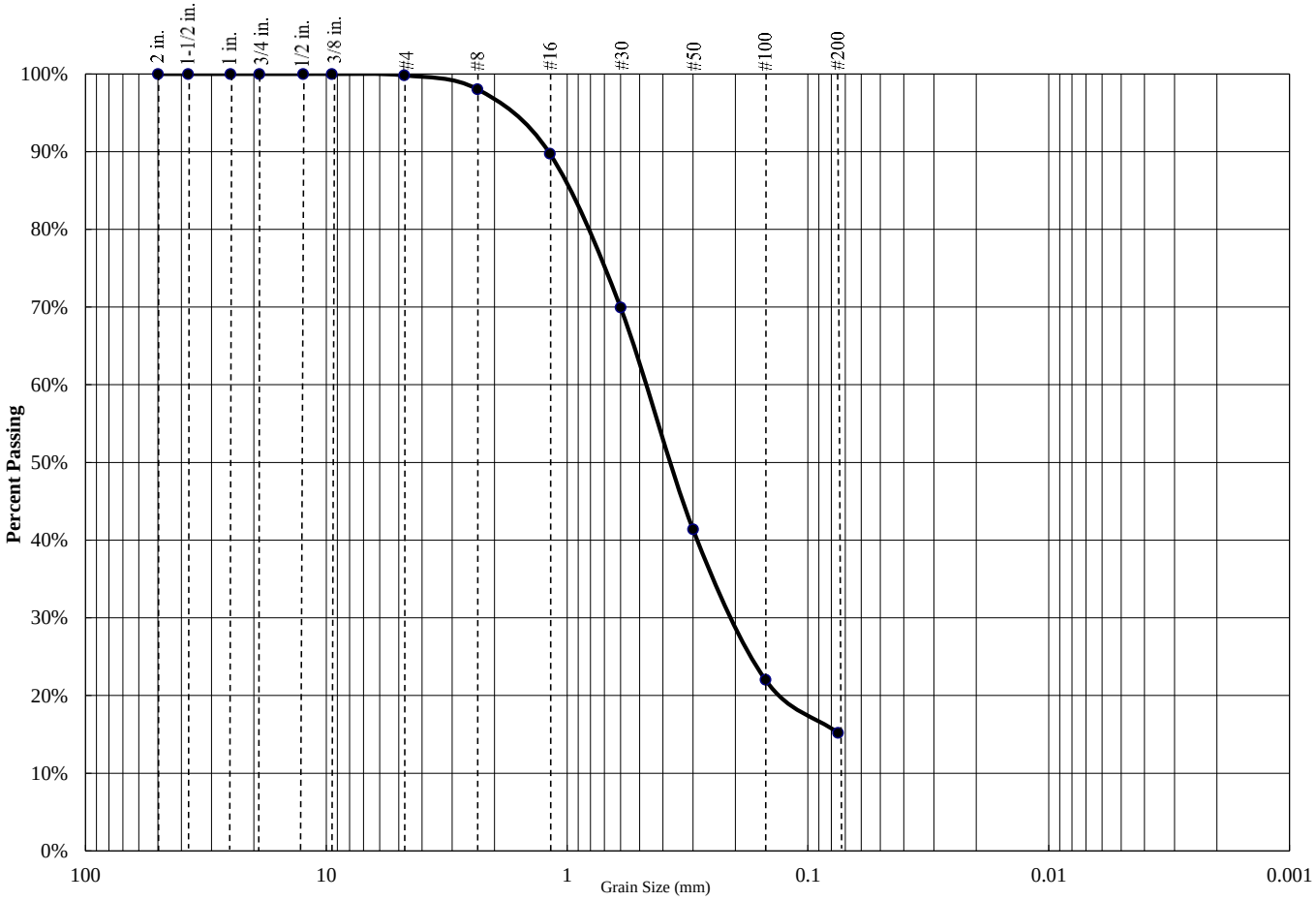
Project Number: 1-222-0227

Boring: B-6 @ 3.5'

SALEM engineering group, inc.

PARTICLE SIZE DISTRIBUTION DIAGRAM

GRADATION TEST - ASTM C136



Percent Gravel	Percent Sand	Percent Silt/Clay
0%	85%	15%

Sieve Size	Percent Passing
3/4 inch	100.0%
1/2 inch	100.0%
3/8 inch	100.0%
#4	99.8%
#8	98.0%
#16	89.8%
#30	70.0%
#50	41.4%
#100	22.0%
#200	15.2%

Atterberg Limits					
PL=	n/a	**LL=**	n/a	**PI=**	n/a

Coefficients					
D_{85}=	0.95	**D_{60}=**	0.48	**D_{50}=**	0.38
D_{30}=	0.22	**D_{15}=**	n/a	**D_{10}=**	n/a
C_u=	N/A	**C_c=**	N/A		

