



# **SUPPLEMENT to the CARRIZO ENERGY SOLAR FARM APPLICATION for CERTIFICATION**

**APPLICATION FOR CERTIFICATION (07-AFC-8)  
Carrizo Energy Solar Farm  
Carrizo Energy, LLC**



**Submitted to:  
California Energy Commission**



**Submitted by:  
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**With Support from:**

**URS**

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## List of Acronyms and Abbreviations

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1 G/S	Unit Emission Rate
AB32	California Assembly Law
ACC	Air-Cooled Condenser
ACMS	Asbestos-Containing Materials
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
APE	Area of Potential Effect
APN	Assessor Parcel Numbers
AST	Aboveground Storage Tank
ATC	Authority to Construct
ATV	all-terrain vehicles
BACT	Best Available Control Technology
CAAQS	California Ambient Air Quality Standards
CAISO	California Independent System Operator
CARB	California Air Resources Board
Carrizo Energy	Ausra CA, II (dba Carrizo Energy, LLC)
CBC	California Building Code
CCIC	Central Coast Information Center
CCR	California Code of Regulations
CDFG	California Department Of Fish And Game
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CESF	Carrizo Energy Solar Farm
CHRIS	California Historical Resource Information System
CLFR	Compact Linear Fresnel Reflector
CNDDB	California Natural Diversity Database
CRHR	California Register Of Historical Resources
CSO	Construction Safety Orders
CUP	Conditional Use Permit
DESCP	Drainage Erosion And Sediment Control Plan
ESO	Electrical Safety Orders
FHWA	Federal Highway Administration
GISO	General Industry Safety Orders
GSU	General Step-Up Transformer
HAP	Hazardous Air Pollutants
HMBP	Hazardous Materials Business Plan
HRA	Health Risk Assessment
ISIS	Interconnection System Impact Study
KOP	Key Observation Points
LBP	Lead-Based Paint
LORS	Laws, Ordinances, Regulations, And Standards
mg/kg-day	milligrams per kilogram per day
MW	megawatts
NAAQS	National Ambient Air Quality Standards

## List of Acronyms and Abbreviations

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NAHC	Native American Heritage Commission
NRHP	National Register Of Historic Places
OEHHA	Office Of Environmental Health Hazard Assessment
OMB	Onsite Manufacturing Building
OSHA	Occupational Health And Safety Act
PG&E	Pacific Gas & Electric
PPE	Personal Protective Equipment
PTO	Permit to Operate
REL	Reference Exposure Level
SF <sub>6</sub>	Sulfur Hexafluoride
SLO	San Luis Obispo
SPL	Sound Pressure Level
SR-58	State Route 58
SSJVIC	Southern San Joaquin Valley Information Center
STG	Steam Turbine Generators
TAC	Toxic Air Contaminants
THI	Total Hazard Index
U.S. EPA	United States Environmental Protection Agency
VOC	Volatile Organic Compounds
µg/m <sup>3</sup>	X/Q "Unit" Ground-Level 1-Hour Concentration

**SECTION 1 SUPPLEMENTAL PROJECT DESCRIPTION****1.1 INTRODUCTION**

Ausra CA, II (dba Carrizo Energy, LLC) (also referred to as Ausra or Applicant) filed an Application for Certification (AFC) with the California Energy Commission (CEC) for its proposed Carrizo Energy Solar Farm (CESF or Project) on October 25, 2007. The Application was deemed Data Adequate on December 19, 2007. Since then, CESF has continued to work with Staff and local residents to assess potential Project improvements. This Supplement to the Project AFC includes proposed changes to the CESF and its ancillary systems, which were originally described in Section 3.0, Facility Description and Location, of the Project AFC. This Supplement to the Project AFC also provides an environmental assessment of the environmental impacts resulting from the proposed Project changes.

**1.2 NORTH/SOUTH CONFIGURATION****1.2.1 Site Arrangement**

As described in Section 3.0, Facility Description and Location, of the Project AFC, the CESF includes the construction and operation of a solar power generating facility and its ancillary systems and will consist of approximately one hundred ninety-five Compact Linear Fresnel Reflector (CLFR) solar concentrating lines, and associated steam drums, steam turbine generators (STGs), air cooled condensers (ACCs), and infrastructure, producing up to a nominal 177 megawatts (MW) net. The Project AFC analyzed the CLFR solar lines in an east/west orientation; however, an alternative configuration was identified in Section 4.3, Alternative Project Configurations, of the Project AFC. This alternative configuration is now the preferred alternative and would have the CLFR solar lines aligned in the north/south direction (Figures 1.2-1 through 1.2-5). The alternative Project configuration would lend itself to more optimal solar power production and would reduce the potential for glare on State Route 58 (SR-58).

**1.2.2 Power Block**

The power block would be reoriented as a result of the new configuration. The power block would be located on the eastern side of the northwestern quadrant of Section 28, and resituated in a north/south direction, as shown in Figure 1.2-1. This configuration will reduce potential visual and noise impacts at key sensitive receptors.

**1.2.3 Air Cooled Condensers**

The Project AFC describes two twenty-five cell ACCs located within the power block; however, per this supplemental filing, the ACCs will contain only twenty cells each (see Figure 1.2-4). This will reduce noise generation.

**1.2.4 Steam Drums**

The Project AFC describes twenty steam drums within the solar field and two within the power block; however, per this supplemental filing, steam from the solar fields will be routed to only eight steam drums

located in the solar field, and then to the two steam turbine generators in the power block (see Figure 1.2-1).

### **1.2.5 Site Grading and Drainage**

The site grading and drainage plan reflects the changes to the Project configuration (see Figure 1.2-6 and Appendix A, Drainage Erosion and Sediment Control Plan (DESCP)).

### **1.2.6 Facility Safety Designs – Seismic Hazards**

Structures and their foundations and equipment anchors will be designed according to the 2007 California Building Code (CBC), and the San Luis Obispo County Building Code. Should there be a conflict in code requirements, the more conservative requirements will govern.

### **1.2.7 Lighting**

Nighttime lighting for the Project has been designed to minimize visual impacts while also providing for safe operation and security of the facility.

Normally illuminated light fixtures will be controlled by photocells, so they only operate when necessary. All permanently installed light fixtures will be shielded and directed to minimize light scattering offsite as required per CEC and local regulations. Portable task lighting will be used for nighttime maintenance activities when necessary.

Perimeter fencing will be installed with motion detectors that would activate nearby light standards to illuminate perimeter areas. If necessary, these lights could also be manually activated from the plant control room. These light fixtures will be shielded and directed to minimize light scattering offsite as required per CEC and local regulations.

The solar field portion of the Project will not generally be lit at night. The only exception would be low-level area lighting around each of the eight Power Distribution Centers to provide safe access around their associated transformers as well as their walkways, stairs, and doors. These Power Distribution Centers are associated with the eight steam drums. At each of the steam drums, there will be area lighting that will be generally in the off position; however, the lighting can be turned on for safe access.

At the power block, permanently installed and normally illuminated lighting will be provided for the following:

- Main entrance;
- Perimeter roads;
- Parking area;
- Building exterior entrances;
- Power Distribution Center entrances;

- Transformer, fire pump, fueling station, and diesel generator areas; and
- General area lighting sufficient for safe access.

Portable lighting will be used for task lighting for nighttime maintenance activities.

The CESF Lighting Plan is included as Appendix B, Lighting Plan. This lighting plan has been prepared on an expedited basis as requested by Staff and members of the public.

### **1.3 EMERGENCY DIESEL GENERATOR**

In the event there is a loss of power from the Pacific Gas & Electric (PG&E) system, an approximate 1 MW emergency diesel generator will power the 4160V bus in order to supply power for control and monitoring instrumentation as well as other essential services, including but not limited to communications, control air, steam turbine lube oil and tuning gear, emergency lighting, transient 480V motor operated valve loads, and other miscellaneous loads. The generator and its associated fuel tank will be located within a weather enclosure in the power block, as shown on Figure 1.2-4.

While no specific equipment has been selected at this time, based on a typical engine for this application, approximately 700 gallons of diesel fuel will be stored in the generator for eight hours of generator operation. Additionally, approximately 20 gallons of lubricating oil will also be stored in the generator. The generator will be tested monthly for at least 30 minutes and will be tested on a different schedule than that of the firewater pump. As per County of San Luis Obispo guidance, testing will be limited to 30 hours per year.

### **1.4 ONSITE MANUFACTURING**

The Project will include limited onsite manufacturing in the north-central portion of the construction laydown area, located on Section 33 (Figure 1.4-1), during the construction phase of the Project. The construction laydown area originally depicted on Figure 1.1-4 in the Project AFC was rearranged to accommodate onsite manufacturing. Limited onsite manufacturing will reduce truck trips to the site during construction.

#### **1.4.1 Onsite Manufacturing Building**

The onsite manufacturing building will require approximately 40,000 square feet of floor space. The foundation would be comprised of 6-inch reinforced concrete flooring. Insulated walls and roofing would be constructed on a modular panel system to allow for rapid erecting and dismantling. Panels would be metal on each side with integral insulation. The building would have large openings on each end (east and west) for the flow of materials.

The building would require evaporative cooling and utility services, including electricity, water (drinking and sanitary), and communications. The manufacturing building and proprietary robotic welding cell will be removed from the premises upon completion of reflector production sufficient to meet Project demand.

### 1.4.2 Onsite Manufacturing Building Construction

Equipment identified in Table 3.4-14, Projected Monthly Construction Equipment Use, of the Project AFC is sufficient to include equipment associated with onsite manufacturing building construction activities.

### 1.4.3 Onsite Manufacturing Process

The onsite manufacturing process involves a proprietary automated production cell that manufactures reflector frames in compliance with applicable health and safety laws, including Occupational Health and Safety Act (OSHA) requirements. Trained employees will operate the automated production cell to manufacture reflectors that will comprise the CESF.

Workers manually load reflector frame components onto a welding jig. The loaded jig shuttles into an electric robotic welding cell within a protective barrier (*i.e.*, flash fence and light curtain). Welding cell operations are controlled via computers outside the welding cell. No workers are within the welding cell during operations. The welding robots weld the various frame components together to form a completed reflector frame (of desired optical specification).

As the automated cell continues operations, a mirror handling robot simultaneously removes mirrors from their packaging and inspects them for any deficiencies. Mirrors that pass inspection are affixed in the proper position onto the reflector frame within the automated production cell. No human contact is required in mirror handling operations within the automated production cell.

Once the mirrors have been affixed to the reflector frame, the welding flash fence and light curtain opens and the completed reflector shuttles to the unload position. Workers guide joists to the completed reflector and an electric crane lifts the reflector and places it onto a trolley. For ease of handling, completed reflectors will be deployed directly into the solar field.

Equipment identified in Table 3.4-14, Projected Monthly Construction Equipment Use, of the Project AFC is sufficient to include equipment associated with onsite manufacturing activities.

### 1.4.4 Management and Disposal of Waste Materials

No hazardous materials will be used during onsite manufacturing. Wastes generated from the manufacturing process include discarded mirror glass and empty adhesive drums.

Welding fume extraction system bag house filters could contain zinc particulate. The bag house filters would have a self cleaning cycle resulting in wastes generated being deposited into non-permeable bag lined bins. This bagged material would be processed by a Licensed Waste Disposal Facility. Sheets of mirror glass may be broken during the manufacturing process and would be collected for disposal offsite. Similarly, empty polyurethane adhesive drums will be crushed and disposed of offsite. All waste materials generated will be disposed of in accordance with Section 3.11.7, Management and Disposal of Waste Materials, of the Project AFC.

**1.4.5 Safety Precautions**

The Applicant's welding process is very specialized and designed to minimize the generation of fumes. Workers are neither required nor allowed within the welding cell while manufacturing takes place. A protective barrier surrounds the welding cell for safety purposes. In addition, fumes are extracted through a system of ducts and bag filters.

Polyurethane adhesive is used to affix mirrors to the reflector frames. The adhesive was selected because it meets California Volatile Organic Compounds (VOC) and Hazardous Air Pollutants (HAP) regulations for use in well ventilated buildings.

All workers will complete appropriate Environmental Health and Safety training prior to working in the onsite manufacturing building. All workers will be required to wear designated Personal Protective Equipment.

**1.4.6 Workforce*****1.4.6.1 Construction of Onsite Manufacturing Building***

An estimated thirty workers per day will be required to construct the onsite manufacturing building. The workforce identified in Table 3.4-11, Construction Labor Projected Monthly Manpower (by Craft), of the Project AFC is sufficient to include craftsmen associated with construction of the onsite manufacturing building.

As described in the Project AFC, construction activities will be scheduled to occur between 7:00 am and 7:00 pm, Monday through Friday. Activities associated with construction of the onsite manufacturing building will take approximately four months and will occur at the beginning of the 35-month Project schedule.

***1.4.6.2 Onsite Manufacturing***

An estimated ten workers per day will participate in onsite manufacturing activities. The workforce identified in Table 3.4-11, Construction Labor Projected Monthly Manpower (by Craft), of the Project AFC is sufficient to include workers associated with the onsite manufacturing activities.

As described in the Project AFC, manufacturing activities will be scheduled to occur between 7:00 am and 7:00 pm, Monday through Friday. Additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities. Onsite manufacturing workers would work one of two 8-hour shifts. As indicated in the Project AFC, the majority of the workers will be bused between the surrounding areas (*e.g.*, Paso Robles, San Luis Obispo, and Bakersfield) and the site each day.

***1.4.6.3 Dismantling of Onsite Manufacturing Building***

An estimated thirty workers per day will be required to dismantle the onsite manufacturing building. The workforce identified in Table 3.4-11, Construction Labor Projected Monthly Manpower (by Craft), of the

Project AFC is sufficient to include craftsmen associated with dismantling the onsite manufacturing building.

As described in the Project AFC, dismantling activities will be scheduled to occur between 7:00 am and 7:00 pm, Monday through Friday. Activities associated with dismantling the onsite manufacturing building will take approximately four months and will occur at the end of the 35-month Project schedule. The construction laydown area, including the site of the manufacturing facility, will be returned to its as-found condition.

#### **1.4.7 Construction Traffic**

##### ***1.4.7.1 Onsite Manufacturing Building Construction***

A total of approximately 185 round trips will be required to construct the onsite manufacturing building during the first four months of the 35-month construction schedule.

Approximately 900 cubic yards of concrete will be required to create the onsite manufacturing building flooring. The Applicant anticipates 115 round trips will be required to transport the concrete to the Project area. Similarly, approximately five round trips will be required to transport rebar, approximately ten round trips will be required to transport structural steel building frames, approximately 45 round trips will be required to transport building panels, and approximately ten round trips will be required to transport the robotic manufacturing components.

##### ***1.4.7.2 Onsite Manufacturing***

The onsite manufacturing process will reduce the number of truck trips associated with CESF construction. According to Section 1.11.13.1.10, Construction Traffic, in the Project AFC, delivery trucks would average three daily round trips, with an estimated seven peak daily round trips, during construction. Heavy vehicles and trucks would average 27 daily round trips, with an estimated 75 peak daily round trips, during construction. Since the AFC was filed in October 2007, the Applicant has conducted additional transportation modeling and determined that approximately 36 round trips per day, or 755 round trips per month, would be required if all CESF solar array components were manufactured offsite and transported to the CESF site. Onsite manufacturing would allow for part assemblies to be manufactured at the Applicant's manufacturing facility in Nevada and transported to the CESF onsite manufacturing facility for final assembly. Heavy vehicle and truck construction traffic would be reduced to approximately 11.3 round trips per day, or 238 round trips per month. All deliveries of reflector fabrication materials would occur between 7:00 am and 7:00 pm, Monday through Friday. All 40-foot trucks will arrive from the east via SR-58 and all large loads (*i.e.*, 53-foot) will arrive from the west via Bitterwater road.

##### ***1.4.7.3 Dismantling of Onsite Manufacturing Building***

Approximately 225 round trips will be required to dismantle the onsite manufacturing building during the last four months of the 35-month construction schedule.

**1.4.8 Project Schedule**

As described in Section 3.11.13.1, Power Plant Facility, of the Project AFC, construction of the CESF, from site preparation and grading to full commercial operation, is expected to take approximately 35 months. Construction of the onsite manufacturing building and subsequent onsite manufacturing would occur after site preparation and during the entire 35 month construction process. Onsite manufacturing will have no impact on the Project schedule identified in the Project AFC.

**1.5 DEMOLITION OF EXISTING STRUCTURES**

Sections 1.2, Facility Location and Description; 3.3.1, Existing Site Conditions; and 3.4.13.1.12, Materials and Equipment Staging Area, of the Project AFC indicate existing abandoned farm structures and residences currently located on Sections 28 and 33 will be demolished prior to change of ownership. Per the March 12, 2008 Data Responses Workshop, the CEC considers the demolition to be part of the Project because the demolition would be required for the Project to be constructed (for additional information, refer to the Transcript of the March 12, 2008 Data Responses Workshop). Therefore, all existing structures located within the Project site and laydown area in Sections 28 and 33 will be demolished as part of site preparation activities.

Existing structures are associated with the King property on Section 28 and the Cavanaugh property on Section 33 (Figure 1.5-1). Structures on Section 28 include a residence, barn, garage, storage shed, several cylindrical water storage tanks and silos, foundations, and smaller related agricultural, ranching, and farming buildings and structures. Structures on Section 33 include three residential structures, barns and sheds, several cylindrical water storage tanks and silos, and smaller related agricultural, ranching, and farming buildings and structures.

Prior to any demolition activities, hazardous materials, including asbestos containing materials, will be removed from the existing structures. While such materials are not known to exist, CESF is including their presence in the demolition planning. Removal of hazardous materials, demolition of existing structures, sorting of waste materials, and shipment of waste materials is anticipated to last approximately 15 working days and would take place at the beginning of site clearing and grading activities, during the first month of the 35-month Project schedule.

As described in the Project AFC, construction activities will be scheduled to occur between 7:00 am and 7:00 pm, Monday through Friday. Additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities. An estimated five workers per day will participate in demolition activities. The workforce identified in Table 3.4-11, Construction Labor Projected Monthly Manpower (by Craft), of the Project AFC is sufficient to include laborers associated with demolition activities; however, some additional specialty workers may be necessary to handle hazardous materials.

Construction equipment required for demolition activities would include bulldozers, front end loaders, backhoes, jackhammers, and other standard construction tools. Equipment identified in Table 3.4-14, Projected Monthly Construction Equipment Use, of the Project AFC is sufficient to include equipment associated with demolition activities.