USCS CLASSIFICATION
Silty sand

Project Name: Ground Mount Solar Array - Merced, CA

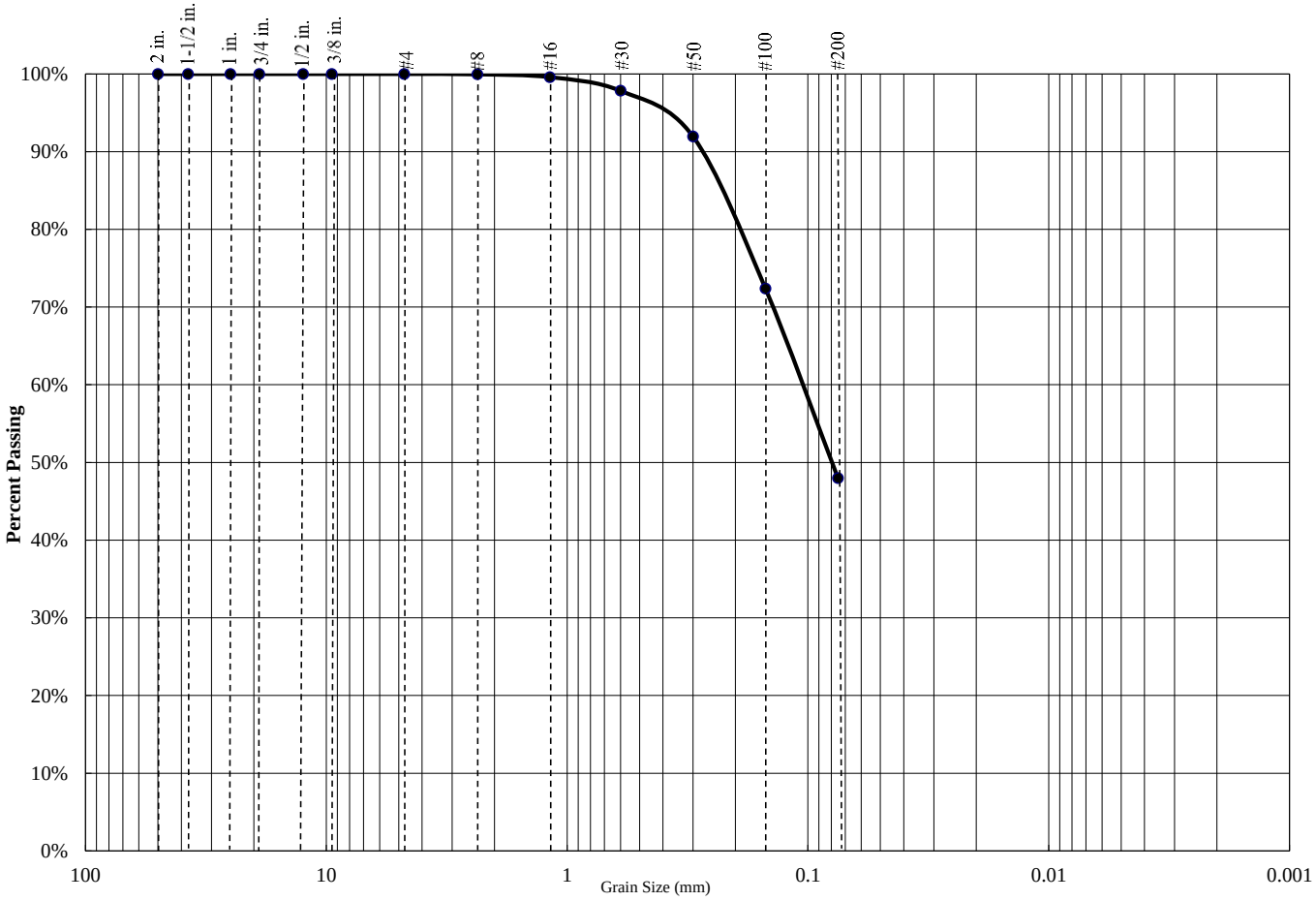
Project Number: 1-222-0227

Boring: B-11 @ 3.5'

SALEM engineering group, inc.

PARTICLE SIZE DISTRIBUTION DIAGRAM

GRADATION TEST - ASTM C136



Percent Gravel	Percent Sand	Percent Silt/Clay
0%	52%	48%

Sieve Size	Percent Passing
3/4 inch	100.0%
1/2 inch	100.0%
3/8 inch	100.0%
#4	100.0%
#8	100.0%
#16	99.6%
#30	97.8%
#50	92.0%
#100	72.4%
#200	48.0%

Atterberg Limits					
PL=	n/a	**LL=**	n/a	**PI=**	n/a

Coefficients					
D_{85}=	0.23	**D_{60}=**	0.12	**D_{50}=**	0.08
D_{30}=	n/a	**D_{15}=**	n/a	**D_{10}=**	n/a
C_u=	N/A	**C_c=**	N/A		

USCS CLASSIFICATION
Silty sand

Project Name: Ground Mount Solar Array - Merced, CA

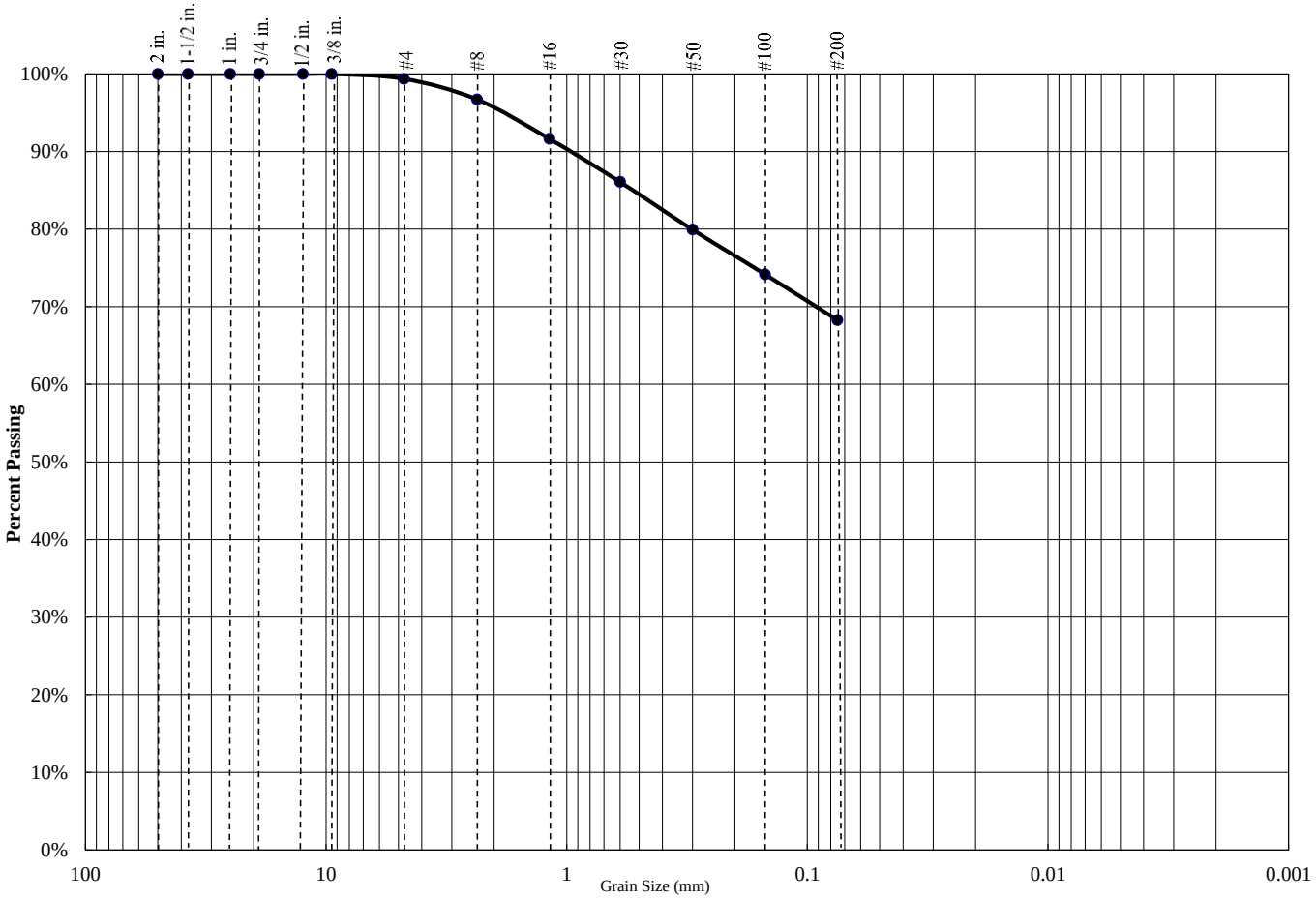
Project Number: 1-222-0227

Boring: B-12 @ 3.5'

SALEM engineering group, inc.

PARTICLE SIZE DISTRIBUTION DIAGRAM

GRADATION TEST - ASTM C136



Percent Gravel	Percent Sand	Percent Silt/Clay
1%	31%	68%

Sieve Size	Percent Passing
3/4 inch	100.0%
1/2 inch	100.0%
3/8 inch	100.0%
#4	99.4%
#8	96.7%
#16	91.6%
#30	86.1%
#50	79.9%
#100	74.2%
#200	68.3%

Atterberg Limits					
PL=	n/a	**LL=**	n/a	**PI=**	n/a

Coefficients					
D_{85}=	0.52	**D_{60}=**	n/a	**D_{50}=**	n/a
D_{30}=	n/a	**D_{15}=**	n/a	**D_{10}=**	n/a
C_u=	N/A	**C_c=**	N/A		

USCS CLASSIFICATION
Snady lean clay

Project Name: Ground Mount Solar Array - Merced, CA

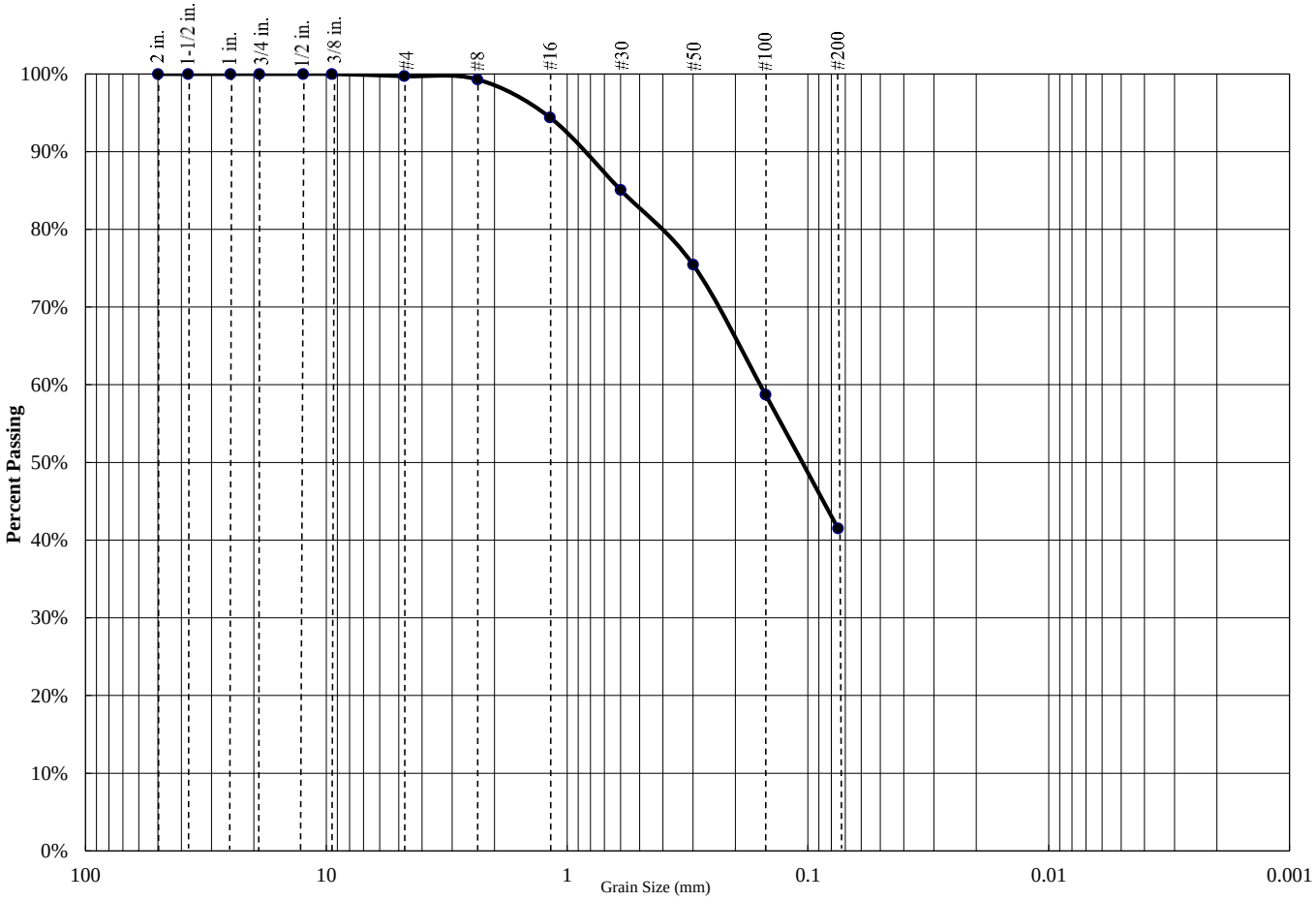
Project Number: 1-222-0227

Boring: B-13 @ 8.5'

SALEM engineering group, inc.

PARTICLE SIZE DISTRIBUTION DIAGRAM

GRADATION TEST - ASTM C136



Percent Gravel	Percent Sand	Percent Silt/Clay
0%	59%	41%

Sieve Size	Percent Passing
3/4 inch	100.0%
1/2 inch	100.0%
3/8 inch	100.0%
#4	99.7%
#8	99.3%
#16	94.4%
#30	85.1%
#50	75.5%
#100	58.7%
#200	41.5%

Atterberg Limits					
PL=	n/a	**LL=**	n/a	**PI=**	n/a

Coefficients					
D_{85}=	0.6	**D_{60}=**	0.17	**D_{50}=**	0.12
D_{30}=	n/a	**D_{15}=**	n/a	**D_{10}=**	n/a
C_u=	N/A	**C_c=**	N/A		

USCS CLASSIFICATION
Clayey sand

Project Name: Ground Mount Solar Array - Merced, CA

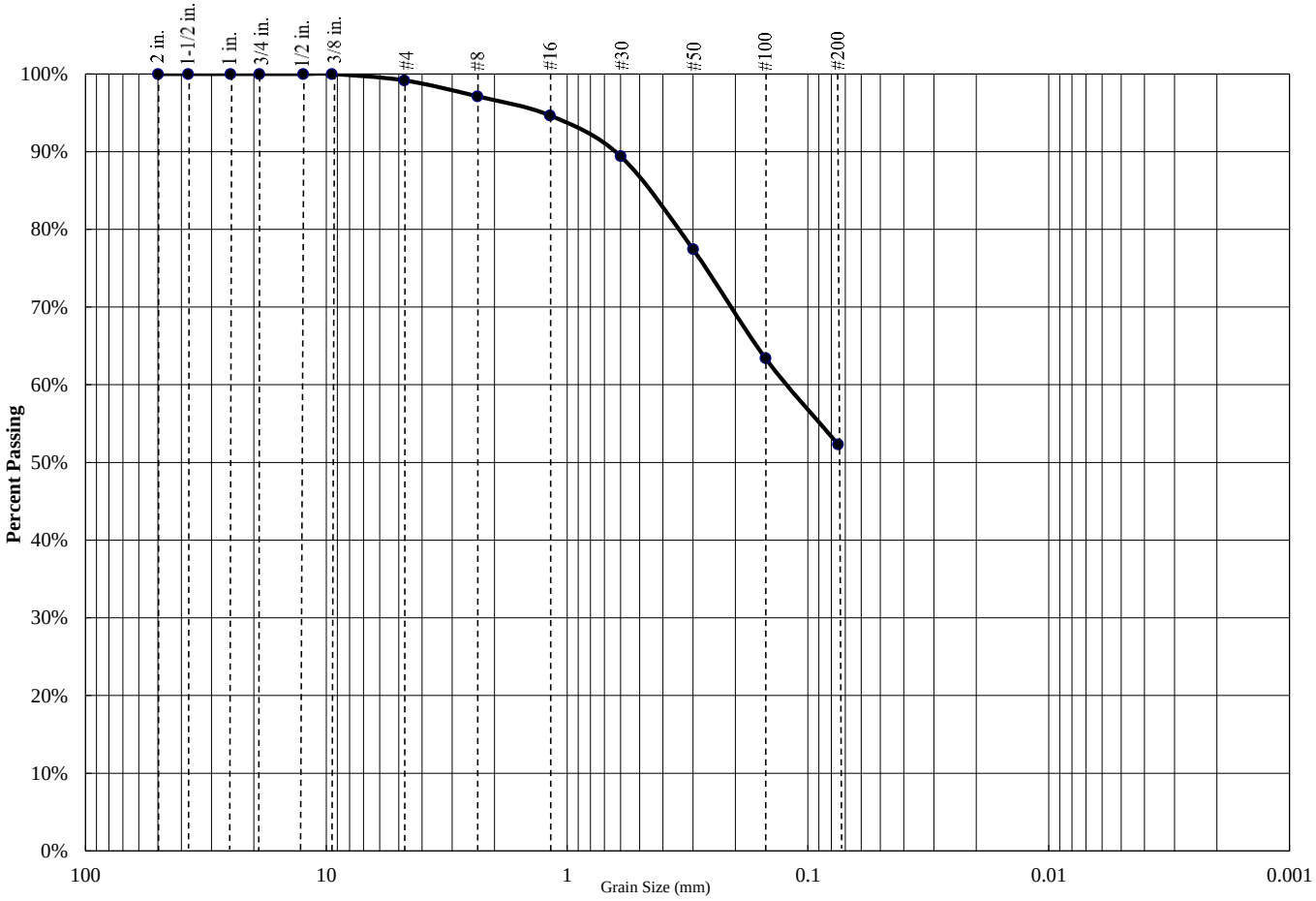
Project Number: 1-222-0227

Boring: B-14 @ 5'

SALEM engineering group, inc.