To the extent practicable, waste materials generated from the demolition would be separated into three categories: 1) hazardous materials (e.g., asbestos-containing materials and lead-based paint), 2) recyclable materials (e.g., wood, concrete, brick, glass, and metal), and 3) mixed non-hazardous materials. An estimated 70 to 90 percent of the waste materials would be recyclable. Anticipated waste materials are presented in Table 1.5-1.

**Table 1.5-1  
Waste Materials Generated from Demolition of Existing Structures**

Component	Cavanaugh Property Section 33 (lbs.) <sup>1,2,3,4</sup>	King Property Section 28 (lbs.) <sup>1,2,3,4</sup>	Lbs. per Truck <sup>5</sup>	Lbs. (adjusted) per Truck <sup>6</sup>	Number of Trucks
Wood	778,096	427,740	40,000	20,000	61
Roofing	226,064	139,160	40,000	20,000	19
Drywall	143,280	88,200	40,000	30,000	8
Concrete	298,104	310,760	40,000	35,000	18
Brick	52,536	32,340	40,000	35,000	3
Glass	7,960	4,925	40,000	40,000	1
Metals	307,564	121,260	40,000	25,000	18
Plastics	14,328	8,920	40,000	20,000	2
Other	124,308	73,180	40,000	20,000	10
Hazardous Materials	7,960	4,960	40,000	25,000	1
<b>Total</b>	<b>1,960,200</b>	<b>1,211,445</b>			<b>141</b>

Notes:

<sup>1</sup> For residential-type structures, assumed 115 lb/sf based on Table 5, from "Characterization of Building-Related construction and Demolition Debris in the United States," Franklin Associates, prepared for EPS, June 1998.

<sup>2</sup> For trailers and mobile homes, referenced "A Feasibility Study of Mobile Home Recycling", Manufactured Housing Institute, October, 2000.

<sup>3</sup> For silos, tanks, etc., debris was estimated based on the size of the structure; dimensional data and materials were used where available.

<sup>4</sup> Remaining features were calculated based on estimated volume of the debris field less estimated void space and the general distribution of materials within the debris field.

<sup>5</sup> A truck haul weight of 40,000 lbs. was assumed in consideration of SR-58.

<sup>6</sup> This value considers the density of the component and the amount of air (empty space) that would be shipped with each load.

Suitable disposal facilities for all three waste materials categories are located in both the Paso Robles area, approximately 50 miles west of the Project, and the Bakersfield area, approximately 70 miles east of the Project. Waste material to be recycled can be transported to either area. Waste material for disposal must stay in-County and will be transported to the locations identified in the AFC. In addition, construction and demolition debris can be recycled at a number of facilities, including North County Recycling, Paso Robles Recycling Facility, and Troesh Recycling. As shown in Table 1.5-1, approximately 141 truck loads are expected to remove the waste materials from the Project during demolition activities. The peak daily truck trips is anticipated to be 20 loads.

## 1.6 ELECTRICAL SYSTEMS

Ausra, an Interconnection Customer, proposes to interconnect its CESF Project to the California Independent System Operator (CAISO) Corporation controlled grid. As described in the Project AFC, the CESF's up to a nominal 177 MW net output will be supplied to the PG&E high voltage system at PG&E's Midway Substation, which is located north of Bakersfield, by tapping into the existing Morro Bay–Midway 230 kilovolt (kV) transmission Line 1, north and adjacent to the Project site. Ausra also selected an alternate point of interconnection which involves looping into both Morro Bay–Midway 230 kV transmission Line 1 and Line 2. This interconnection, as well as the proposed solar field electrical distribution system, was described on the single line diagrams included in the Project AFC (see Figures 3.4-14 and 3.4-15).

### 1.6.1 Reconductoring of 230 kV Morro Bay – Midway Transmission Line

Upon direction from CAISO, PG&E completed an Interconnection System Impact Study (ISIS). The results of the ISIS concluded that the Project may cause overloading of one transmission circuit under Category B and three transmission circuits under Category C contingency conditions on the CAISO Controlled Grid. The short circuit study concluded that the CESF Project would result in no overstressed equipment at nearby substations. In addition, the ISIS included two sensitivity analyses, one without modeling CAISO queue #009 project and one without modeling CAISO queue #166 project. The results without #009 project indicated that the CESF Project will cause no overloading of transmission facilities. The results without #166 project indicated the CESF Project would cause overloading of two transmission circuit under Category B contingency conditions. For complete CESF Project details regarding the interconnection studies, refer to the Carrizo Plain Solar Interconnection System Impact Study Report.

If required, the CESF Project will include system reconductoring to the 230 kV Morro Bay–Midway transmission Line 1 and Line 2.

### 1.6.2 Carrizo Plains Switching Station

The ISIS also identified that a loop type interconnection would be required versus the tap connection proposed in the Project AFC. This looping interconnection would take place at a new PG&E 230kV Carrizo Plains Switching Station. As described in the ISIS, the 230kV transmission line from the CESF would interconnect to the Morro Bay–Midway #1 circuit through the new switchyard. The electrical interconnection has been revised accordingly and a preliminary configuration is shown on the Project single diagram in Figure 1.6-1. See also Figures 1.6-2 and 1.6-3.

### 1.6.3 Alternate Station Service Source

As the Project interconnects to only one of the two Morro Bay–Midway circuits, in the event that the circuit is not available, all power to the CESF would be lost. To preclude that event and reduce the operating demand on the diesel generator, an alternate station service source connection will be made to the PG&E 115 kV line adjacent to the Project. No power would be exported over this connection. Its purpose is solely to keep plant systems energized in the event that a transmission connection becomes

unavailable due to an event on the line, or maintenance activities. This station service connection is shown on the Project single diagram in Figure 1.6-1.

#### **1.6.4 Solar Field Electrical Distribution**

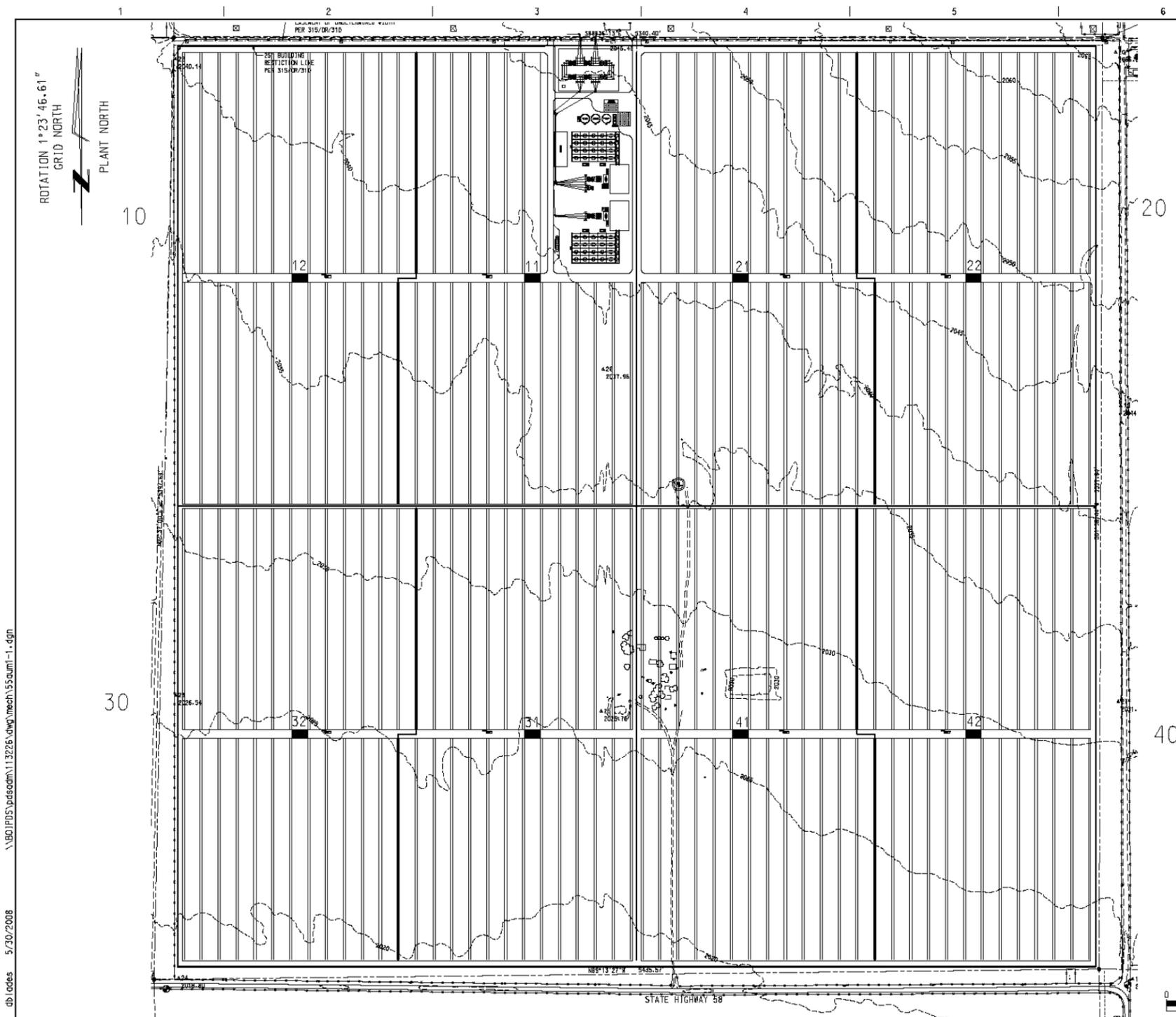
The Project AFC contains a description of the solar field 480V electrical distribution system; however, per this supplemental filing, the distribution system has been altered. The revised electrical interconnection is shown on the Project single diagram in Figure 1.6-1.

### **1.7 ADMINISTRATION BUILDING HEIGHT**

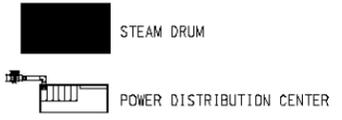
The Project AFC indicates that the proposed administration building height is 40 feet; however, per this supplemental filing, the administration building will be no more than 35 feet in height.

### **1.8 PERIMETER FENCING HEIGHT**

Section 3.11.10.7.5, Site Security, of the Project AFC indicates the “facility will be fenced with a minimum 3 m (10-foot) chain link fence with three strands of barbwire on top and with privacy lattice around the perimeter.” Similarly, Section 3.11.13.1.1, Construction Site Security, of the Project AFC states the “construction laydown area will be fenced with a temporary 3 m (10-foot) chain link fence with a gated entrance from SR-58.” However, the fencing surrounding both the Project site and laydown area will be a maximum approximate 2 meter (m) (6.5-foot) in height. The reduction in fence height will still provide adequate security.



0	SITE COMMON
1	UNIT 1 STG & POWERBLOCK EQUIPMENT
2	UNIT 2 STG & POWERBLOCK EQUIPMENT
10	NW QUADRANT SOLAR ARRAY COMMON
11	DRUM, CIRC PUMP, RECEIVERS (25), REFLECTORS (250) SYSTEM
12	DRUM, CIRC PUMP, RECEIVERS (25), REFLECTORS (250) SYSTEM
20	NE QUADRANT SOLAR ARRAY COMMON
21	DRUM, CIRC PUMP, RECEIVERS (25), REFLECTORS (250) SYSTEM
22	DRUM, CIRC PUMP, RECEIVERS (25), REFLECTORS (250) SYSTEM
30	SW QUADRANT SOLAR ARRAY COMMON
31	DRUM, CIRC PUMP, RECEIVERS (25), REFLECTORS (250) SYSTEM
32	DRUM, CIRC PUMP, RECEIVERS (25), REFLECTORS (250) SYSTEM
40	SE QUADRANT SOLAR ARRAY COMMON
41	DRUM, CIRC PUMP, RECEIVERS (25), REFLECTORS (250) SYSTEM
42	DRUM, CIRC PUMP, RECEIVERS (25), REFLECTORS (250) SYSTEM



db:cedes 5/30/2008 \\BOJ\pds\pdsadm\113226\wp\mech\550um1-1.dgn



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INTER-DISCIPLINE REVIEW							
DISC	ARCH	CIVIL	ELECT	HVAC	I&C	MECH	STRUCT
DATE							
INIT							

REV	ISSUED FOR INDICITIVE PRICING	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
A	ISSUED FOR INDICITIVE PRICING	05/30/08	DPB	JTS	STH	DJ	

DSGN	JTS	05/30/08
DRN	DPB	05/30/08
CKD	STH	05/30/08
SCALE: 1" = 300'-0"		
FOR 22x34 DWG ONLY		



AUSRA	JOB NUMBER	REV
CARRIZO ENERGY SOLAR FARM	113226	A
SOLAR FIELD LAYOUT	DRAWING NUMBER	M1-1



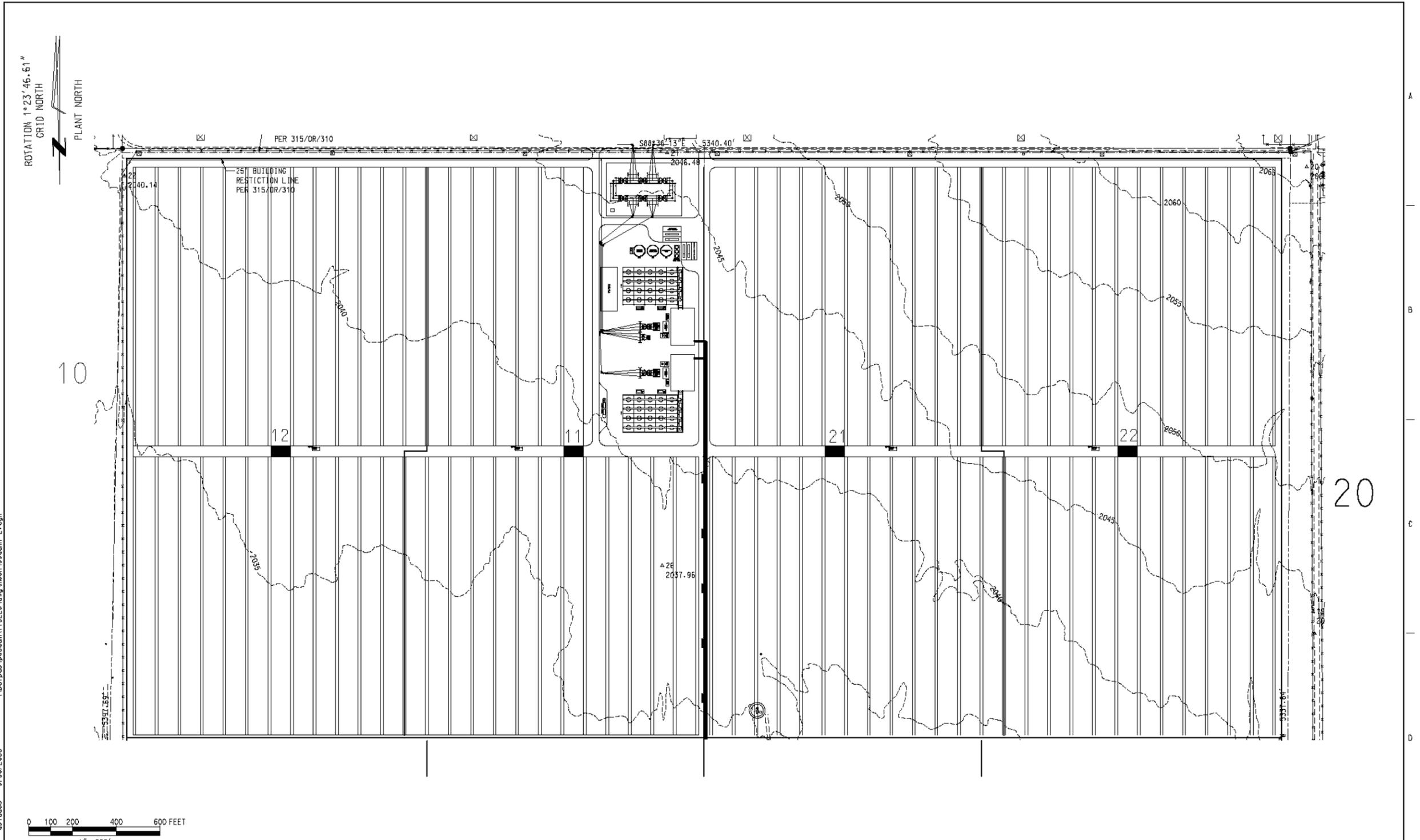
**SOLAR FIELD LAYOUT  
CARRIZO ENERGY SOLAR FARM (CESF)**

CREATED BY: PE	DATE: 06-30-08	FIG. NO:
PM: AL	PROJ. NO: 22239472	1.2-1

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INTER-DISCIPLINE REVIEW								
DISC	ARCH	CIVIL	ELECT	HVAC	I&C	MECH	STRUCT	
DATE								
INIT								

REV	ISSUED FOR INDICITIVE PRICING	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
A	ISSUED FOR INDICITIVE PRICING	05/30/08	DPB	JTS	STH	DJ	M1-1 SOLAR FIELD LAYOUT