PARTICLE SIZE DISTRIBUTION DIAGRAM

GRADATION TEST - ASTM C136



Percent Gravel	Percent Sand	Percent Silt/Clay
1%	47%	52%

Sieve Size	Percent Passing
3/4 inch	100.0%
1/2 inch	100.0%
3/8 inch	100.0%
#4	99.2%
#8	97.1%
#16	94.7%
#30	89.4%
#50	77.4%
#100	63.4%
#200	52.3%

Atterberg Limits					
PL=	22	**LL=**	31	**PI=**	9

Coefficients					
D_{85}=	0.45	**D_{60}=**	0.14	**D_{50}=**	n/a
D_{30}=	n/a	**D_{15}=**	n/a	**D_{10}=**	n/a
C_u=	N/A	**C_c=**	N/A		

USCS CLASSIFICATION
Sandy lean clay

Project Name: Ground Mount Solar Array - Merced, CA

Project Number: 1-222-0227

Boring: B-14 @ 10'

SALEM engineering group, inc.

Atterberg Limits Determination
ASTM D4318

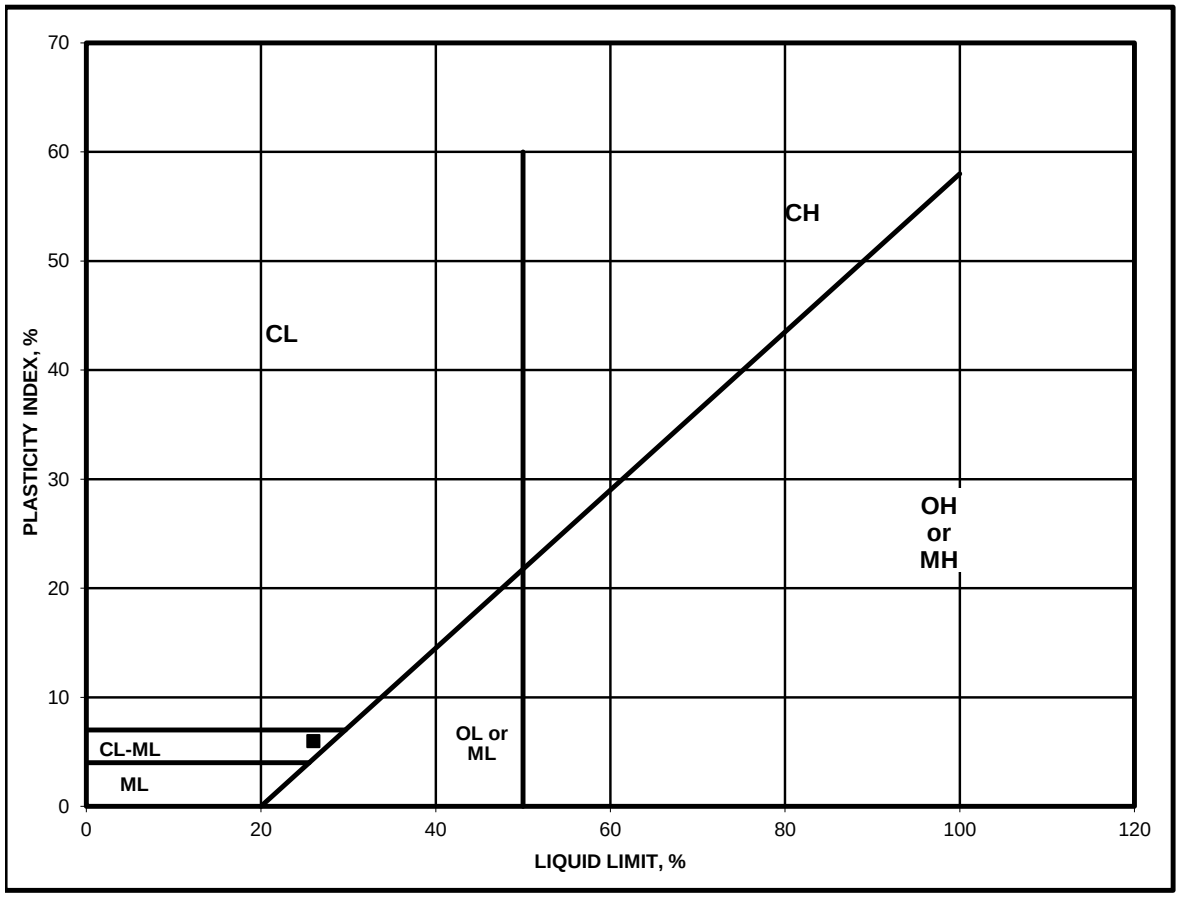
Project Name: Ground Mount Solar Array - Merced, CA
Project Number: 1-222-0227
Date Sampled: 4/1/22 Date Tested: 4/7/22
Sampled By: SEG Tested By: SA
Sample Location: B-1 @ 10'

Run Number	Plastic Limit			Liquid Limit		
	1	2	3	1	2	3
Weight of Wet Soil & Tare	28.52	28.68	28.93	30.46	32.18	30.17
Weight of Dry Soil & Tare	27.14	27.36	27.71	28.38	29.76	28.18
Weight of Water	1.38	1.32	1.22	2.08	2.42	1.99
Weight of Tare	20.63	20.94	21.19	20.36	20.59	21.00
Weight of Dry Soil	6.51	6.42	6.52	8.02	9.17	7.18
Water Content	21.2	20.6	18.7	25.9	26.4	27.7
Number of Blows				25	21	16

Plastic Limit : 20 **Liquid Limit : 26**

Plasticity Index : 6

Unified Soil Classification : CL/ML



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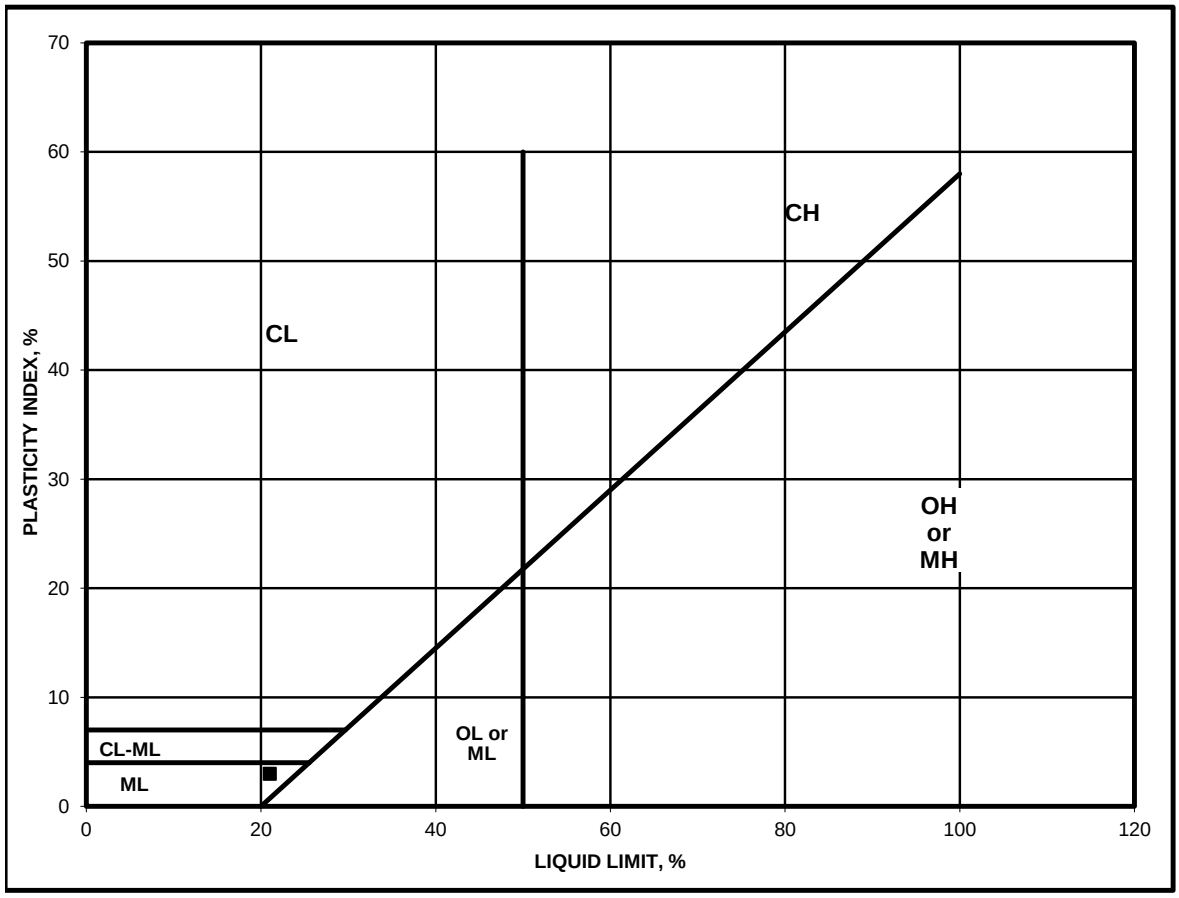
Atterberg Limits Determination
ASTM D4318

Project Name: Ground Mount Solar Array - Merced, CA
Project Number: 1-222-0227
Date Sampled: 4/1/22 Date Tested: 4/7/22
Sampled By: SEG Tested By: SA
Sample Location: B-11 @ 0 - 3'

Run Number	Plastic Limit			Liquid Limit		
	1	2	3	1	2	3
Weight of Wet Soil & Tare	28.81	29.35	28.55	31.72	33.59	33.47
Weight of Dry Soil & Tare	27.65	28.10	27.41	29.94	31.21	31.17
Weight of Water	1.16	1.25	1.14	1.78	2.38	2.30
Weight of Tare	20.88	21.18	21.13	21.10	20.58	21.11
Weight of Dry Soil	6.77	6.92	6.28	8.84	10.63	10.06
Water Content	17.1	18.1	18.2	20.1	22.4	22.9
Number of Blows				29	20	15

Plastic Limit : 18 **Liquid Limit : 21**

Plasticity Index : 3
Unified Soil Classification : ML



SALEM engineering group, inc.

Atterberg Limits Determination
ASTM D4318

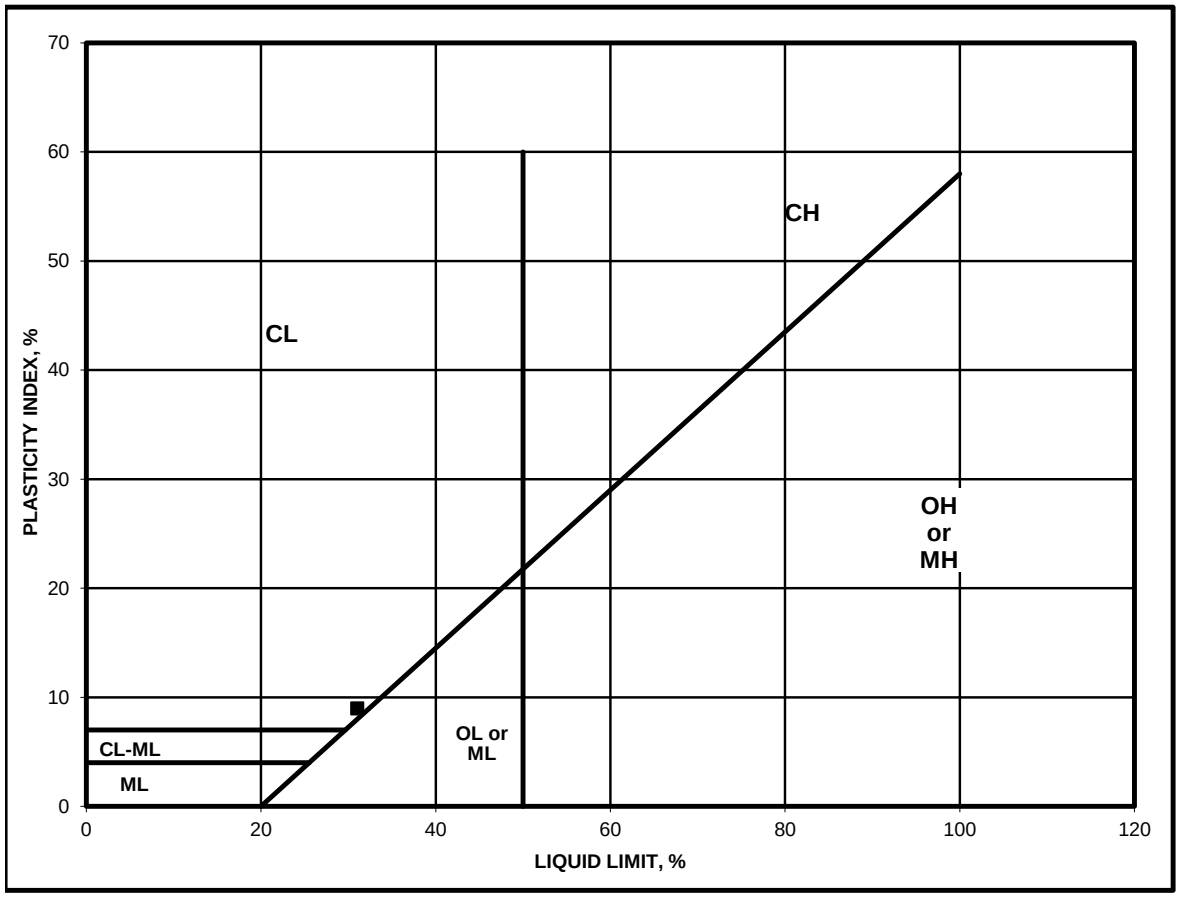
Project Name: Ground Mount Solar Array - Merced, CA
Project Number: 1-222-0227
Date Sampled: 4/1/22 Date Tested: 4/7/22
Sampled By: SEG Tested By: SA
Sample Location: B-14 @ 10'