DSGN	JTS	05/30/08
DRN	DPB	05/30/08
CKD	STH	05/30/08
SCALE: 1" = 200'-0"		
FOR 22x34 DWG ONLY		



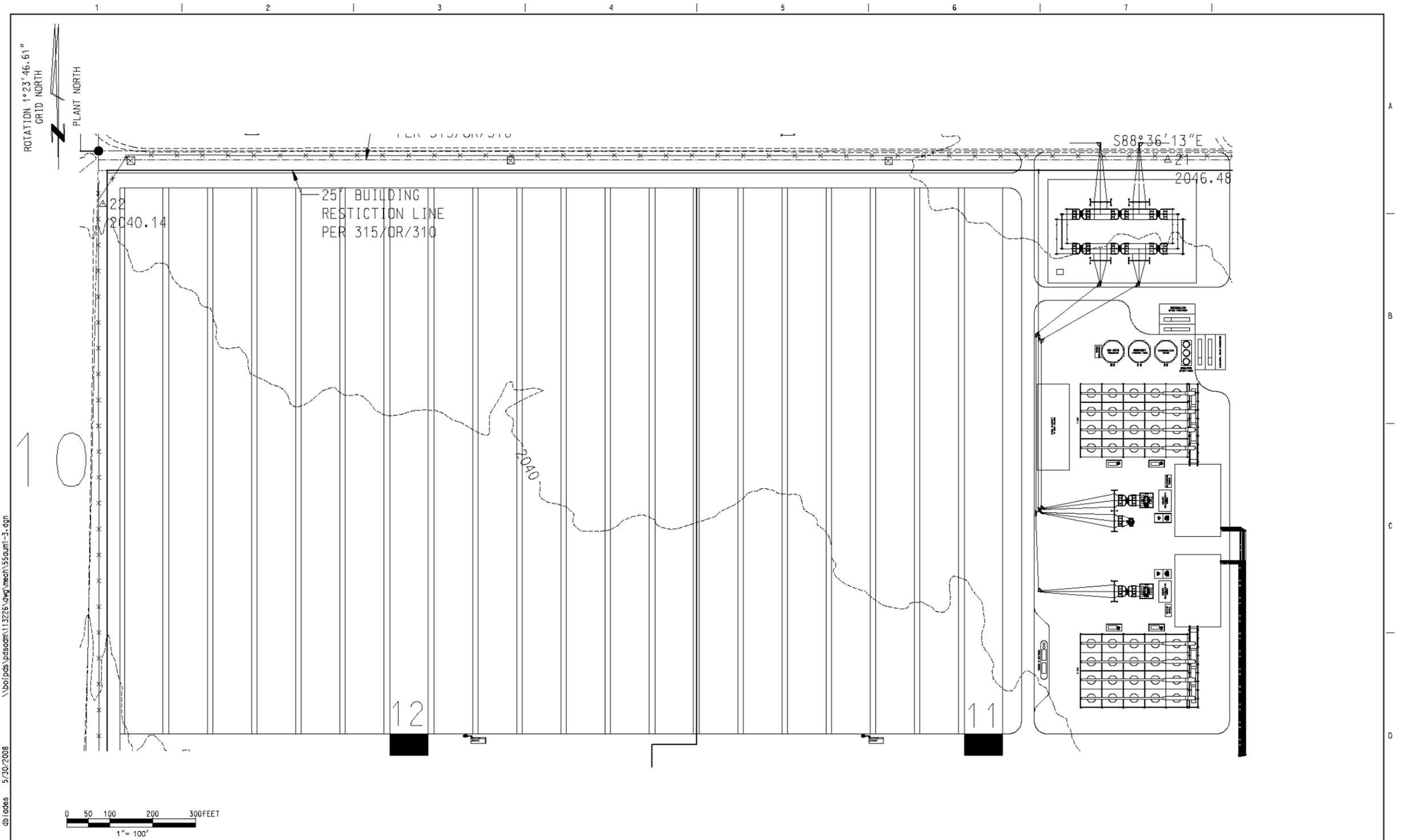
AUSRA	JOB NUMBER	REV
CARRIZO ENERGY SOLAR FARM	113226	▲
SOLAR FIELD LAYOUT NORTHERN HALF	DRAWING NUMBER	
	M1-2	



SOLAR FIELD LAYOUT NORTHERN HALF CARRIZO ENERGY SOLAR FARM (CESF)		
CREATED BY: PE	DATE: 06-30-08	FIG. NO:
PM: AL	PROJ. NO: 22239472	1.2-2

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INTER-DISCIPLINE REVIEW								
DISC	ARCH	CIVIL	ELECT	HVAC	I&C	MECH	STRUCT	
DATE								
INIT								

REV	ISSUED FOR INDICITIVE PRICING	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
A	ISSUED FOR INDICITIVE PRICING	05/30/08	DPB	JTS	STH	DJ	M1-1 SOLAR FIELD LAYOUT

DSGN	JTS	05/30/08
DRN	DPB	05/30/08
CKD	STH	05/30/08
SCALE: 1" = 100'-0"		
FOR 22x34 DWG ONLY		



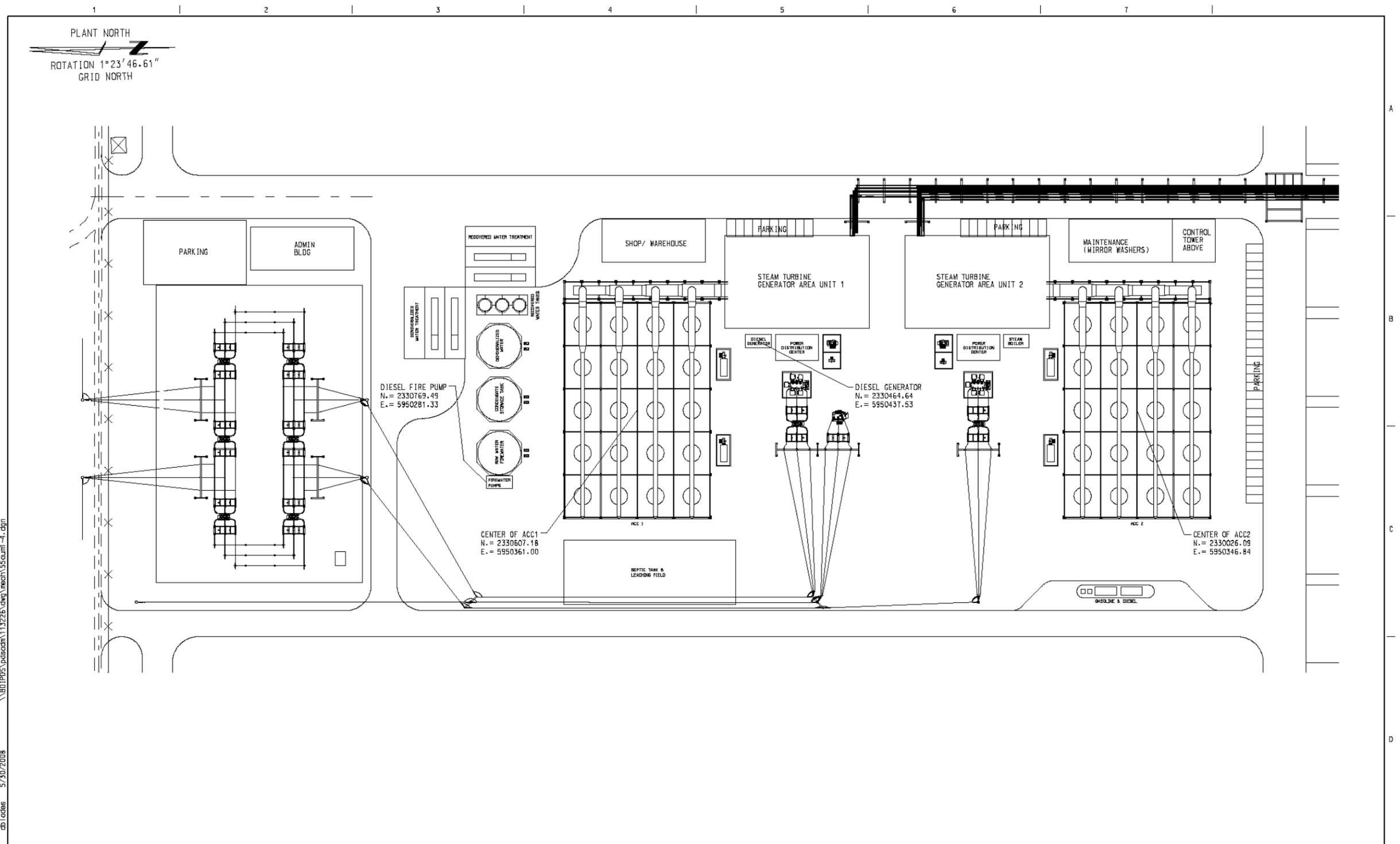
AUSRA  
CARRIZO ENERGY SOLAR FARM  
SOLAR FIELD LAYOUT  
NORTH WEST ARR.

JOB NUMBER	REV
113226	
DRAWING NUMBER	
M1-3	



**SOLAR FIELD LAYOUT NW ARR.  
CARRIZO ENERGY SOLAR FARM (CESF)**

CREATED BY: PE	DATE: 06-30-08	FIG. NO:
PM: AL	PROJ. NO: 22239472	1.2-3



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INTER-DISCIPLINE REVIEW								
DISC	ARCH	CIVIL	ELECT	HVAC	I&C	MECH	STRUCT	
DATE								
INIT								

REV	ISSUE FOR INDICATIVE PRICING	DATE	DRN	DSGN	CKD	APPD	REFERENCE DRAWINGS
A	ISSUE FOR INDICATIVE PRICING	5/30/08	DPB	JTS	STH	DJ	M1-1 SOLAR FIELD LAYOUT

DSGN	JTS	05/30/08
DRN	DPB	05/30/08
CKD	STH	05/30/08



AUSRA  
 CARRIZO ENERGY SOLAR FARM  
 SOLAR FIELD LAYOUT  
 POWER BLOCK ARRANGEMENT

JOB NUMBER	REV
113226	A
DRAWING NUMBER	
M1-4	

SCALE: 1" = 50'-0"  
 FOR 22x34 DWG ONLY



**POWER BLOCK ARRANGEMENT  
 CARRIZO ENERGY SOLAR FARM (CESF)**

CREATED BY: PE  
 PM: AL  
 DATE: 06-30-08  
 PROJ. NO: 22239472

FIG. NO:  
**1.2-4**



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**AERIAL SIMULATION  
CARRIZO ENERGY SOLAR FARM (CESF)**

NO SCALE

CREATED BY: JN

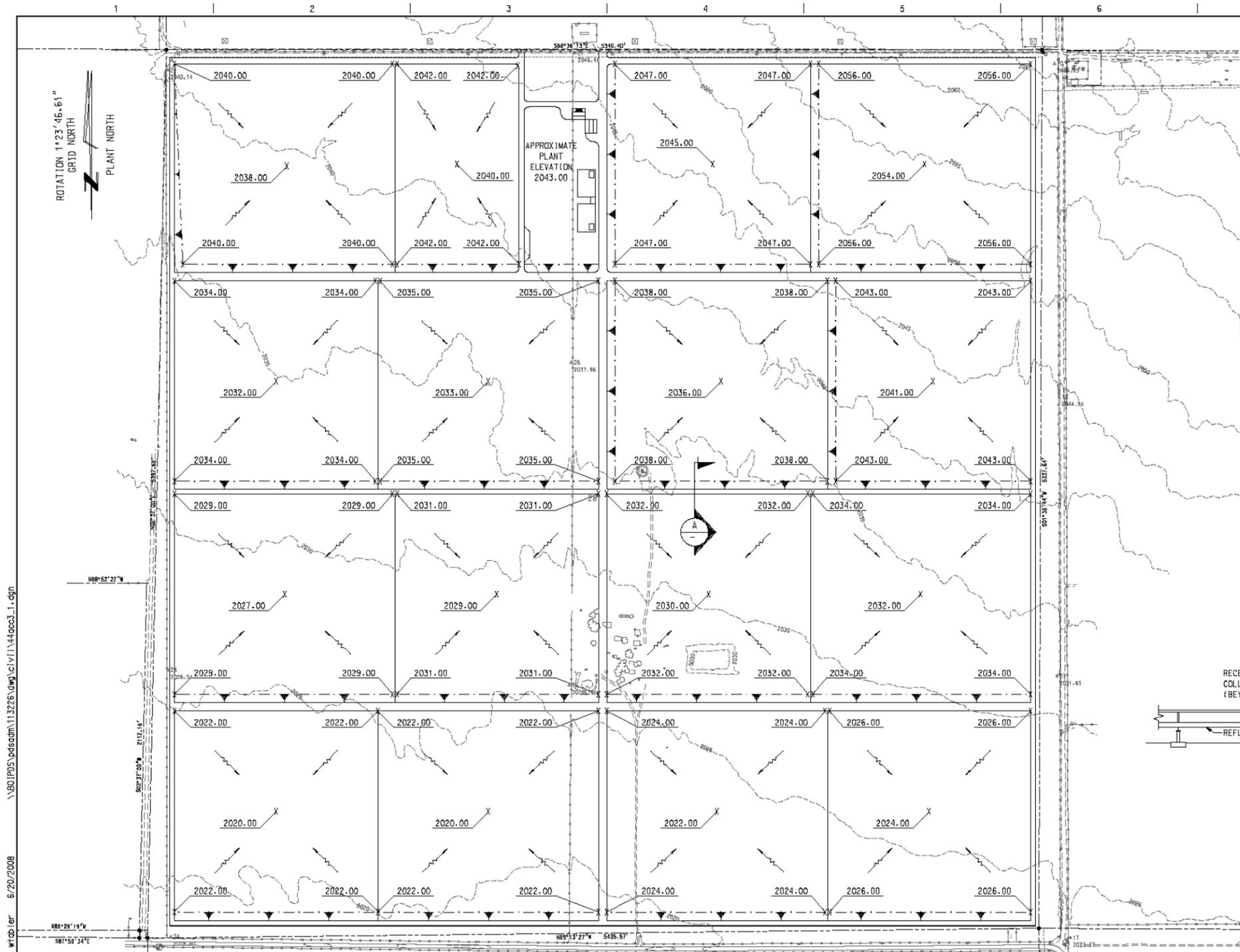
DATE: 06-30-08

FIG. NO:

PM: AL

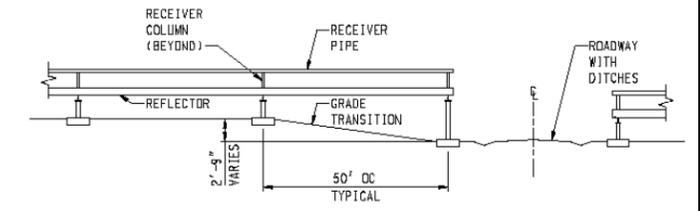
PROJ. NO: 22239472

**1.2-5**

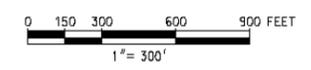


- LEGEND**
- 2050 --- EXISTING CONTOUR, 5' INTERVAL
  - - - - - EXISTING FENCE
  - - - - - GRADE BREAK
  - X 2050.00 FINISHED GRADE SPOT ELEVATION
  - DRAINAGE FLDW
  - TOC TOP OF CONCRETE
  - TOG TOP OF GRAVEL
  - FL FLOWLINE
  - EL ELEVATION
  - IE INVERT ELEVATION

- NOTES**
1. EXISTING FEATURES ARE DEPICTED BY LIGHTER WEIGHT (SCREENED) LINES. NEW STRUCTURES AND FACILITIES ARE SHOWN IN HEAVIER LINE WEIGHTS.
  2. SEE DRAWING C1-1 FOR BASIS OF BEARING, COORDINATE SYSTEM AND ELEVATIONS.
  3. ALL ELEVATIONS SHOWN ARE FINISHED GRADE, UNLESS OTHERWISE NOTED.
  4. FINISH GRADES SHALL BE WITHIN +/- 0.10' OF ELEVATIONS SHOWN.
  5. FINISHED GRADE SHALL BE UNIFORMLY SLOPED AND FREE OF SURFACE IRREGULARITIES. PROVIDE SMOOTH TRANSITIONS BETWEEN GRADE CHANGES. GRADES SHALL SLOPE AWAY FROM BUILDINGS AND SLABS AT MINIMUM 2% FOR 10'.
  6. FINISHED GRADE SHALL BE 6" MINIMUM BELOW TOP OF CONCRETE EXCEPT FOR PADS INTENDED FOR VEHICLE PARKING. GRADING SHALL DIRECT SURFACE WATER AWAY FROM STRUCTURES.
  7. CONTRACTOR SHALL ESTABLISH EROSION AND SEDIMENTATION CONTROLS PRIOR TO INITIATING ANY EARTH WORK AND SHALL COMPLY WITH ALL MEASURES INDICATED IN THE CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN AND MONITORING PROGRAM PREPARED FOR THIS PROJECT.



TYPICAL GRADE TRANSITION SECTION  
SECTION A-A  
SCALE NTS



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INTER-DISCIPLINE REVIEW									
DISC	ARCH	CIVIL	ELECT	HVAC	I&C	MECH	STRUCT		
DATE	*	*	*	*	*	*	*		
INIT	*	*	*	*	*	*	*		
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REV			REVISIONS		DATE	DRN	DSGN	CKD	APPD