Run Number	Plastic Limit			Liquid Limit		
	1	2	3	1	2	3
Weight of Wet Soil & Tare	28.62	28.88	29.15	32.96	32.03	33.44
Weight of Dry Soil & Tare	27.17	27.39	27.65	30.14	29.42	30.33
Weight of Water	1.45	1.49	1.50	2.82	2.61	3.11
Weight of Tare	20.75	20.77	20.83	21.14	21.04	20.58
Weight of Dry Soil	6.42	6.62	6.82	9.00	8.38	9.75
Water Content	22.6	22.5	22.0	31.3	31.1	31.9
Number of Blows				25	20	16

Plastic Limit : 22 **Liquid Limit : 31**

Plasticity Index : 9

Unified Soil Classification : CL



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EXPANSION INDEX TEST
ASTM D4829

Project Name: Ground Mount Solar Array - Merced, CA
Project Number: 1-222-0227
Date Sampled: 4/1/22 Date Tested: 4/7/22
Sampled By: SEG Tested By: NS
Sample Location: B-11 @ 0 - 3'
Soil Description: Silty sand

Trial #	1	2	3
Weight of Soil & Mold, g.	597.1		
Weight of Mold, g.	187.8		
Weight of Soil, g.	409.3		
Wet Density, pcf	123.4		
Weight of Moisture Sample (Wet), g.	842.0		
Weight of Moisture Sample (Dry), g.	774.8		
Moisture Content, %	8.7		
Dry Density, pcf	113.6		
Specific Gravity of Soil	2.7		
Degree of Saturation, %	48.5		

Time	Inital	30 min	1 hr	6 hrs	12 hrs	24 hrs
Dial Reading	0	-0.0039	-0.0042	--	--	-0.0046

Expansion Index $_{measured}$ = 0
Expansion Index $_{50}$ = 0.0

Expansion Index = 0

Expansion Potential Table	
Exp. Index	Potential Exp.
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium
91 - 130	High
>130	Very High

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CHEMICAL ANALYSIS

SO_4 - Modified CTM 417 & Cl - Modified CTM 417/422

Project Name: Ground Mount Solar Array - Merced, CA
Project Number: 1-222-0227
Date Sampled: 4/1/22 Date Tested: 4/12/22
Sampled By: SEG Tested By: NS
Soil Description: Silty sand

Sample Number	Sample Location	Soluble Sulfate SO_4-S	Soluble Chloride Cl	pH
1a.	B-4 @ 0 - 3'	< 50 mg/kg	71 mg/kg	7.2
1b.	B-4 @ 0 - 3'	< 50 mg/kg	70 mg/kg	7.2
1c.	B-4 @ 0 - 3'	< 50 mg/kg	70 mg/kg	7.2
Average:		**< 50 mg/kg**	**70 mg/kg**	**7.2**

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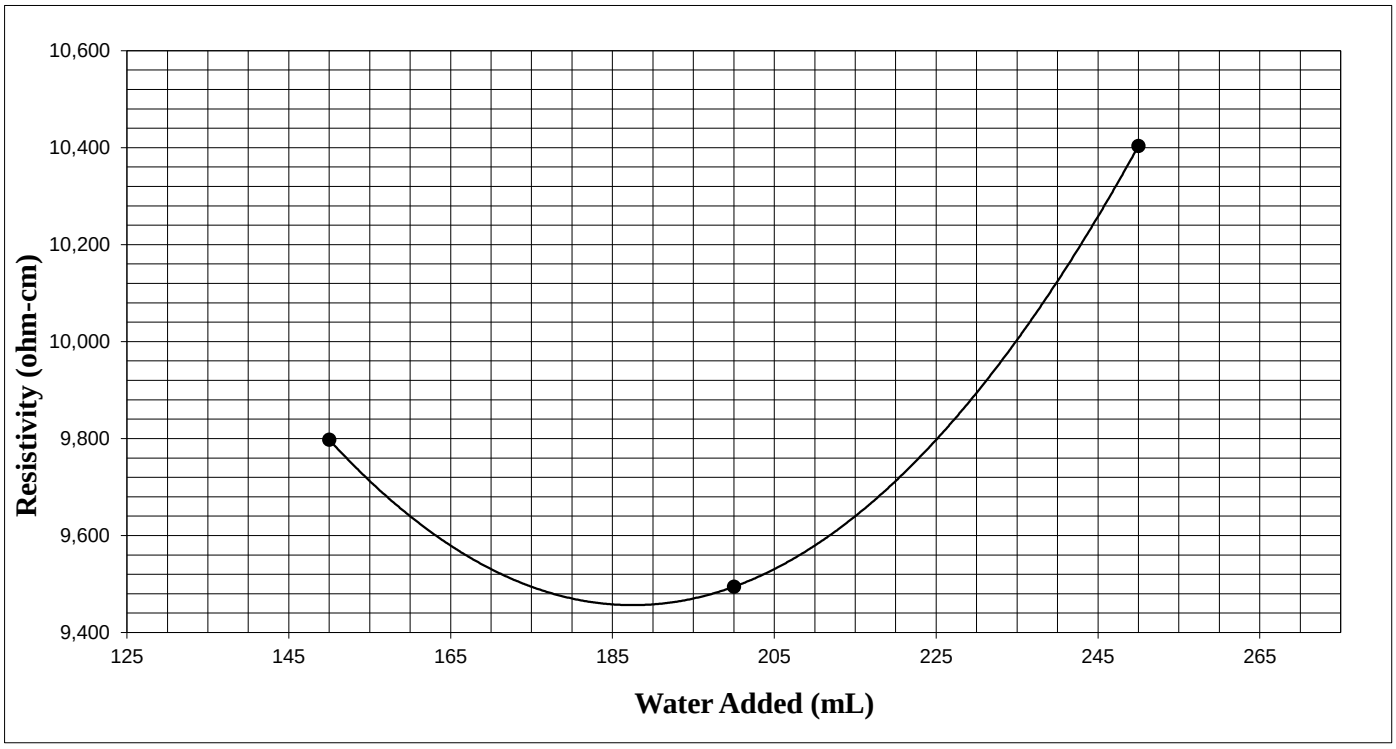
SOIL RESISTIVITY
CTM 643

Project Name: Ground Mount Solar Array - Merced, Date Sampled: 4/1/22
Project Number: 1-222-0227 Sampled By: SEG
Sample Location: B-4 @ 0 - 3' Date Tested: 4/11/22
Soil Description: Silty sand Tested By: SA

Chloride Content:	70	mg/Kg	Initial Sample Weight:	700	gms
Sulfate Content:	< 50	mg/Kg	Test Box Constant:	1.010	cm
Soil pH:	7.2				

Test Data:

Trial #	Water Added (mL)	Meter Dial Reading	Multiplier Setting	Resistance (ohms)	Resistivity (ohm-cm)
1	150	9.7	1,000	9,700	9,797
2	200	9.4	1,000	9,400	9,494
3	250	10.3	1,000	10,300	10,403



Minimum Resistivity:	**9,456** ohm-cm

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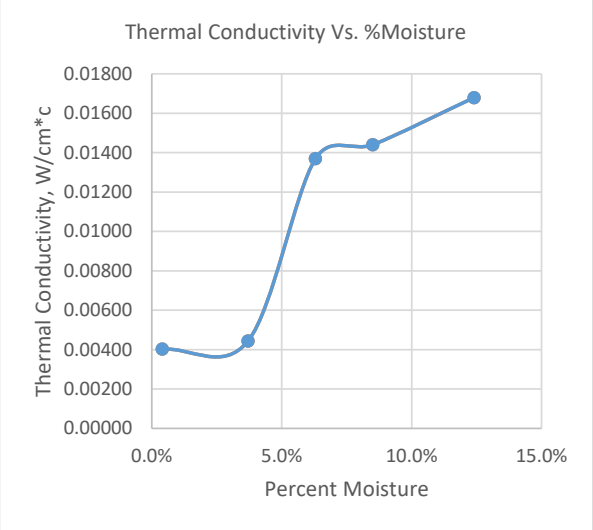
Thermal Conductivity by Thermal Probe, ASTM D5334-14

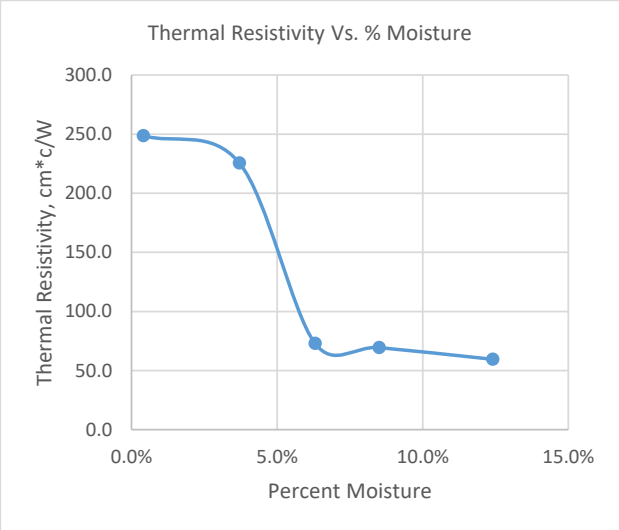
Project Name Prasad Ground Mount Solar
Project Number 1-222-0227

Report Date 4/13/2022
Test Date 4/11/2022

Test Boring B-4
Depth 0-3 Feet BSG

Wet Weight, gm	804.0	865.0	906.0	924.3	945.5
Dry Weight, gm	800.8	834.1	852.3	851.9	841.2
Moisture Content, %	0.40%	3.70%	6.30%	8.50%	12.40%
Average Length, in	6.00	6.00	6.00	6.00	6.00
Average Diameter, in	2.42	2.42	2.42	2.42	2.42
Dry Density, pcf	112.4	117.1	119.6	119.6	118.1
Thermal Conductivity, W/cm*c°	0.00402	0.00443	0.01369	0.0144	0.01679
Thermal Resistivity, cm*c°/W	248.7	225.7	73	69.4	59.5



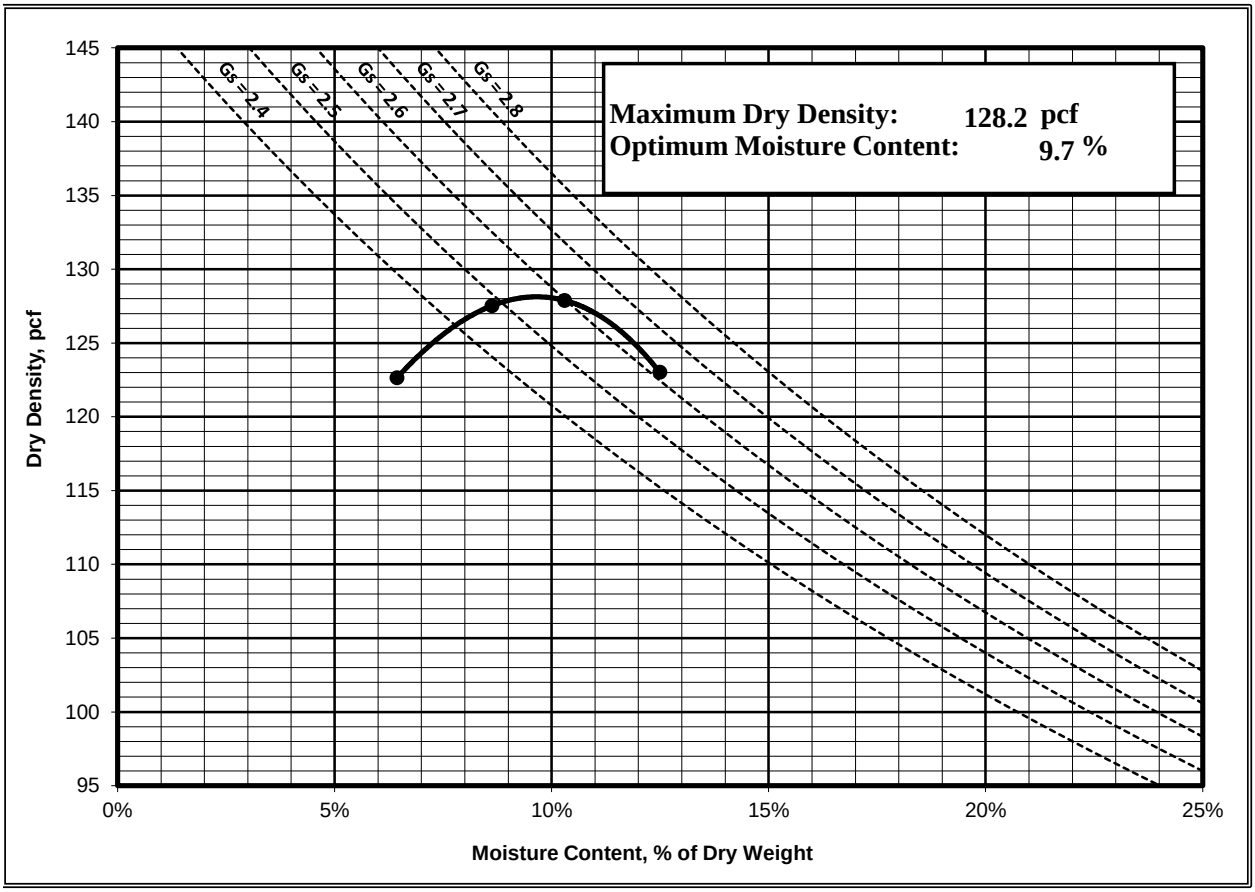


NOTE: Sample Remolded to 95 percent of the maximum dry density

Laboratory Compaction Curve
ASTM D1557

Project Name: Ground Mount Solar Array - Merced, CA
Project Number: 1-222-0227
Date Sampled: 4/1/22 Date Tested: 4/8/22
Sampled By: SEG Tested By: MC
Sample Location: B-4 @ 0 - 3'
Soil Description: Silty Sand
Test Method: Method A

	1	2	3	4
Weight of Moist Specimen & Mold, (g)	3934.6	4055.4	4093.6	4053.1
Weight of Compaction Mold, (g)	1960.8	1960.8	1960.8	1960.8
Weight of Moist Specimen, (g)	1973.8	2094.6	2132.8	2092.3
Volume of Mold, (ft^3)	0.0333	0.0333	0.0333	0.0333
Wet Density, (pcf)	130.5	138.5	141.1	138.4
Weight of Wet (Moisture) Sample, (g)	322.4	322.4	322.4	322.4
Weight of Dry (Moisture) Sample, (g)	302.9	296.8	292.3	286.6
Moisture Content, (%)	6.4%	8.6%	10.3%	12.5%
Dry Density, (pcf)	122.6	127.5	127.9	123.0



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APPENDIX

C

APPENDIX C

GENERAL EARTHWORK AND PAVEMENT SPECIFICATIONS

When the text of the report conflicts with the general specifications in this appendix, the recommendations in the report have precedence.