DSGN	WKW	06/18/08
DRN	WMT	06/18/08
CKD	WKW	06/19/08
SCALE: 1" = 300'-0"		
FOR 22-34 DWG ONLY		



AUSRA		JOB NUMBER	REV
CARRIZO ENERGY SOLAR FARM		113226	A
PRELIMINARY GRADING AND DRAINAGE PLAN		DRAWING NUMBER	C3-1

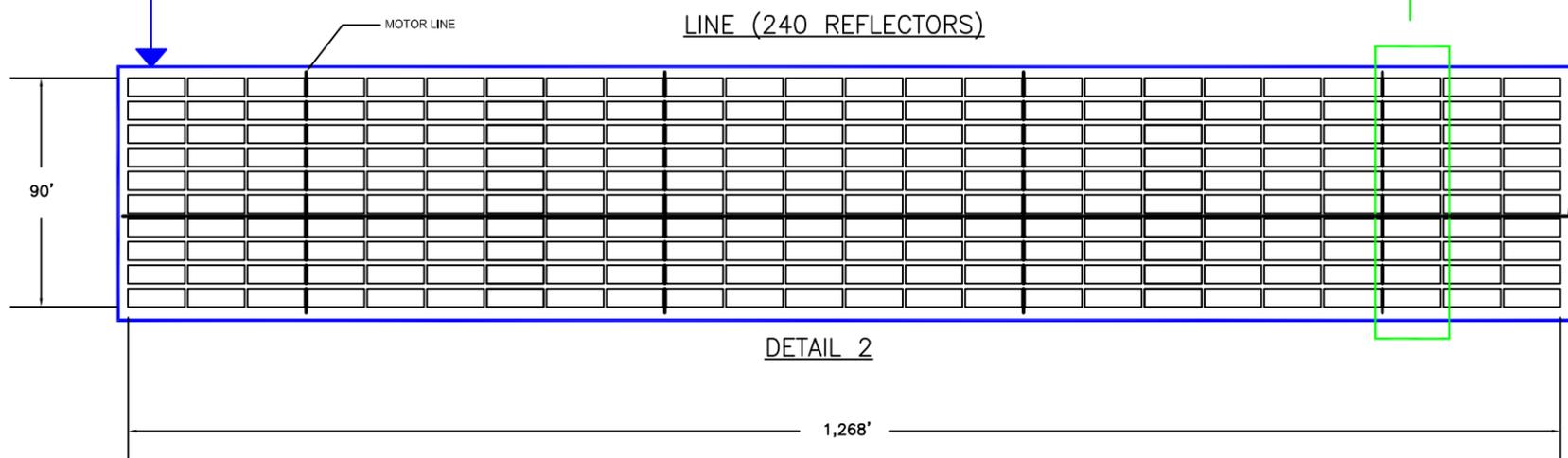
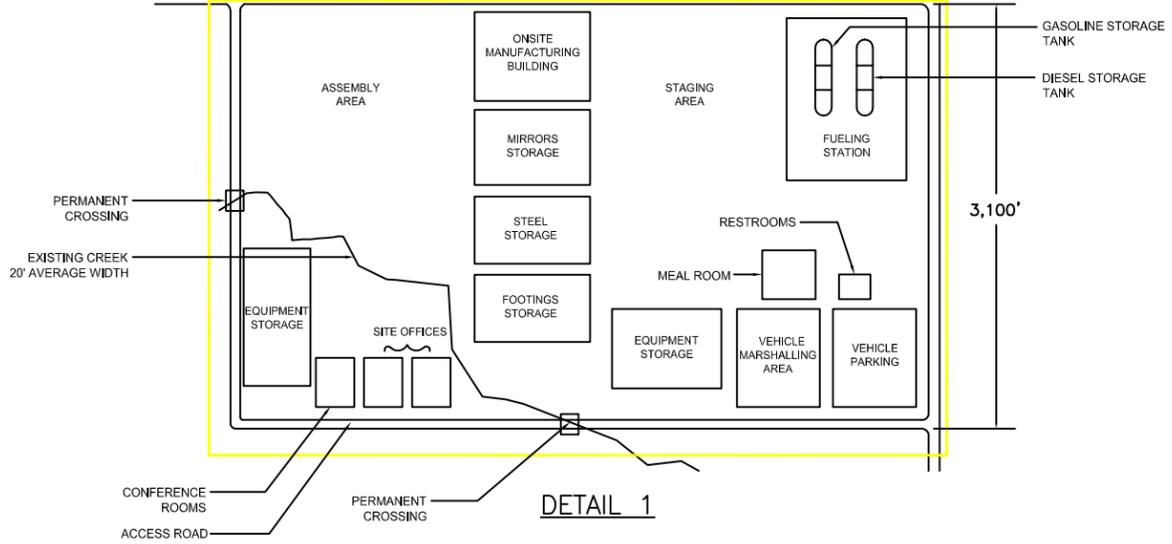
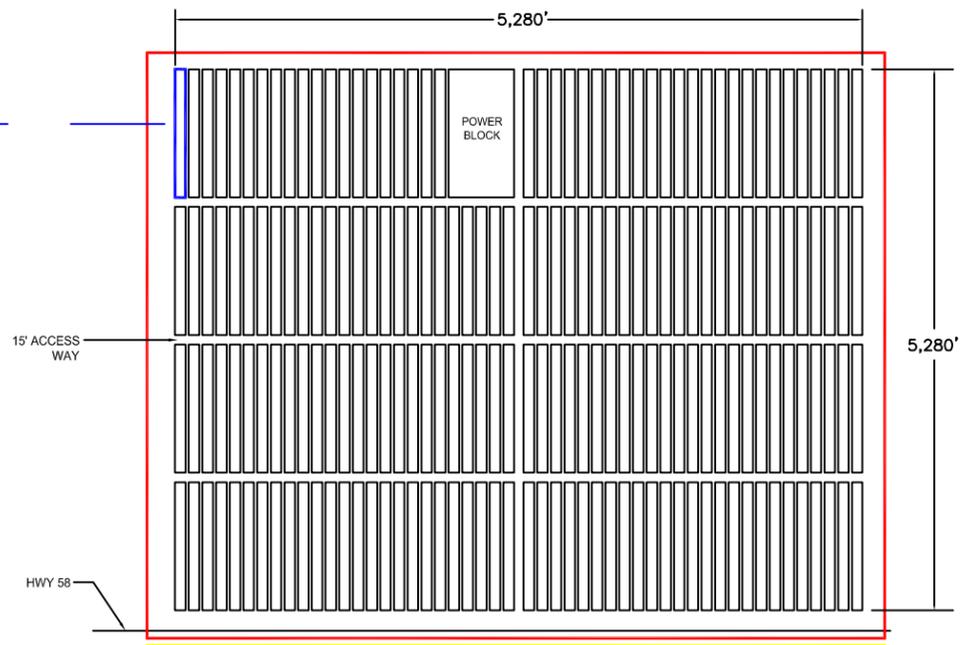


**PRELIMINARY GRADING & DRAINAGE PLAN  
CARRIZO ENERGY SOLAR FARM (CESF)**

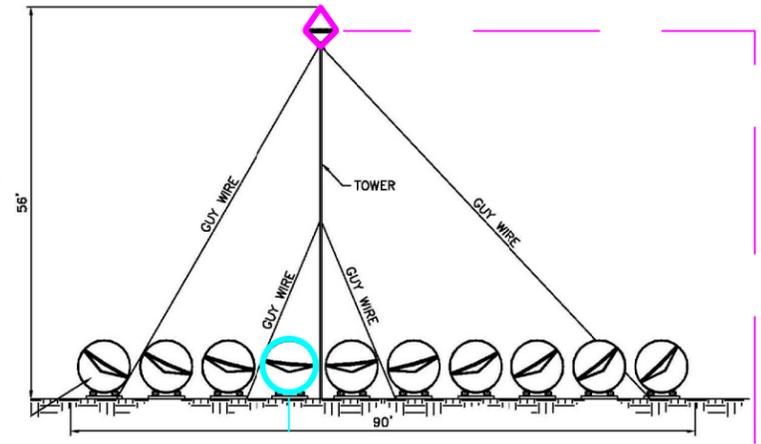
CREATED BY: PE	DATE: 06-30-08	FIG. NO:
PM: AL	PROJ. NO: 22239472	1.2-6

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SOLAR FARM (195 LINES)

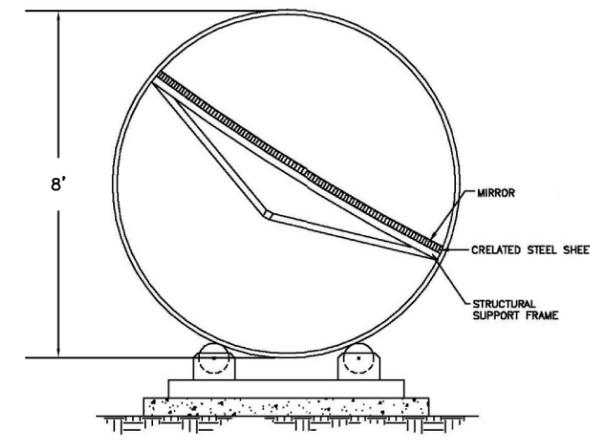


BAY

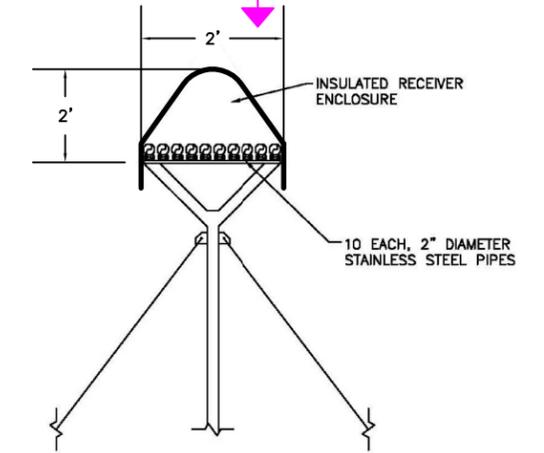


DETAIL 3

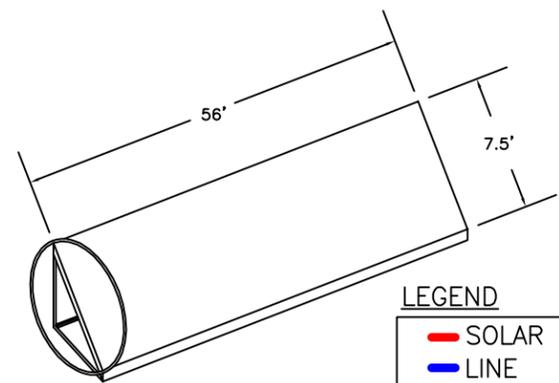
REFLECTOR PROFILE



RECEIVER



REFLECTOR PERSPECTIVE (APPROX. 46,800 REFLECTORS IN SOLAR FARM)



LEGEND

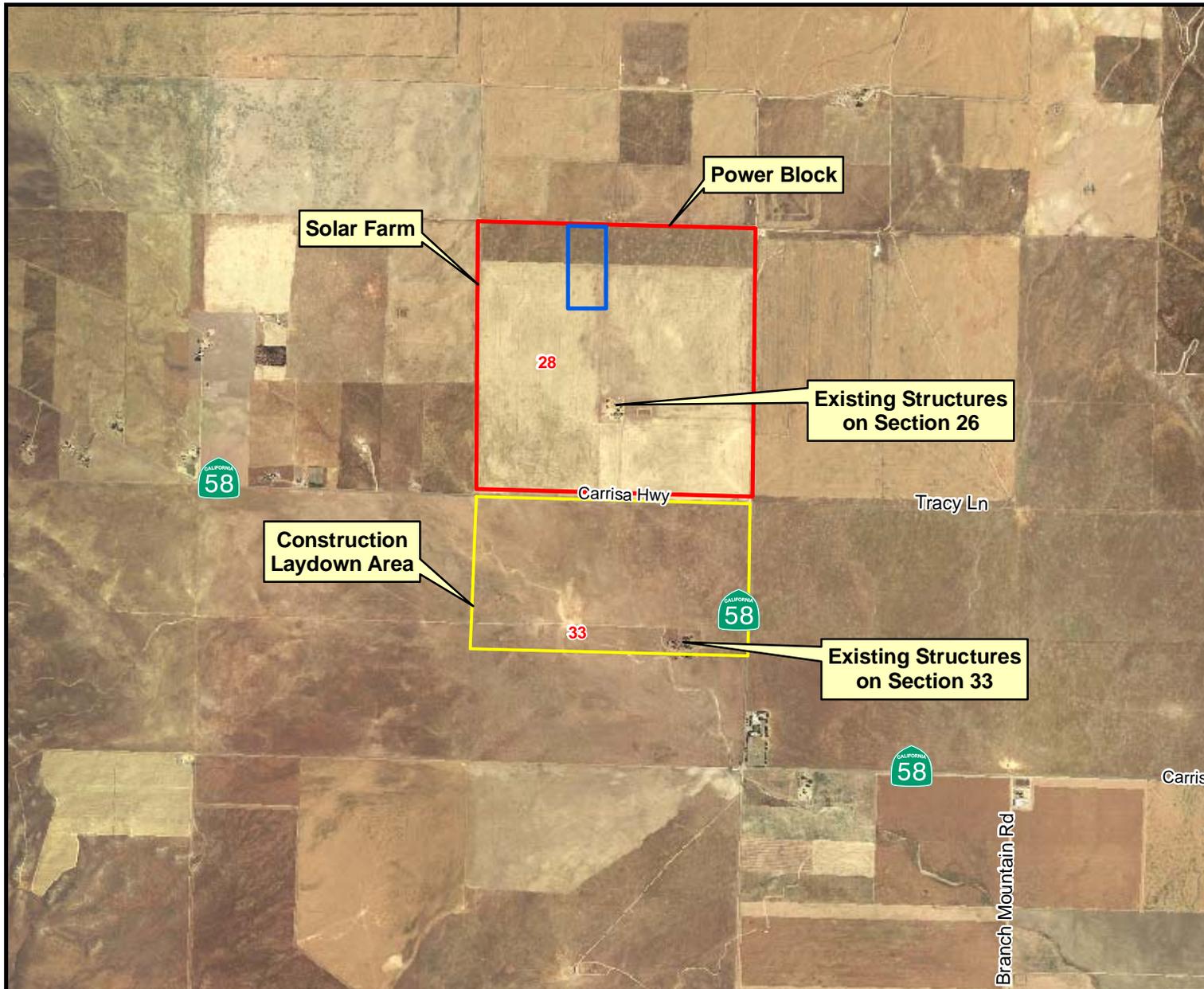
<span style="color: red;">█</span>	SOLAR FARM	= Array + Power Block
<span style="color: blue;">█</span>	LINE	= 1,268' x 90'
<span style="color: green;">█</span>	BAY	= 56' x 90'
<span style="color: cyan;">█</span>	REFLECTOR	= 56' x 7.5'
<span style="color: magenta;">█</span>	RECEIVER	= 2' x 2'
<span style="color: yellow;">█</span>	CONSTRUCTION LAYDOWN AREA	= 5,280' x 3,100'



PROJECT LAYOUT  
CARRIZO ENERGY SOLAR FARM (CESF)



CREATED BY: JM	DATE: 06-08-08	FIG. NO:
PM: AL	PROJ. NO: 22239472	1.4 - 1



SOURCES: TIGER (roads 2000);  
 USDA FSA Aerial Photography  
 Field Office: County image mosaic for  
 San Luis Obispo, CA (2005).

1500 0 1500 3000 Feet  
 SCALE: 1" = 3,000' (1:36,000)

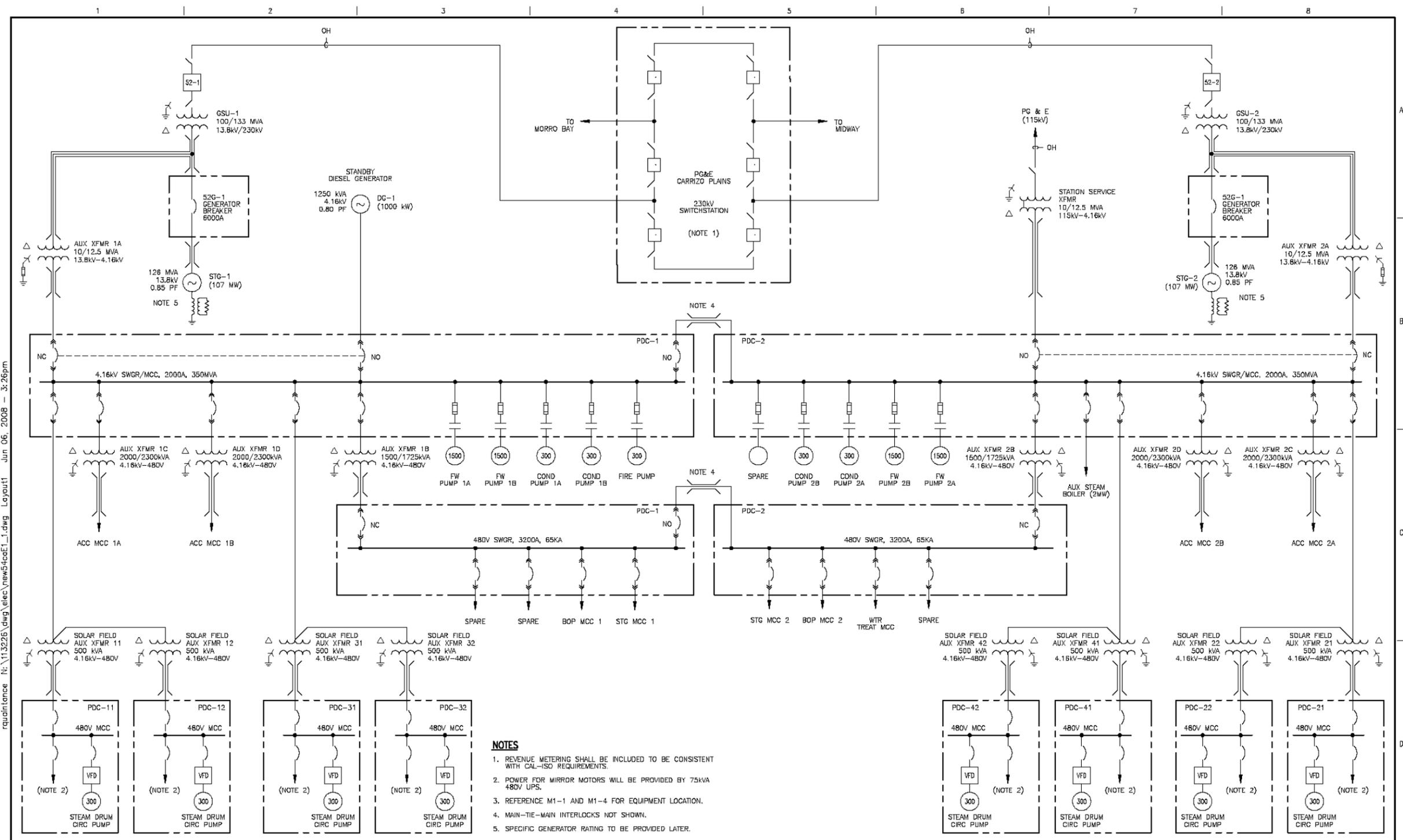
**EXISTING STRUCTURES  
 CARRIZO ENERGY SOLAR FARM (CESF)**

CREATED BY: JN    DATE: 06-30-08    FIG. NO:  
 PM: AL    PROJ. NO: 22239472    1.5-1

**LEGEND**

- Solar Farm
- Construction Laydown Area
- Power Block

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rquaintance N: \\113225\dwg\elec\new54cdE\_1.dwg Layout1 Jun 06, 2008 - 3:26pm

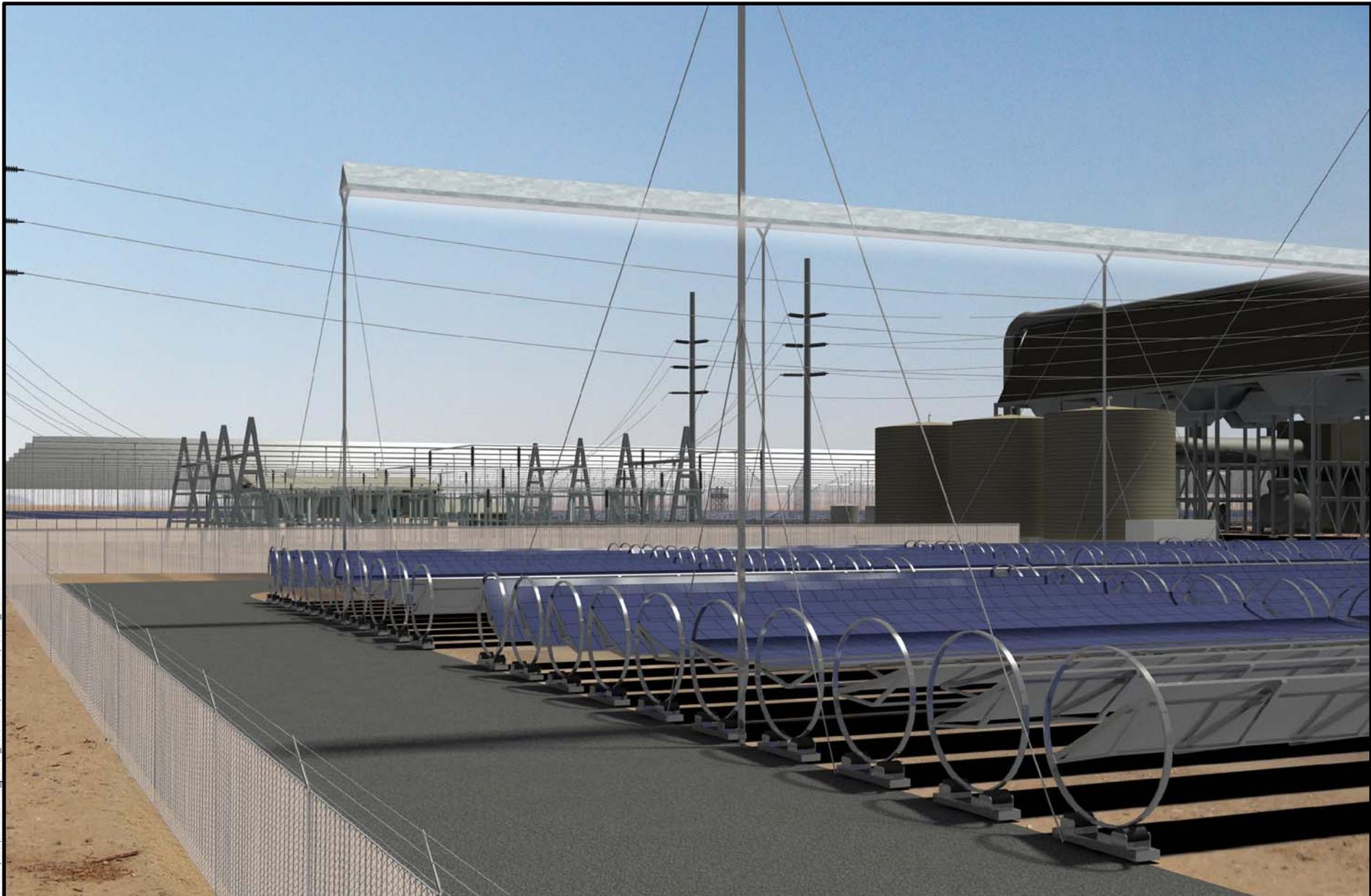
- NOTES**
1. REVENUE METERING SHALL BE INCLUDED TO BE CONSISTENT WITH CAL-ISO REQUIREMENTS.
  2. POWER FOR MIRROR MOTORS WILL BE PROVIDED BY 75kVA 480V UPS.
  3. REFERENCE M1-1 AND M1-4 FOR EQUIPMENT LOCATION.
  4. MAIN-TIE-MAIN INTERLOCKS NOT SHOWN.
  5. SPECIFIC GENERATOR RATING TO BE PROVIDED LATER.

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	DISC	ARCH	CIVIL	ELECT	HVAC	I&C	MECH	STRUCT	DRN	RDD	1/25/08			113226	A
	DATE	*	*	*	*	*	*	*	CKD	BT	1/25/08	DRAWING NUMBER			
	INIT	*	*	*	*	*	*	*	SCALE:	NONE	FOR 22x34 DWG ONLY	E1-1			
	A ISSUED FOR INDICATIVE PRICING 6/06/08 RDD RDD SBT DEJ REV REVISIONS DATE DRN DSGN CKD APPD REFERENCE DRAWINGS														

**CONCEPTUAL ONE LINE**  
**CARRIZO ENERGY SOLAR FARM (CESF)**

	CREATED BY: PE PM: AL	DATE: 06-30-08 PROJ. NO: 22239472
		FIG. NO: <b>1.6-1</b>

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**POWER BLOCK SIMULATION  
CARRIZO ENERGY SOLAR FARM (CESF)**



NO SCALE

CREATED BY: JN

DATE: 06-30-08

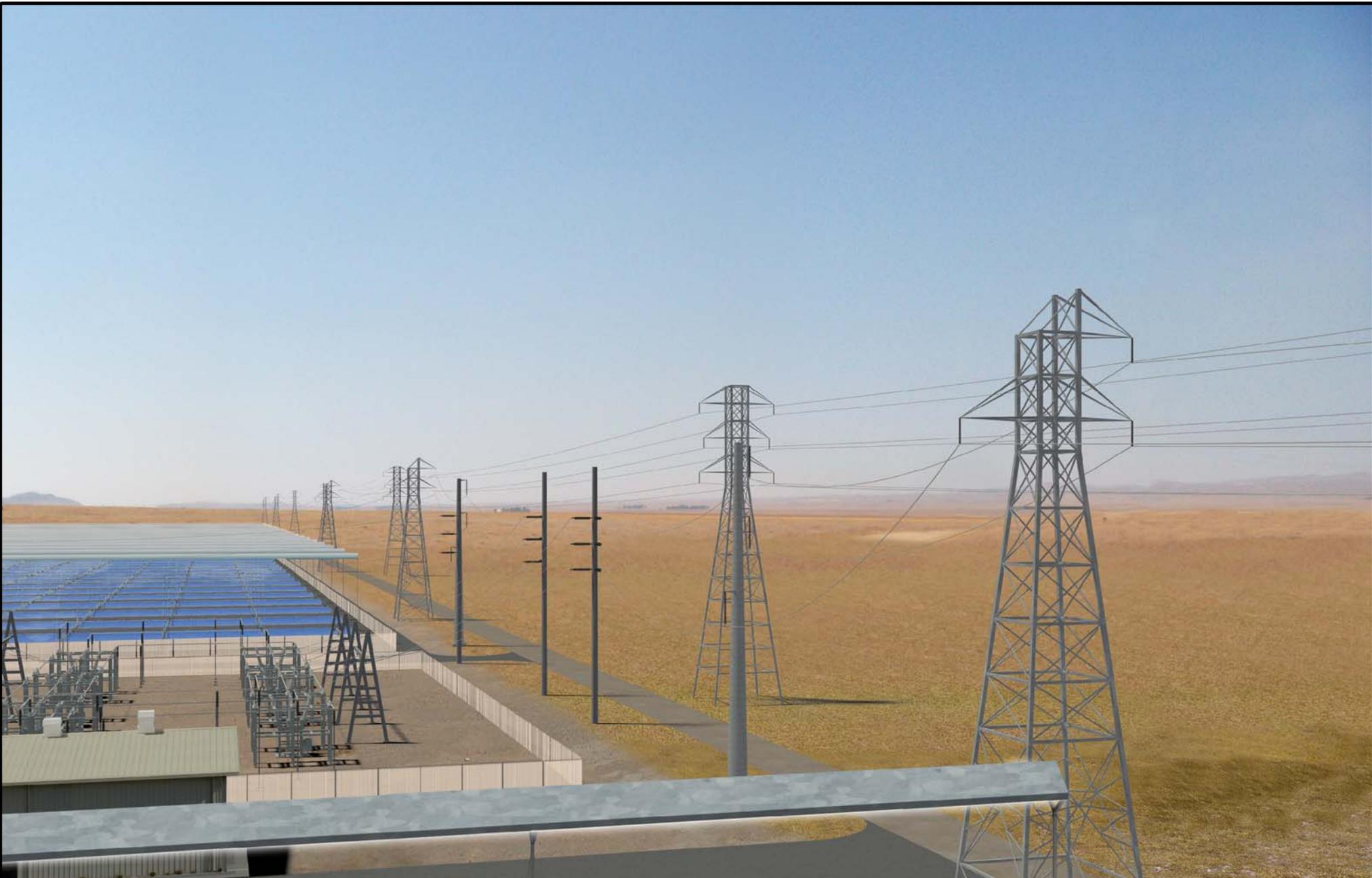
FIG. NO:

PM: PM

PROJ. NO: 22239472

**1.6-2**

Path: G:\gts\projects\1577\22239320\mxd\simulations\_interconnection.mxd, 07/01/08, colin\_mattison



**URS**

**INTERCONNECTION SIMULATION  
CARRIZO ENERGY SOLAR FARM (CESF)**

NO SCALE

CREATED BY: JN

DATE: 06-30-08

FIG. NO:

PM: AL

PROJ. NO: 22239472

**1.6-3**

**SECTION 2 ENVIRONMENTAL INFORMATION**

**2.1 INTRODUCTION**

This section presents a discussion of the affected environment and potential environmental consequences that are associated with the changes identified in this Supplement to the Carrizo Energy Solar Farm (CESF or Project) Application for Certification (AFC), along with measures to mitigate or avoid adverse impacts as appropriate. Supporting information to determine compliance with applicable laws, ordinances, regulations, and standards (LORS) is included within the discussion in each applicable section.

The analyses presented in this section are based on the following:

- Details of the proposed Project as presented in Section 1.0, Supplemental Project Description, of this document;
- Details of the proposed Project as presented in Section 3.0, Facility Description and Location, of the Project AFC;
- Consideration of CEC regulations, including regulations applicable to the expedited processing of projects; and
- Consideration of CEC Staff and public input.

The environmental assessments presented in this section are meant to comply with CEC requirements, including those of the California Environmental Quality Act (CEQA). In general, each section follows the same format of presenting the affected environment and existing site conditions, followed by the environmental consequences of the proposed Project, cumulative impacts, measures proposed to mitigate significant adverse impacts, and LORS compliance.

## 2.2 AIR QUALITY

This section addresses potential air quality impacts from the proposed CESF Project changes identified in this Supplement to the Project AFC. Considerations with individual changes are analyzed separately in the following subsections.

### 2.2.1 Affected Environment

The affected environment is unchanged from that presented in Section 5.2.1 of the Project AFC.

### 2.2.2 Environmental Consequences

#### 2.2.2.1 North/South Configuration

The north/south configuration does not create additional construction or operation related impacts to air quality beyond those presented in Section 5.2.2 of the Project AFC.

#### 2.2.2.2 Emergency Generator

The only two operational stationary sources of emissions for the CESF Project will be an emergency diesel firewater pump engine and an emergency diesel generator. The firewater pump engine, originally identified in the Project AFC, will be rated at approximately 300 horsepower, while the emergency generator engine will be rated at approximately 1,341 horsepower. Each piece of equipment will be tested for thirty minutes per week during different (*i.e.*, non-concurrent) time periods. Estimated hourly and annual emissions and stack parameters for the firewater and generator engines are provided in Table 2.2-1 and Table 2.2-2, respectively. Emission rates shown in this table are based on vendor-supplied emission factors. The fuel used by these engines will be ultra-low sulfur diesel containing a maximum of 15-ppm sulfur by weight. Detailed emissions calculations for the firewater pump and emergency generator are presented in Appendix C, Air Quality Data.

**Table 2.2-1  
Firewater Pump Engine Emission Parameters**

Pollutant	Emissions (lbs/hr)	Emissions (lb/yr)
NO <sub>x</sub>	1.41	42.36
CO	0.11	3.27
VOC	0.11	3.17
SO <sub>x</sub>	0.00	0.04
PM <sub>10</sub> <sup>1</sup>	0.05	1.39

*Source Parameters*

Annual emissions based on 30 hours of operation.

Stack top height: 18 feet above ground level.

Stack diameter: 5 inches.

Stack exhaust flow rate at full firing: 1740 ACFM or 64.825 m/s.

Stack exhaust temperature at full firing: 770°.

Notes <sup>1</sup> Assume all PM<sub>10</sub> is also PM<sub>2.5</sub>

**Table 2.2-2  
Generator Engine Emission Parameters**

Pollutant	Emissions (lbs/hr)	Emissions (lb/yr)
NO <sub>x</sub>	7.13	213.75
CO	0.28	8.43
VOC	0.01	0.44
SO <sub>x</sub>	0.01	0.24
PM <sub>10</sub> <sup>1</sup>	0.03	1.02

*Source Parameter:*

Annual emissions based on 30 hours of operation.

Stack top height: 18 feet above ground level.

Stack diameter: 8 inches.

Stack exhaust flow rate at full firing: 8387.2 ACFM or 122.06 m/s.

Stack exhaust temperature at full firing: 964.9°F.

*Notes:* <sup>1</sup> Assume all PM<sub>10</sub> is also PM<sub>2.5</sub>

In 2006, the California Assembly passed a law (AB32) directing California Air Resources Board (CARB) to develop regulations to reduce statewide greenhouse gas emissions to 1990 levels by 2020. Potential greenhouse gas emissions from the proposed Project were calculated using the California Climate Action Registry power/utility protocol (Version 1.0 April 2005). The estimated annual greenhouse gas emissions from the firewater pump and emergency generator engines are presented in Table 2.2-3. The estimated maximum potential sulfur hexafluoride (SF<sub>6</sub>) leakage emissions from circuit breakers and other transmissions system equipment on the Project site are presented in Table 2.2-4. Additional calculation details are provided in Appendix C, Air Quality Data.

**Table 2.2-3  
Maximum Potential Greenhouse Gas Emissions from the Proposed Project**

Emission rate (metric tons/year)		
1 Firewater pump	1 Emergency Generator	Total CO <sub>2</sub> Equivalent
1.68	7.51	9.19

**Table 2.2-4**  
**Estimated Maximum Potential SF<sub>6</sub> Leakage Emissions from Proposed Circuit Breakers and Other**  
**Transmissions System Equipment on the Project Site**

Breaker	Quantity	Typical	Typical	SF <sub>6</sub>	Leakage	Leakage	Leakage	CO <sub>2</sub> e Emissions (metric tons/yr)
		Make	Model	lbs/ Breaker	Rate (percent)	lbs/yr (Per Breaker)	lbs/yr (All Breakers)	
230 kV main breaker (2000A)	2	GE-Hitachi HVB	HP series	240	1	2.4	4.8	52.04
230 kV transformer breaker (2000A)	5	GE-Hitachi HVB	HP series	240	1	2.4	12	130.09
34.5 kV capacitor breaker (1200A)	10	GE-Hitachi HVB	HS series	31	1	0.31	3.1	33.61
34.5 kV solar group breaker (1200A)	15	GE-Hitachi HVB	HS series	31	1	0.31	4.65	50.41
48.3 kV capacitor switcher	15	Southern states	CapSwitcher	7	0.50	0.035	0.525	5.69
<b>CO<sub>2</sub>e emissions (metric tons/year)</b>								<b>271.83</b>

Notes:

CO<sub>2</sub>e = carbon monoxide equivalent  
 kV = kilovolt  
 lbs = pounds  
 yr = year

The impacts of Project operational emissions on criteria pollutant concentrations in the areas adjacent to the Project site were evaluated using the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) dispersion model (Version 07026). AERMOD is appropriate for modeling the two engines because it has the ability to assess dispersion of emission plumes from multiple point sources in flat, simple, and complex terrain, while utilizing sequential hourly meteorological input data. The regulatory default options were used, including building and stack tip downwash, default wind speed profiles, exclusion of deposition and gravitational settling, consideration of buoyant plume rise, and complex terrain.

For the AERMOD simulations to evaluate operational impacts of NO<sub>2</sub> concentrations, the ozone-limiting method option of the model was used to take into account the role of ambient ozone in limiting the conversion of emitted NO<sub>x</sub> (which occurs mostly in the form of NO) to NO<sub>2</sub>, the pollutant regulated by

ambient standards. The input data to the AERMOD-OLM model includes representative hourly ozone monitoring data for the same years corresponding to the meteorological input record. These simulations used the ozone data from the San Luis Obispo Air Pollution Control District (SLOAPCD) Nipomo Regional Park monitoring station for the years 2001-2005.

According to United States Environmental Protection Agency (U.S. EPA) AERMOD implementation guides, AERMOD's rural option was selected. The record of hourly meteorological data collected at the La Panza remote automated weather station was used for the years 2001-2005. Receptor grids used in the AERMOD modeling analysis to evaluate operational impacts were as follows:

- 50-meter spacing along the fenceline and extending from the fenceline out to 200 meters beyond the property line
- 250-meter spacing from 200 m to 5 km beyond the property line

Figures 2.2-1 and 2.2-2 show the placement of near-field and far-field receptor points, respectively.

Air modeling was performed to evaluate the maximum increase in ground-level pollutant concentrations resulting from proposed project emissions, and to compare the maximum predicted impacts, including background pollutant levels, with applicable short-term and long-term California Ambient Air Quality Standards (CAAQS) and National Ambient Air Quality Standards (NAAQS). Supporting modeling files may be found on the attached CD. Maximum predicted operational impacts for the emergency firewater pump and diesel generator are presented in Tables 2.2-5 and 2.2-6, respectively. These tables show that the modeled impacts due to Project emissions, in combination with conservative background concentrations, would not cause a violation of any CAAQS or NAAQS and would not significantly contribute to the existing violations of the state  $PM_{10}$  standard. Figures 2.2-3 and 2.2-4 show locations of the maximum predicted operational impacts for all pollutants and averaging times for the diesel emergency firewater pump and emergency generator. Note that the Applicant will accept a permit condition prohibiting testing of the two engines during the same hour.

**Table 2.2-5  
AERMOD Modeling Results for Project Operations  
Firewater Pump**

Pollutant	Averaging Period	Maximum Predicted Impact ( $\mu\text{g}/\text{m}^3$ )	Background Concentration ( $\mu\text{g}/\text{m}^3$ ) <sup>1</sup>	Total Concentration ( $\mu\text{g}/\text{m}^3$ )	NAAQS ( $\mu\text{g}/\text{m}^3$ )	CAAQS ( $\mu\text{g}/\text{m}^3$ )	Maximum UTMX NAD27 (m)	Maximum UTMY NAD27 (m)
NO <sub>2</sub>	1-hour <sup>2</sup>	138.3	105.3	243.6	NA	339 <sup>5</sup>	767,946	3,919,084
	Annual <sup>2</sup>	0.019	17.0	17.0	100	57 <sup>5</sup>	767,963	3,919,096
SO <sub>2</sub>	1-hour	0.154	309.2	309.4	NA	655	767,995	3,919,086
	3-hour	0.041	109.2	109.2	1300	NA	767,963	3,919,096
	24-hour	0.002	52.5	52.5	365	105	767,963	3,919,096
	Annual	0.00002	8.0	8.0	80	NA	767,963	3,919,096
CO	1-hour	11.2	2415.0	2426.2	40,000	23,000	767,995	3,919,086
	8-hour	0.804	1367.0	1367.8	10,000	10,000	767,963	3,919,096
PM <sub>10</sub>	24-hour <sup>3,4</sup>	0.037	55.0	55.0	150	50	767,963	3,919,096
	Annual <sup>4</sup>	0.001	18.0	18.0	NA	20	767,963	3,919,096
PM <sub>2.5</sub>	24-hour <sup>4</sup>	0.037	30.7	30.7	35	NA	767,963	3,919,096
	Annual <sup>4</sup>	0.001	8.3	8.3	15	12	767,963	3,919,096

## Notes:

<sup>1</sup> Background represents the maximum values measured at the monitoring stations identified in the Project AFC, Section 5.2.1.2.