1.0 SCOPE OF WORK: These specifications and applicable plans pertain to and include all earthwork associated with the site rough grading, including, but not limited to, the furnishing of all labor, tools and equipment necessary for site clearing and grubbing, stripping, preparation of foundation materials for receiving fill, excavation, processing, placement and compaction of fill and backfill materials to the lines and grades shown on the project grading plans and disposal of excess materials.

2.0 PERFORMANCE: The Contractor shall be responsible for the satisfactory completion of all earthwork in accordance with the project plans and specifications. This work shall be inspected and tested by a representative of SALEM Engineering Group, Incorporated, hereinafter referred to as the Soils Engineer and/or Testing Agency. Attainment of design grades, when achieved, shall be certified by the project Civil Engineer. Both the Soils Engineer and the Civil Engineer are the Owner's representatives. If the Contractor should fail to meet the technical or design requirements embodied in this document and on the applicable plans, he shall make the necessary adjustments until all work is deemed satisfactory as determined by both the Soils Engineer and the Civil Engineer. No deviation from these specifications shall be made except upon written approval of the Soils Engineer, Civil Engineer, or project Architect.

No earthwork shall be performed without the physical presence or approval of the Soils Engineer. The Contractor shall notify the Soils Engineer at least 2 working days prior to the commencement of any aspect of the site earthwork.

The Contractor shall assume sole and complete responsibility for job site conditions during the course of construction of this project, including safety of all persons and property; that this requirement shall apply continuously and not be limited to normal working hours; and that the Contractor shall defend, indemnify and hold the Owner and the Engineers harmless from any and all liability, real or alleged, in connection with the performance of work on this project, except for liability arising from the sole negligence of the Owner or the Engineers.

3.0 TECHNICAL REQUIREMENTS: All compacted materials shall be densified to no less that 92 percent of relative compaction (90 percent for cohesive soils) based on ASTM D1557 Test Method (latest edition), UBC or CAL-216, or as specified in the technical portion of the Soil Engineer's report. The location and frequency of field density tests shall be determined by the Soils Engineer. The results of these tests and compliance with these specifications shall be the basis upon which satisfactory completion of work will be judged by the Soils Engineer.

4.0 SOILS AND FOUNDATION CONDITIONS: The Contractor is presumed to have visited the site and to have familiarized himself with existing site conditions and the contents of the data presented in the Geotechnical Engineering Report. The Contractor shall make his own interpretation of the data contained in the Geotechnical Engineering Report and the Contractor shall not be relieved of liability for any loss sustained as a result of any variance between conditions indicated by or deduced from said report and the actual conditions encountered during the progress of the work.

5.0 DUST CONTROL: The work includes dust control as required for the alleviation or prevention of any dust nuisance on or about the site or the borrow area, or off-site if caused by the Contractor's operation either during the performance of the earthwork or resulting from the conditions in which the Contractor leaves the site. The Contractor shall assume all liability, including court costs of codefendants, for all claims related to dust or wind-blown materials attributable to his work. Site preparation shall consist of site clearing and grubbing and preparation of foundation materials for receiving fill.

6.0 CLEARING AND GRUBBING: The Contractor shall accept the site in this present condition and shall demolish and/or remove from the area of designated project earthwork all structures, both surface and subsurface, trees, brush, roots, debris, organic matter and all other matter determined by the Soils Engineer to be deleterious. Such materials shall become the property of the Contractor and shall be removed from the site.

Tree root systems in proposed improvement areas should be removed to a minimum depth of 3 feet and to such an extent which would permit removal of all roots greater than 1 inch in diameter. Tree roots removed in parking areas may be limited to the upper 1½ feet of the ground surface. Backfill of tree root excavations is not permitted until all exposed surfaces have been inspected and the Soils Engineer is present for the proper control of backfill placement and compaction. Burning in areas which are to receive fill materials shall not be permitted.

7.0 SUBGRADE PREPARATION: Surfaces to receive Engineered Fill and/or building or slab loads shall be prepared as outlined above, scarified to a minimum of 12 inches, moisture-conditioned and compacted to the requirements of section 9.4 of this report.

Loose soil areas and/or areas of disturbed soil shall be moisture-conditioned as necessary and compacted to as engineered fill. All ruts, hummocks, or other uneven surface features shall be removed by surface grading prior to placement of any fill materials. All areas which are to receive fill materials shall be approved by the Soils Engineer prior to the placement of any fill material.

8.0 EXCAVATION: All excavation shall be accomplished to the tolerance normally defined by the Civil Engineer as shown on the project grading plans. All over-excavation below the grades specified shall be backfilled at the Contractor's expense and shall be compacted in accordance with the applicable technical requirements.

9.0 FILL AND BACKFILL MATERIAL: No material shall be moved or compacted without the presence or approval of the Soils Engineer. Material from the required site excavation may be utilized for construction site fills, provided prior approval is given by the Soils Engineer. All materials utilized for constructing site fills shall be free from vegetation or other deleterious matter as determined by the Soils Engineer.

10.0 PLACEMENT, SPREADING AND COMPACTION: The placement and spreading of approved fill materials and the processing and compaction of approved fill and native materials shall be the responsibility of the Contractor. Compaction of fill materials by flooding, ponding, or jetting shall not be permitted unless specifically approved by local code, as well as the Soils Engineer. Both cut and fill shall be surface-compacted to the satisfaction of the Soils Engineer prior to final acceptance.

11.0 SEASONAL LIMITS: No fill material shall be placed, spread, or rolled while it is frozen or thawing, or during unfavorable wet weather conditions. When the work is interrupted by heavy rains, fill

operations shall not be resumed until the Soils Engineer indicates that the moisture content and density of previously placed fill is as specified.

12.0 DEFINITIONS - The term "pavement" shall include asphaltic concrete surfacing, untreated aggregate base, and aggregate subbase. The term "subgrade" is that portion of the area on which surfacing, base, or subbase is to be placed.

The term “Standard Specifications”: hereinafter referred to, is the most recent edition of the Standard Specifications of the State of California, Department of Transportation. The term "relative compaction" refers to the field density expressed as a percentage of the maximum laboratory density as determined by ASTM D1557 Test Method (latest edition).

13.0 PREPARATION OF THE SUBGRADE - The Contractor shall prepare the surface of the various subgrades receiving subsequent pavement courses to the lines, grades, and dimensions given on the plans. The upper 12 inches of the soil subgrade beneath the pavement section shall be compacted to a minimum relative compaction of 92 percent based upon ASTM D1557. The finished subgrades shall be tested and approved by the Soils Engineer prior to the placement of additional pavement courses.

14.0 AGGREGATE BASE - The aggregate base material shall be spread and compacted on the prepared subgrade in conformity with the lines, grades, and dimensions shown on the plans. The aggregate base material shall conform to the requirements of Section 26 of the Standard Specifications for Class II material, ¾-inch or 1½-inches maximum size. The aggregate base material shall be compacted to a minimum relative compaction of 95 percent based on ASTM D1557. The aggregate base material shall be spread in layers not exceeding 6 inches and each layer of aggregate material course shall be tested and approved by the Soils Engineer prior to the placement of successive layers.

15.0 AGGREGATE SUBBASE - The aggregate subbase shall be spread and compacted on the prepared subgrade in conformity with the lines, grades, and dimensions shown on the plans. The aggregate subbase material shall conform to the requirements of Section 25 of the Standard Specifications for Class II Subbase material. The aggregate subbase material shall be compacted to a minimum relative compaction of 95 percent based ASTM D1557, and it shall be spread and compacted in accordance with the Standard Specifications. Each layer of aggregate subbase shall be tested and approved by the Soils Engineer prior to the placement of successive layers.