<sup>2</sup> Results for NO<sub>2</sub> during operations used ozone limiting method (OLM) with ambient ozone data collected at the Nipomo Regional Park monitoring station for the years 2001-2005.

<sup>3</sup> PM<sub>10</sub> background levels exceed ambient standards.

<sup>4</sup> All PM<sub>10</sub> emissions from proposed Project sources were also considered to be PM<sub>2.5</sub>.

<sup>5</sup> In February 2007, CARB approved new, more stringent CAAQS for NO<sub>2</sub> as shown in the table above. These changes became effective in March 2008.

**Table 2.2-6  
AERMOD Modeling Results for Project Operations  
Emergency Generator**

Pollutant	Averaging Period	Maximum Predicted Impact ( $\mu\text{g}/\text{m}^3$ )	Background Concentration ( $\mu\text{g}/\text{m}^3$ ) <sup>1</sup>	Total Concentration ( $\mu\text{g}/\text{m}^3$ )	NAAQS ( $\mu\text{g}/\text{m}^3$ )	CAAQS ( $\mu\text{g}/\text{m}^3$ )	Maximum UTMX NAD27 (m)	Maximum UTMY NAD27 (m)
NO <sub>2</sub>	1-hour <sup>2</sup>	209.6	105.3	314.9	NA	339 <sup>5</sup>	767,946	3,919,084
	Annual <sup>2</sup>	0.030	17.0	17.0	100	57 <sup>5</sup>	767,995	3,919,086
SO <sub>2</sub>	1-hour	0.309	309.2	309.5	NA	655	767,946	3,919,084
	3-hour	0.077	109.2	109.3	1300	NA	767,897	3,919,083
	24-hour	0.003	52.5	52.5	365	105	767,913	3,919,096
	Annual	0.00003	8.0	8.0	80	NA	767,995	3,919,086
CO	1-hour	10.9	2415.0	2425.9	40,000	23,000	767,946	3,919,084
	8-hour	0.816	1367.0	1367.8	10,000	10,000	767,913	3,919,096
PM <sub>10</sub>	24-hour <sup>3,4</sup>	0.012	55.0	55.0	150	50	767,913	3,919,096
	Annual <sup>4</sup>	0.0002	18.0	18.0	NA	20	767,995	3,919,086
PM <sub>2.5</sub>	24-hour <sup>4</sup>	0.012	30.7	30.7	35	NA	767,913	3,919,096
	Annual <sup>4</sup>	0.0002	8.3	8.3	15	12	767,995	3,919,086

## Notes:

<sup>1</sup> Background represents the maximum values measured at the monitoring stations identified in the project Project AFC, Section 5.2.1.2.

<sup>2</sup> Results for NO<sub>2</sub> during operations used ozone limiting method (OLM) with ambient ozone data collected at the Nipomo Regional Park monitoring station for the years 2001-2005.

<sup>3</sup> PM<sub>10</sub> background levels exceed ambient standards.

<sup>4</sup> All PM<sub>10</sub> emissions from proposed Project sources were also considered to be PM<sub>2.5</sub>.

<sup>5</sup> In February 2007, CARB approved new, more stringent CAAQS for NO<sub>2</sub> as shown in the table above. These changes became effective in March 2008.

### ***2.2.2.3 Onsite Manufacturing***

As described in Section 1.4.6.2, the workforce identified in the Project AFC will be sufficient to accomplish onsite manufacturing of solar panels. Thus, the employee commute trips will not increase as a result of onsite manufacturing, and the number of truck trips associated with CESF construction will be reduced by shipping building materials in lieu of finished panels. The electric welding cell will be powered by the grid, and any associated PM emissions are expected to be negligible. Therefore, onsite manufacturing does not create additional construction or operation related impacts to air quality beyond those presented in Section 5.2.2 of the Project AFC.

### ***2.2.2.4 Demolition of Existing Structures***

Demolition of onsite structures will not require additional workers or equipment compared with the Project as originally proposed. Accordingly, air quality impacts are not expected to exceed the levels predicted for the construction phase in the Project AFC.

### ***2.2.2.5 Electrical Systems***

In the event this supplemental activity occurs, it is not expected to require any new excavation or other activities likely to generate significant dust emissions or fuel combustion emissions. A limited commitment of vehicles and workers would presumably be necessary to accomplish this work. However, the information currently available regarding the specific activities associated with such reconductering is insufficient to support a definite conclusion regarding the potential significance of associated effects on air quality.

### ***2.2.2.6 Administration Building Height***

Decreasing the height of the administration building does not create additional construction or operation related impacts to air quality beyond those presented in Section 5.2.2 of the Project AFC.

### ***2.2.2.7 Perimeter Fencing***

Decreasing the height of the perimeter fencing does not create additional construction or operation related impacts to air quality beyond those presented in Section 5.2.2 of the Project AFC .

## **2.2.3 Cumulative Impacts**

No additional cumulative impacts to air quality have been identified as part of this supplemental analysis.

## **2.2.4 Mitigation Measures**

In accordance with the requirements of 40 CFR part 60, 85 *et al.* and regulations pursuant to California Code of Regulations Title 13 and Title 17, the Project will be required to use best available control technology (BACT) to minimize emissions from the proposed firewater pump engine and emergency diesel generator. There are no other emission sources for the operational Project for which BACT

requirements are applicable. Table 2.2-6, presents the proposed BACT emission levels for the proposed firewater pump engine and emergency diesel generator, based on the assessment presented below.

**Table 2.2-6  
Summary of Proposed Best Available Control Technology**

Pollutant	Control Technology	Emission Limit
<b>Diesel Fire Water Pump Engine (300 horsepower)</b>		
NO <sub>x</sub>	EPA Tier II	4.27 g/bhp-hr
CO	EPA Tier II	0.33 g/bhp-hr
ROC	EPA Tier II	0.32 g/bhp-hr
PM <sub>10</sub>	EPA Tier II	0.12 g/bhp-hr
<b>Diesel Generator Set (1341 horsepower)</b>		
NO <sub>x</sub>	EPA Tier II	4.82 g/bhp-hr
CO	EPA Tier II	0.19 g/bhp-hr
ROC	EPA Tier II	0.01 g/bhp-hr
PM <sub>10</sub>	EPA Tier II	0.023 g/bhp-hr

Source: EPA, <http://www.epa.gov/nonroad-diesel/regulations.htm#tier2>

Notes:

CO	=	carbon monoxide
g/bhp-hr	=	grams per brake horsepower hour
NO <sub>x</sub>	=	nitrogen oxides
PM <sub>10</sub>	=	particulate matter less than or equal to 10 microns in diameter
ROC	=	reactive organic compounds
SO <sub>2</sub>	=	sulfur dioxide
EPA	=	Environmental Protection Agency

40 CFR Part 89 and California Code of Regulations Title 13 and Title 17 require certified EPA Tier III emergency internal combustion engines, but engines compliant with Tier III standards are currently commercially unavailable. A search of the EPA and CARB BACT determination clearinghouse was made and recent BACT determinations for internal combustion engines are presented in Table 2.2-7. The equipment proposed for the CESF Project satisfies the emission requirements of recent BACT determinations for similar equipment in several different regulatory jurisdictions within California.

**Table 2.2-7**  
**Summary of Recent California Best Available Control Technology**  
**Determinations for Diesel Internal Combustion Engines**

Name	Location	Application Date	Rating (hp)	Control Technology	Emission Limit (g/bhp-hr)			
					VOC	NO <sub>x</sub>	CO	PM <sub>10</sub>
Caithness Blythe II, LLC – Blythe Energy Project II	Riverside, CA	08/2006	303	Engine design	NA	11.2	1.0	0.15
East Los Angeles College	Monterey Park, CA	12/2003	160	Engine design	0.09	3.9	0.45	0.22
Los Angeles County	Downey, CA	12/2003	160	Engine design	0.12	4.2	0.44	0.14
Los Angeles County Probation Facility	Los Angeles, CA	8/2002	240	Engine design	N/A	4.2	0.44	0.14
Johnson Power Systems	Los Angeles, CA	8/2002	764	Engine design	0.03	6.19	0.37	0.04

Source: SCAQMD, Web site, 2008.

Notes:

CO = carbon monoxide  
g/bhp-hr = grams per brake horsepower – hour  
hp = horsepower  
N/A = data not available  
NO<sub>x</sub> = nitrogen oxides  
PM<sub>10</sub> = particulate matter 10 microns and smaller  
VOC = volatile organic compounds

## 2.2.5 LORS Compliance

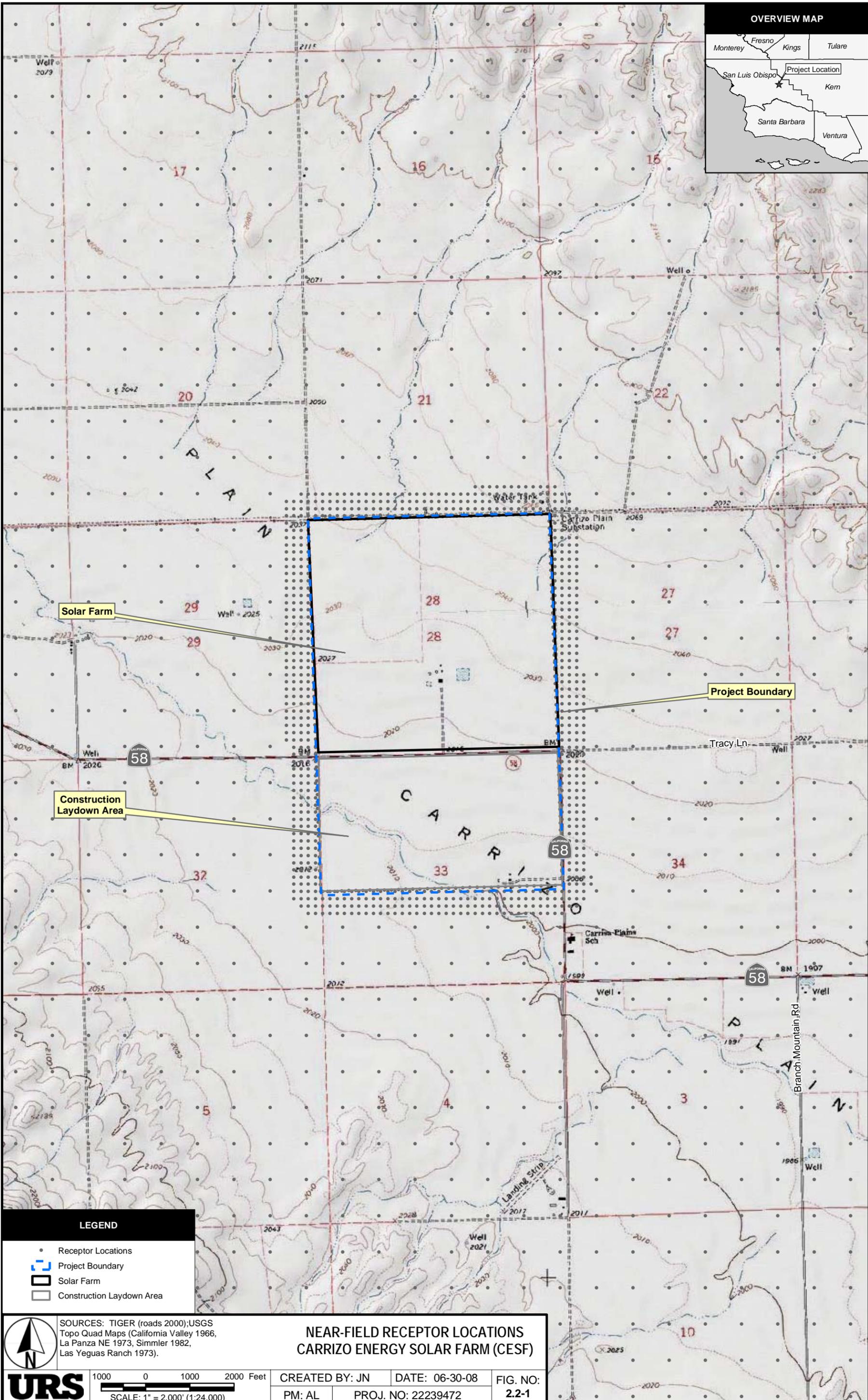
The LORS presented in Section 5.2.5 of the Project AFC are applicable to the revised Project and no additional LORS are recommended. Similarly, the agency contact information presented in Section 5.2.5 of the Project AFC is unchanged.

Under Regulation II, SLOAPCD regulates the construction, alteration, replacement, and operation of new sources of air pollutants by issuance of an Authority to Construct (ATC) and Permit to Operate (PTO). Per the Project AFC, an application for a SLOAPCD ATC, proposing installation of a diesel fueled firewater pump engine, was received by SLOAPCD on October 29, 2007. Additional information documenting the engine emissions was received by SLOAPCD on November 8, 2007 and the application was reviewed and found to be complete on November 14, 2007. As part of this supplemental filing, an ATC permit from the SLOAPCD will also be required for the emergency generator.

## 2.2.6 References

One additional reference beyond those presented in Section 5.2.6 of the Project AFC was used for this supplemental analysis:

U.S. EPA (U.S. Environmental Protection Agency), 1998. Nonroad Diesel Equipment, Tier 2 Engines.  
<http://www.epa.gov/Nonroaddiesel/regulations.htm#tier2>.



Solar Farm

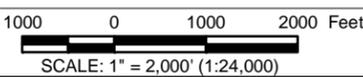
Project Boundary

Construction Laydown Area

- LEGEND**
- Receptor Locations
  - ▭ Project Boundary
  - ▭ Solar Farm
  - ▭ Construction Laydown Area

SOURCES: TIGER (roads 2000); USGS Topo Quad Maps (California Valley 1966, La Panza NE 1973, Simmler 1982, Las Yeguas Ranch 1973).

**NEAR-FIELD RECEPTOR LOCATIONS  
CARRIZO ENERGY SOLAR FARM (CESF)**



CREATED BY: JN  
PM: AL

DATE: 06-30-08  
PROJ. NO: 22239472

FIG. NO:  
2.2-1

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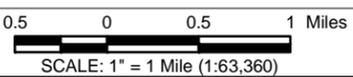
**LEGEND**

- Receptor Locations
- ▭ Project Boundary
- ▭ Solar Farm
- ▭ Construction Laydown Area



SOURCES: TIGER (roads 2000);USGS  
 Topo Quad Maps (California Valley 1966,  
 La Panza NE 1973, Simmler 1982,  
 Las Yeguas Ranch 1973).

**FAR-FIELD RECEPTOR LOCATIONS  
 CARRIZO ENERGY SOLAR FARM (CESF)**

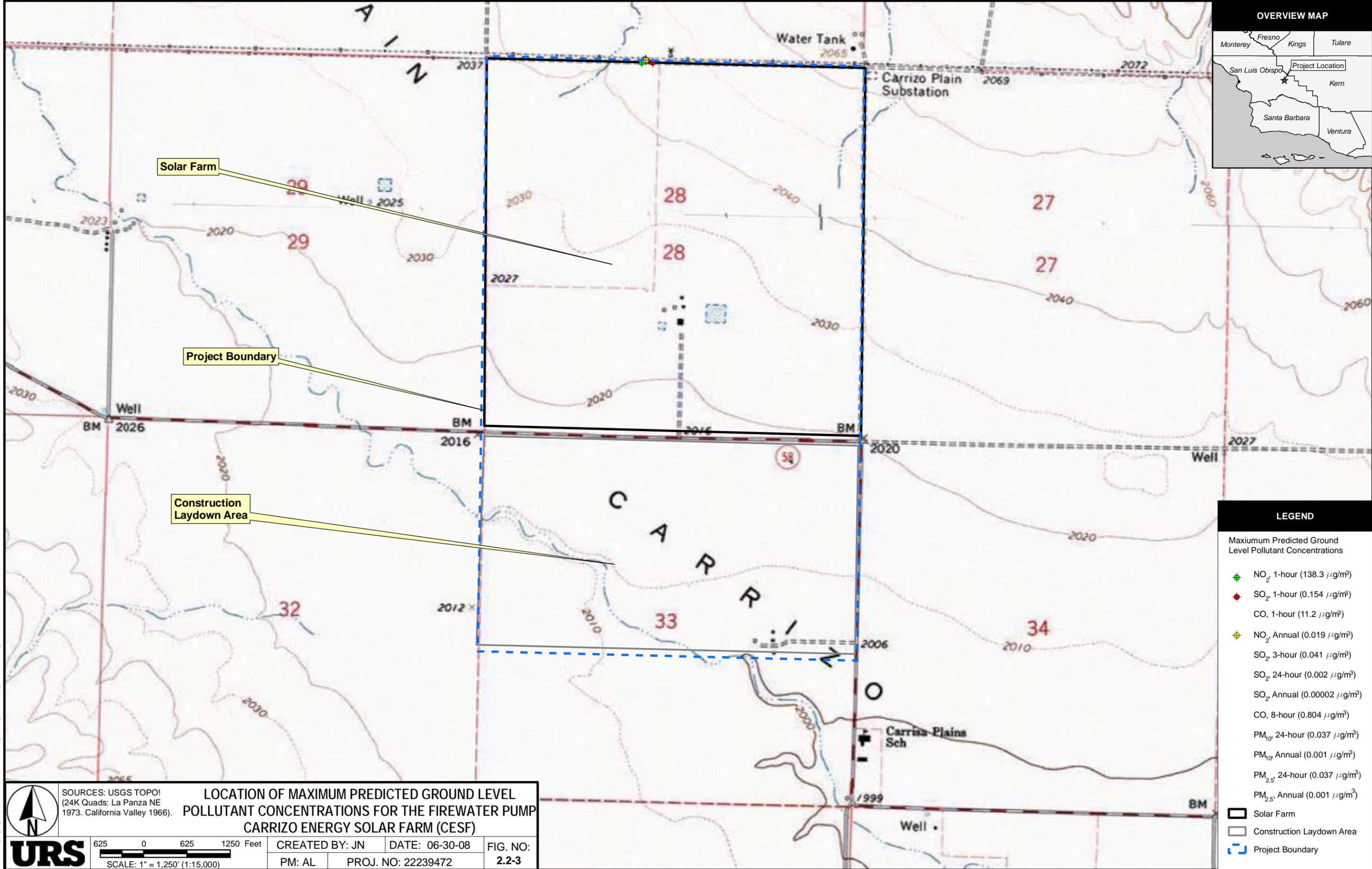


CREATED BY: JN  
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DATE: 06-30-08  
 PROJ. NO: 22239472

FIG. NO:  
**2.2-2**

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**LEGEND**

Maximum Predicted Ground Level Pollutant Concentrations

- ◆ NO<sub>2</sub> 1-hour (138.3 μg/m<sup>3</sup>)
- ◆ SO<sub>2</sub> 1-hour (0.154 μg/m<sup>3</sup>)
- ◆ CO, 1-hour (11.2 μg/m<sup>3</sup>)
- ◆ NO<sub>2</sub> Annual (0.019 μg/m<sup>3</sup>)
- ◆ SO<sub>2</sub> 3-hour (0.041 μg/m<sup>3</sup>)
- ◆ SO<sub>2</sub> 24-hour (0.002 μg/m<sup>3</sup>)
- ◆ SO<sub>2</sub> Annual (0.00002 μg/m<sup>3</sup>)
- ◆ CO, 8-hour (0.804 μg/m<sup>3</sup>)
- ◆ PM<sub>10</sub> 24-hour (0.037 μg/m<sup>3</sup>)
- ◆ PM<sub>10</sub> Annual (0.001 μg/m<sup>3</sup>)
- ◆ PM<sub>2.5</sub> 24-hour (0.037 μg/m<sup>3</sup>)
- ◆ PM<sub>2.5</sub> Annual (0.001 μg/m<sup>3</sup>)

- ▭ Solar Farm
- ▭ Construction Laydown Area
- ▭ Project Boundary

**URS**

SOURCES: USGS TOPO!  
(24K Quads: La Panza NE  
1973, California Valley 1966).

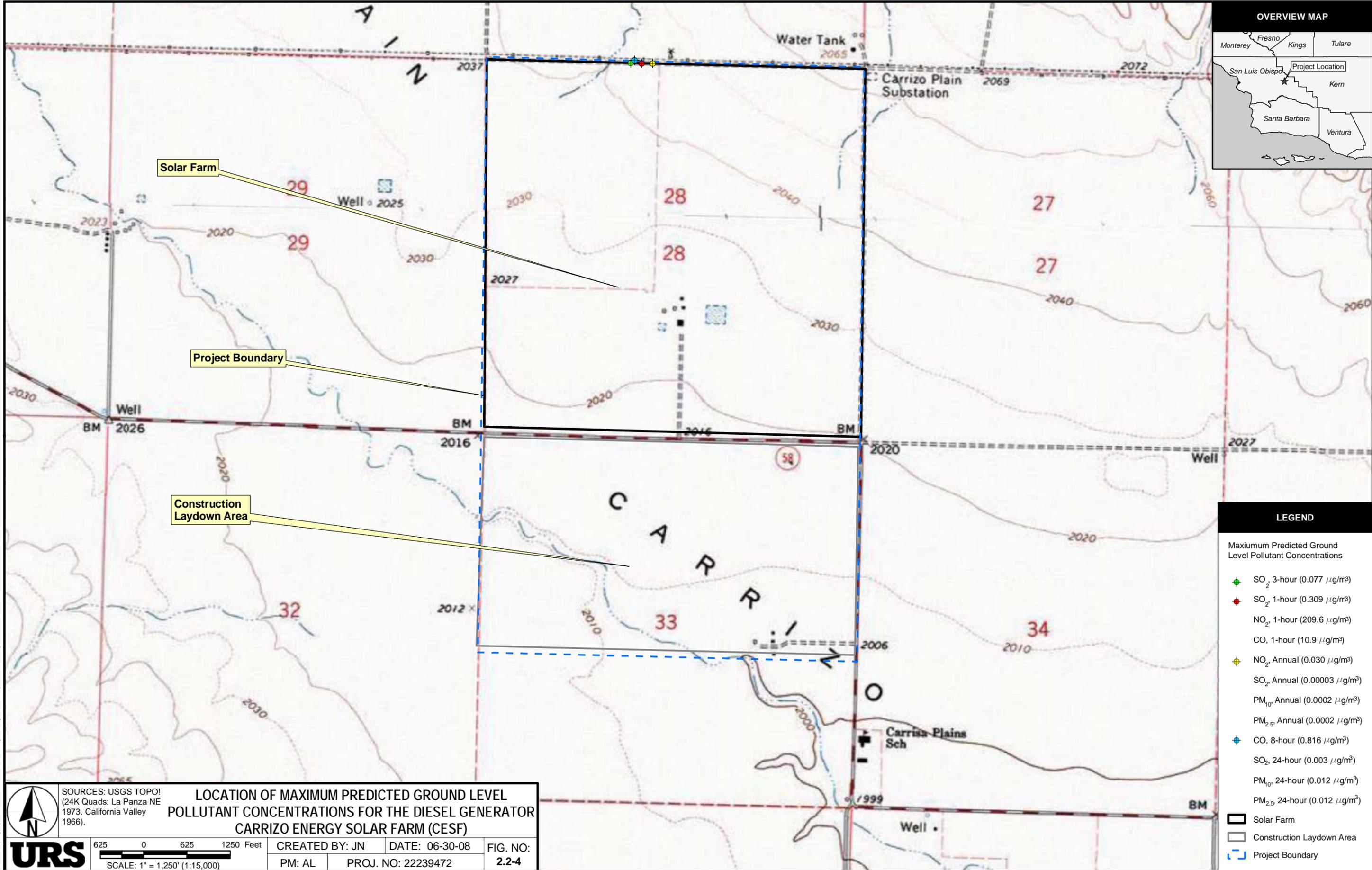
**LOCATION OF MAXIMUM PREDICTED GROUND LEVEL POLLUTANT CONCENTRATIONS FOR THE FIREWATER PUMP CARRIZO ENERGY SOLAR FARM (CESF)**

CREATED BY: JN    DATE: 06-30-08    FIG. NO: 2.2-3

PM: AL    PROJ. NO: 22239472

SCALE: 1" = 1,250' (1:15,000)

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LEGEND	
Maximum Predicted Ground Level Pollutant Concentrations	
<span style="color: green;">◆</span>	SO <sub>2</sub> 3-hour (0.077 μg/m <sup>3</sup> )
<span style="color: red;">◆</span>	SO <sub>2</sub> 1-hour (0.309 μg/m <sup>3</sup> )
	NO <sub>2</sub> 1-hour (209.6 μg/m <sup>3</sup> )
	CO, 1-hour (10.9 μg/m <sup>3</sup> )
<span style="color: yellow;">◆</span>	NO <sub>2</sub> Annual (0.030 μg/m <sup>3</sup> )
	SO <sub>2</sub> Annual (0.00003 μg/m <sup>3</sup> )
	PM <sub>10</sub> Annual (0.0002 μg/m <sup>3</sup> )
	PM <sub>2.5</sub> Annual (0.0002 μg/m <sup>3</sup> )
<span style="color: blue;">◆</span>	CO, 8-hour (0.816 μg/m <sup>3</sup> )
	SO <sub>2</sub> 24-hour (0.003 μg/m <sup>3</sup> )
	PM <sub>10</sub> 24-hour (0.012 μg/m <sup>3</sup> )
	PM <sub>2.5</sub> 24-hour (0.012 μg/m <sup>3</sup> )
<span style="border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span>	Solar Farm
<span style="border: 1px dashed blue; display: inline-block; width: 10px; height: 10px;"></span>	Construction Laydown Area
<span style="border-bottom: 1px dashed blue; display: inline-block; width: 10px;"></span>	Project Boundary

**LOCATION OF MAXIMUM PREDICTED GROUND LEVEL POLLUTANT CONCENTRATIONS FOR THE DIESEL GENERATOR CARRIZO ENERGY SOLAR FARM (CESF)**

SOURCES: USGS TOPO! (24K Quads: La Panza NE 1973, California Valley 1966).

CREATED BY: JN    DATE: 06-30-08    FIG. NO: 2.2-4

PM: AL    PROJ. NO: 22239472

SCALE: 1" = 1,250' (1:15,000)

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**2.3 GEOLOGIC HAZARDS AND RESOURCES****2.3.1 Affected Environment**

The affected environment is unchanged from that presented in Section 5.3.1 of the Project AFC.

**2.3.2 Environmental Consequences*****2.3.2.1 North/South Configuration***

The changes to the configuration include rotating the power block and shifting it slightly to the west. The subsurface conditions within the footprint of the power block will require investigation as part of the design-level geotechnical investigation for the Project. The configuration of the mirrors themselves is not a geologic consideration; however, the configuration changes have resulted in minor changes to the grading plan. Regardless, the configuration changes do not create additional construction or operation related impacts in addition to those presented in Section 5.3.2 of the Project AFC.

Operation related impacts resulting from the configuration changes, in addition to those presented in Section 5.3 of the Project AFC, are not expected.

***2.3.2.2 Emergency Generator***

The emergency generator does not create additional construction or operation related impacts in addition to those presented in Section 5.3.2 of the Project AFC.

***2.3.2.3 Onsite Manufacturing***

Construction of the onsite manufacturing facilities is likely to increase slightly the total grading volume required during construction. The presence of potentially expansive and/or loose near-surface soil may affect the foundation design for the facilities. Subsurface conditions in the vicinity of the new facilities will be evaluated as part of the final geotechnical investigation. Other potentially significant impacts by geologic conditions on the construction, in addition to those presented in Section 5.3.2 of the Project AFC, are not anticipated. Project site development is not anticipated to result in significant adverse impacts to geologic or mineral resources. Operation related impacts as a result of the onsite manufacturing, in addition to those presented in Section 5.3.2 of the Project AFC, are not expected.

***2.3.2.4 Demolition of Existing Structures***

Demolition of existing structures does not create additional construction or operation related impacts to geologic or mineral resources beyond those presented in Section 5.3.2 of the Project AFC.

***2.3.2.5 Electrical Systems***

Modification to the electrical systems does not create additional construction or operation related impacts in addition to those presented in Section 5.3.2 of the Project AFC.

### *2.3.2.6 Administration Building Height*

Decreasing the height of the administration building does not create additional construction or operation related impacts to geologic and mineral resources beyond those presented in Section 5.3.2 of the Project AFC.

### *2.3.2.7 Perimeter Fencing*

Decreasing the height of the perimeter fencing does not create additional construction or operation related impacts to geologic and mineral resources beyond those presented in Section 5.3.2 of the Project AFC.

## **2.3.3 Cumulative Impacts**

No additional cumulative impacts to the geologic and mineral resources at the site have been identified as part of this supplemental analysis.

## **2.3.4 Mitigation Measures**

The mitigation measures and other discussion presented in Section 5.3.4 of the Project AFC are applicable to the proposed Project changes. No additional mitigation measures are recommended based on the Project modifications.

With implementation of the mitigation measures outlined in Section 5.3.4, impacts to plant construction and operation by the geologic environment and impacts to geologic or mineral resources will be reduced to less than significant levels.

Seismic design criteria (see Mitigation Measure GEO-1 in the Project AFC) have been modified since the Project AFC was issued. The Project elements will now be designed in accordance with the 2007 California Building Code (CBC). Revised seismic design criteria are presented in Appendix D, Addendum No. 1 to Preliminary Geotechnical Investigation.

## **2.3.5 LORS Compliance**

The LORS presented in Section 5.3.5 of the Project AFC are applicable to the revised Project and no additional LORS are recommended. Similarly, the agency contact information presented in Section 5.3.5 of the AFC is unchanged and the proposed Project modifications do not affect the required permits or Project schedule presented in Section 5.3.5 of the Project AFC.

As discussed above, the 2007 CBC is being used for Project design in lieu of the 2001 CBC, which is listed in Section 5.3.5.2.3 of the Project AFC. The administering agency continues to be the CEC. In Table 5.3-4, Summary of LORS, of the Project AFC, the 2007 CBC should be listed in lieu of the 2001 CBC. No other changes are applicable.

## **2.3.6 References**

No additional references beyond those presented in Section 5.3.6 of the Project AFC were used for this supplemental analysis.

**2.4 SOIL RESOURCES****2.4.1 Affected Environment**

The affected environment is unchanged from that presented in Section 5.4.1 of the Project AFC.

**2.4.2 Environmental Consequences*****2.4.2.1 North/South Configuration***

Changes to the Project configuration include rotating the power block and shifting it slightly to the west. The soil conditions within the footprint of the power block will not be substantially different than the conditions previously considered. The shift in location of the power block and the reconfiguration of the mirrors themselves is not a significant change with regard to impact to soils. The configuration changes will result in minor changes to the grading plan but do not create additional construction or operation related impacts to soils beyond those presented in Section 5.4.2 of the Project AFC

***2.4.2.2 Emergency Generator***

The emergency generator does not create additional construction or operation related impacts to soil resources beyond those presented in Section 5.4.2 of the Project AFC.

***2.4.2.3 Onsite Manufacturing***

Construction of the onsite manufacturing facilities is likely to slightly increase the total grading volume required during construction. This is not considered a significant change in impacts to soils relative to those previously discussed in Section 5.4.2 of the Project AFC. Other potentially significant impacts to soil resources beyond those presented in Section 5.4.2 of the Project AFC are not anticipated. Project site development is not anticipated to result in significant adverse impacts to soil resources.

Operation related impacts to soils as a result of the onsite manufacturing, beyond those presented in Section 5.4.2 of the Project AFC, are not expected.

***2.4.2.4 Demolition of Existing Structures***

Demolition of existing structures does not create additional construction or operation related impacts to soil resources beyond those presented in Section 5.4.2 of the Project AFC.

***2.4.2.5 Electrical Systems***

Modification to the electrical systems does not create additional construction or operation related impacts to soil resources beyond those presented in Section 5.4.2 of the Project AFC.

**2.4.2.6 Administration Building Height**

Decreasing the height of the administration building does not create additional construction or operation related impacts to soil resources beyond those presented in Section 5.4.2 of the Project AFC.

**2.4.2.7 Perimeter Fencing**

Decreasing the height of the perimeter fencing does not create additional construction or operation related impacts to soil resources beyond those presented in Section 5.4.2 of the Project AFC.

**2.4.3 Cumulative Impacts**

No additional cumulative impacts to the soil resources at the site have been identified as part of this supplemental analysis.

**2.4.4 Mitigation Measures**

The mitigation measures and other discussion presented in Section 5.4.4 of the Project AFC are applicable to the proposed Project changes. No additional mitigation measures are recommended based on the Project modifications.

With implementation of the mitigation measures outlined in Section 5.4.4 of the Project AFC, impacts to soils as a result of plant construction and operation will be reduced to less than significant levels.

**2.4.5 LORS Compliance**

The LORS presented in Section 5.4.5 of the Project AFC are applicable to the revised Project and no additional LORS are recommended. Similarly, the agency contact information presented in Section 5.4.5 of the Project AFC is unchanged and the proposed Project modifications do not affect the required permits or Project schedule presented in Section 5.4.5 of the Project AFC.

**2.4.6 References**

No additional references beyond those presented in Section 5.4.6 of the Project AFC were used for this supplemental analysis.

**2.5 WATER RESOURCES**

Section 5.5 of the Project AFC evaluated and presented the affected environment and environmental consequences associated with the CESF. The following sections describe the changes to the drainage and identify mitigation measures that would reduce potential water resource related impacts to a level of insignificance.

**2.5.1 Affected Environment**

The affected environment is unchanged from that presented in Section 5.5.1 of the Project AFC. There will be no changes to the affected environment in terms of water resources due to the changes presented in this Supplement to the Project AFC. The groundwater quality and supply, surface water quality, climate and precipitation, water supply and use, wastewater streams, stormwater runoff, and flooding hazards are the same as those described for the Project AFC.

**2.5.2 Environmental Consequences*****2.5.2.1 North/South Configuration***

The Project AFC analyzed the CLFR solar lines in an east/west orientation; however, an alternative configuration was identified in Section 4.3, Alternative Project Configurations, of the Project AFC. This alternative configuration is now the preferred alternative and would have the CLFR solar lines aligned in the north/south direction. The alternative Project configuration would lend itself to more optimal solar power production and would reduce the potential for glare on SR-58.

The only change to water resources due to the reconfiguration of the solar lines involves the flow of water. The water will now flow to 16 low spots designed to contain and infiltrate surface runoff; however, the previous configuration included only 6 low spots. The DESCP, included as Appendix A, shows the calculations that indicate the revised grading plan provides adequate mitigation for onsite stormwater.

***2.5.2.2 Emergency Generator***

While no specific equipment has been selected at this time, based on a typical engine for this application, approximately 700 gallons of diesel fuel will be stored in the generator for eight hours of generator operation. Additionally, approximately 20 gallons of lubricating oil will also be stored in the generator. The generator will be tested monthly for at least 30 minutes and will be tested on a different schedule than that of the firewater pump. As per County of San Luis Obispo guidance, testing will be limited to 30 hours per year.

The generator and its associated fuel tank will be located within a weather enclosure in the power block. Because the generator will be enclosed, there are no anticipated impacts to water quality.

***2.5.2.3 Onsite Manufacturing***

Onsite manufacturing does not create additional construction or operation related impacts to water resources beyond those presented in Section 5.5.2 of the Project AFC.

#### *2.5.2.4 Demolition of Existing Structures*

Demolition of existing structures does not create additional construction or operation related impacts to water resources beyond those presented in Section 5.5.2 of the Project AFC.

#### *2.5.2.5 Electrical Systems*

Modification to the electrical systems does not create additional construction or operation related impacts to water resources beyond those presented in Section 5.5.2 of the Project AFC.

#### *2.5.2.6 Administration Building Height*

Decreasing the height of the administration building does not create additional construction or operation related impacts to water resources beyond those presented in Section 5.5.2 of the Project AFC.

#### *2.5.2.7 Perimeter Fencing*

Decreasing the height of the perimeter fencing does not create additional construction or operation related impacts to water resources beyond those presented in Section 5.5.2 of the Project AFC.

### **2.5.3 Cumulative Impacts**

No additional cumulative impacts to the water resources at the site have been identified as part of this supplemental analysis.

### **2.5.4 Mitigation Measures**

As discussed above, the only change to water resources associated with this Supplement to the Project AFC is due to the reconfiguration of the solar lines. Associated mitigation measures are presented in the DESC, included as Appendix A.

### **2.5.5 LORS Compliance**

The LORS presented in Section 5.5.5 of the Project AFC are applicable to the revised Project and no additional LORS are recommended. Similarly, the agency contact information presented in Section 5.5.5 of the Project AFC is unchanged and the proposed Project modifications do not affect the required permits or Project schedule presented in Section 5.5.5 of the Project AFC.

### **2.5.6 References**

No additional references beyond those presented in Section 5.5.6 of the Project AFC were used for this supplemental analysis.

**2.6 BIOLOGICAL RESOURCES**

This Supplement to the Project AFC includes proposed changes to the CESF and its ancillary systems, which were originally described in Section 3.0 of the Project AFC. This Supplement to the Project AFC, as described in Section 1.0, would not involve substantial changes to the findings and conclusions in Section 5.6 Biological resources of the Project AFC.

**2.6.1 Affected Environment**

The current discussion on the affected environment, in the Section 5.6.1 of the Project AFC, is adequate to describe the affected environment of the CESF's proposed site location for purposes of this supplemental filing.

In addition to the currently proposed Project at the CESF site location, the proposed supplemental changes to the CESF Project would include the potential reconductoring of an existing approximate 75-mile transmission line corridor, the 230 kV Morro Bay-Midway transmission line, which travels west-east from the Morro Bay Powerplant located in Morro Bay, San Luis Obispo County to the Midway Substation located in Buttonwillow, Kern County. The transmission line corridor primarily traverses largely unpopulated and underdeveloped areas within the counties of San Luis Obispo and Kern, and passes through the San Luis Obispo Wildlife Area, Los Padres National Forest, the Temblor Range, and Temblor Valley. Waterways near the transmission line corridor include (but are not limited to) San Bernardo Creek, Chorro Creek, San Luisito Creek, Laguna Lake, San Luis Obispo Creek, Kern River, McGinnis Creek, Santa Margarita Lake, Buena Creek, Trout Creek, San Juan Creek, Yaro Creek, Pilnas Creek, and the Rinconada Creek. Residential and commercial development near the transmission line is concentrated in populated areas, such as the communities of Morro Bay, San Luis Obispo, and Buttonwillow. Major infrastructure elements that are near or cross the transmission line corridor include (but are not limited to) the West Side Canal, East Side Canal, Corn Camp Ditch, Whittier Ditch, Florida Drain, California Aqueduct, and several pipelines, railroad grades, and roadways.

The landscape is characterized by rolling hills, mountainous terrain, and alluvial plains, and land uses within the open space along the corridor include grazing, rangeland, cultivation of agricultural products (*e.g.*, wheat and barley), and oil and mineral extraction.

**2.6.2 Environmental Consequences*****2.6.2.1 North/South Configuration***

The north/south configuration does not create additional construction or operation related impacts to biological resources beyond those presented in Section 5.6.2 of the Project AFC.

***2.6.2.2 Emergency Generator***

The emergency generator does not create additional construction or operation related impacts to biological resources beyond those presented in Section 5.6.2 of the Project AFC.

### 2.6.2.3 Onsite Manufacturing

Onsite manufacturing does not create additional construction or operation related impacts to biological resources beyond those presented in Section 5.6.2 of the Project AFC.

### 2.6.2.4 Demolition of Existing Structures

Red-tailed hawk nests were observed at the existing residence in the construction laydown area, in Section 33, during the 2008 biological resources surveys. To ensure compliance with the Migratory Bird Treaty Act, and to minimize potential for impact to birds and raptor species, demolition of all existing structures must occur outside of bird breeding season (February - July), or when no active nests are present within the area where demolition will occur.

### 2.6.2.5 Electrical Systems

To identify the biological resources located within the transmission line corridor that stretches from the Morro Bay Powerplant to the Midway Substation, searches of the California Department of Fish and Game (CDFG) California Natural Diversity Database (CNDDDB) and the United States Fish and Wildlife Service (USFWS) GIS database were performed (see Figure 2.6-1). Wildlife and plant species that have been reported in this database within a quarter-mile buffer on either side of the transmission line corridor (creating a half-mile corridor) are shown in Tables 2.6-1 and 2.6-2.

It is anticipated that minimal impact areas would be created on the ground for reconductoring activities. Biological resources affected and total area of impact is expected to be very small quantities. Potential impacts anticipated as a result of the reconductoring activities are considered to be adverse, but less than significant. Special-status species that are found within the transmission line alignment are discussed in Tables 2.6-1 and 2.6-2.

**Table 2.6-1  
Wildlife Species within Transmission Line Corridor**

Common Name	Scientific Name	Status <sup>1</sup>	Preferred Habitat	Potential for Occurrence within Transmission Line Corridor
<b>Animals</b>				
Blunt-nosed leopard lizard	<i>Gambelia sila</i>	FE, SE, CDFG Fully Protected	Found in arid areas with scattered vegetation, non-native grassland and alkali sink scrub communities of the San Joaquin Valley floor.	Locations recorded near Midway Substation. This species is likely to be present within or near the transmission line corridor where suitable habitat is present.
Burrowing owl	<i>Athene cunicularia</i>	CSC	Primarily found in grasslands, can thrive in agricultural landscapes. Prefers to place burrows in short vegetation with sparse shrubs.	Found historically within ½ mile of transmission line corridor; likely to be present in agricultural fields and grasslands along corridor.

**Table 2.6-1  
Wildlife Species within Transmission Line Corridor  
(Continued)**

Common Name	Scientific Name	Status <sup>1</sup>	Preferred Habitat	Potential for Occurrence within Transmission Line Corridor
California red-legged frog	<i>Rana aurora draytonii</i>	FT, CSC	Found in marshes, slow parts of streams, lakes, reservoirs, ponds, primarily in wooded areas in lowlands and foothills, although it can also be found in grasslands. Ranges from Baja California along the coastal plains and into the coastal ranges as well as in the Sierra foothills	Potential for occurrence within corridor not likely due to habitat preference for wetlands.
California condor	<i>Gymnogyps californianus</i>	FE, SE	Arid foothills and mountain ranges of southern and central California. Roost in rocky cliffs or in trees and forage over foothills, grasslands, and oak woodlands.	Found historically within ½ mile of transmission line corridor; likely to forage in suitable habitat along corridor.
Ferruginous hawk	<i>Buteo regalis</i>	None, CDFG watchlist	Arid to semiarid regions, as well as grasslands and agricultural areas	Found historically within ½ mile of transmission line corridor; likely to forage in suitable habitat along corridor.
Giant garter snake	<i>Thamnophis gigas</i>	FT, ST	Endemic to Central Valley wetlands. Found in marshes, sloughs, drainage canals, and irrigation ditches. Prefers locations with vegetation close to the water for basking.	Potential for occurrence within corridor not likely due to habitat preference for wetlands.
Monarch butterfly	<i>Danaus plexippus</i>	None, State Sensitive (Wintering grounds)	Fields, meadows, and gardens. Primary overwintering location is near Pacific Grove in Monterey County.	Potential for occurrence within corridor not likely due to location on coast.
Purple martin	<i>Progne subis</i>	CSC	Nests in buildings and riparian habitats; thought to be extirpated from Central Valley except in Sacramento.	Not likely to be present within alignment corridor due to lack of known populations within the Central Valley.
San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	FE, ST	Grasslands and scrublands; often in areas of oil exploration and extraction, wind turbines, agricultural land uses, and urban areas.	Likely within corridor where suitable habitat is present.

**Table 2.6-1  
Wildlife Species within Transmission Line Corridor  
(Continued)**

Common Name	Scientific Name	Status <sup>1</sup>	Preferred Habitat	Potential for Occurrence within Transmission Line Corridor
Silvery legless lizard	<i>Anniella pulchra pulchra</i>	CSC	Common in several habitats supporting friable soils, especially in coastal dune, valley-foothill, chaparral, and coastal sage scrub. It may occasionally enter desert scrub habitats.	Found historically within ½ mile of transmission line corridor; potential for occurrence within corridor likely in suitable habitat.
Tipton kangaroo rat	<i>Dipodomys nitratoides nitratoides</i>	FE, SE	Arid communities with alluvial fan and floodplain soils. Sparse cover of woody shrubs with minimal to moderate ground cover of grasses and forbs.	Likely within corridor where suitable habitat is present.
Tulare grasshopper mouse	<i>Onychomys torridus tularensis</i>	CSC	Arid shrubland communities in hot, arid grassland and shrubland associations.	Likely within corridor where suitable habitat is present.

Notes:

<sup>1</sup> U.S. Fish and Wildlife Service (federal).

FE = Endangered (in danger of becoming extinct throughout all or a significant portion of its range).

FT = Threatened (likely to become endangered in the foreseeable future in the absence of special protection).

FC = Federal Candidate (candidate for FT or FE listing).

FSC = Species of Concern (sufficient information exists which warrants concern over that species' status and warrants study).

CDFG = California Department of Fish and Game (State).

SE = Endangered (in danger of becoming extinct throughout all or a significant portion of its range).

SC = State Candidate (candidate for SE or State threatened [likely to become endangered in the foreseeable future in the absence of special protection]).

CSC = Species of Concern (information exists which warrants concern over that species' status and warrants study).

**Table 2.6-2  
Plant Species within Transmission Line Corridor**

Common Name	Scientific Name	Status <sup>1</sup>	Habitat	Potential for Occurrence within Transmission Line Corridor
<b>Plants</b>				
Arroyo de la Cruz Manzanita	<i>Arctostaphylos cruzensis</i>	1B.2	Sandy bluffs, Central Coast (<150m), evergreen shrub; Broad-leaved upland forest, coastal bluff scrub, closed-cone coniferous forest, chaparral, coastal scrub, valley and foothill grassland/sandy (60-310m). Monterey and SLO counties.	Found historically within ½ mile of transmission line corridor in the western portion of the line; potential for occurrence within corridor is likely where suitable habitat is present.

**Table 2.6-2  
Plant Species within Transmission Line Corridor  
(Continued)**

Common Name	Scientific Name	Status <sup>1</sup>	Habitat	Potential for Occurrence within Transmission Line Corridor
Betty's dudleya	<i>Dudleya abramsii</i> ssp. <i>bettinae</i>	1B.2	Rocky outcrops in serpentine grassland, Outer South Coast Ranges (50-180m), perennial herb; Chaparral, coastal scrub, valley and foothill grassland/serpentinite, rocky (20-180m). SLO county.	Found historically within ½ mile of transmission line corridor in the western portion of the line; potential for occurrence within corridor is likely where suitable habitat is present.
Blochman's dudleya	<i>Dudleya blochmaniae</i> ssp. <i>blochmaniae</i>	1B.1	Open, rocky slopes, often serpentine or clay-dominated, Central Coast, South Coast (<450m), perennial herb; Coastal bluff scrub, chaparral, coastal scrub, valley and foothill grassland/rocky, often clay or serpentinite (5-450m). Los Angeles, Orange, Santa Barbara, San Diego, SLO, and Ventura counties.	Found historically within ½ mile of transmission line corridor in the western portion of the line; potential for occurrence within corridor is likely where suitable habitat is present.
Brewer's spineflower	<i>Chorizanthe breweri</i>	1B.3	Chaparral, foothill woodland, on serpentine, Outer South Coast Ranges (<800m), annual herb; Closed-cone coniferous forest, chaparral, cismontane woodland, coastal scrub, serpentinite, rocky, or gravelly (45-800m). Monterey and SLO counties.	Found historically within ½ mile of transmission line corridor in the western portion of the line; potential for occurrence within corridor is likely where suitable habitat is present.
California seablite	<i>Suaeda californica</i>	1B.1, FE	Margins of coastal salt marshes, Central Coast (<5m), evergreen shrub; Marshes and swamps (coastal salt) (0-15m). Alameda, Contra Costa, Santa Clara, San Francisco, and SLO counties.	Found historically within ½ mile of transmission line corridor in the western portion of the line near the Morro Bay substation; potential for occurrence within corridor not likely due to habitat preference for coastal marsh vegetation.
Cambria morning-glory	<i>Calystegia subacaulis</i> ssp. <i>episcopalis</i>	1B.2	Dry, open scrub or woodland, Outer South Coast Ranges (<500m), rhizotamous herb; Chaparral, cismontane woodland, coastal prairie (60-500m). SLO county.	Found historically within ½ mile of transmission line corridor in the western portion of the line; potential for occurrence within corridor is likely where suitable habitat is present.

**Table 2.6-2  
Plant Species within Transmission Line Corridor  
(Continued)**

Common Name	Scientific Name	Status <sup>1</sup>	Habitat	Potential for Occurrence within Transmission Line Corridor
Hoover's eriastrum	<i>Eriastrum hooveri</i>	4.2, (FT delisted 2003)	Drying grassy areas, South Coast Ranges (<170m), annual herb; Chenopod scrub, pinyon and juniper woodland, valley and foothill grassland (50-915m). Fresno, Kings, Kern, Los Angeles, Santa Barbara, San Benito, and San Luis Obispo counties.	Found historically within ½ mile of transmission line corridor in the western portion of the line; potential for occurrence within corridor is likely where suitable habitat is present.
Jones' layia	<i>Layia jonesii</i>	1B.2	Open serpentine or clay slopes, Central Coast, Outer South Coast Ranges (<400m), annual herb; Chaparral, valley and foothill grasslands in San Luis Obispo County.	Potential for occurrence within corridor not likely due to habitat preference for clay and serpentine soils along the coast.
Kern mallow	<i>Eremalche parryi</i> ssp. <i>kernensis</i>	1B.1, FE	Eroded hillsides, alkali flats with shadscale, San Joaquin Valley, Inner South Coast Ranges (100-1000m), annual herb; Chenopod scrub, valley and foothill grassland (70-1000m). Kern and Tulare counties.	Found historically within ½ mile of transmission line corridor; potential for occurrence within corridor is likely where suitable habitat is present.
La Graciosa thistle	<i>Cirsium loncholepis</i>	1B.1, ST, FE	Wetlands in dunes, Central Coast; cismontane woodland, coastal dunes, coastal scrub, marshes and swamps, valley and foothill grassland/mesic, sandy (4-220m). Monterey, Santa Barbara, San Luis Obispo and Ventura counties.	Potential for occurrence within corridor not likely due to habitat preference for wetlands in dunes.
La Panza mariposa-lily	<i>Calochortus simulans</i>	1B.3	Sand (often granitic), in grassland to yellow-pine forest, outer South Coast Ranges (<1100m). Santa Barbara and San Luis Obispo Counties.	Found historically within ½ mile of transmission line corridor; potential for occurrence within corridor is likely where suitable habitat is present.

**Table 2.6-2  
Plant Species within Transmission Line Corridor  
(Continued)**

Common Name	Scientific Name	Status <sup>1</sup>	Habitat	Potential for Occurrence within Transmission Line Corridor
Lemmon's jewelflower	<i>Caulanthus coulteri</i> var. <i>lemmonii</i>	1B.2	Dry, exposed slopes, San Joaquin Valley, San Francisco Bay Area, Outer South Coast Ranges (80-8000m). Pinyon and juniper woodland, valley and foothill grasslands in Alameda, Fresno, Kings, Kern, Merced, Monterey, Santa Barbara, San Benito, San Joaquin, San Luis Obispo, Stanislaus, and Ventura Counties.	Found historically within ½ mile of transmission line corridor; potential for occurrence within corridor is likely where suitable habitat is present.
Miles' milk-vetch	<i>Astragalus didymocarpus</i> var. <i>milesianus</i>	1B.2	Grassy areas near coast, coastal scrub (20-90m). Santa Barbara, San Luis Obispo, Ventura Counties.	Found historically within ½ mile of transmission line corridor; potential for occurrence within corridor is likely where suitable habitat is present.
Oso Manzanita	<i>Arctostaphylos osoensis</i>	1B.2	Chaparral, cismontane woodland/dacite porphyry buttes (300-500m) in San Luis Obispo County.	Found historically within ½ mile of transmission line corridor; potential for occurrence within corridor is likely where suitable habitat is present.
Palmer's monardella	<i>Monardella palmeri</i>	1B.2	Chaparral, cismontane woodland/serpentinite soils (200-800m). Monterey and San Luis Obispo Counties.	Found historically within ½ mile of transmission line corridor; potential for occurrence within corridor is likely where suitable habitat is present.
San Luis Obispo County lupine	<i>Lupinus ludovicianus</i>	1B.2	Open grassy areas, on limestone, in oak woodlands and chaparral (50-525m). San Luis Obispo Counties.	Found historically within ½ mile of transmission line corridor; potential for occurrence within corridor is likely where suitable habitat is present.
San Luis Obispo fountain thistle	<i>Cirsium fontinale</i> var. <i>obispoense</i>	1B.2, SE, FE	Serpentine seeps and streams in chaparral, cismontane woodland, coastal scrub, valley and foothill grasslands (35-380m). San Luis Obispo County.	Found historically within ½ mile of transmission line corridor; potential for occurrence within corridor is likely where suitable habitat is present.
San Luis mariposa-lily	<i>Calochortus obispoensis</i>	1B.2	Dry serpentine generally in chaparral, coastal scrub, valley and foothill grassland (75-730m). San Luis Obispo County.	Found historically within ½ mile of transmission line corridor; potential for occurrence within corridor is likely where suitable habitat is present.

**Table 2.6-2  
Plant Species within Transmission Line Corridor  
(Continued)**

Common Name	Scientific Name	Status <sup>1</sup>	Habitat	Potential for Occurrence within Transmission Line Corridor
San Luis Obispo owl's clover	<i>Castilleja densiflora</i> ssp. <i>obispoensis</i>	1B.2	Coastal grassland, meadows and seeps, valley and foothill grasslands/sometimes serpentinite soils (10-400m). San Luis Obispo County.	Potential for occurrence within corridor not likely due to habitat preference for wetlands in dunes
San Luis Obispo sedge	<i>Carex obispoensis</i>	1B.2	Springs, stream sides; Closed-cone coniferous forest, chaparral, coastal prairie, coastal scrub, valley and foothill grassland/often serpentine seeps, sometimes gabbro, often on clay soils (10-790m). Monterey, San Diego, San Luis Obispo counties.	Found historically within ½ mile of transmission line corridor; potential for occurrence within corridor is likely where suitable habitat is present.
Santa Margarita Manzanita	<i>Arctostaphylos wellsii</i>	1B.1	Sandstone outcrops, chaparral, Central coast (<400m); Broadleaf upland forest, closed-cone coniferous forest, chaparral/sandstone in San Luis Obispo County.	Found historically within ½ mile of transmission line corridor; potential for occurrence within corridor is likely where suitable habitat is present.
Adobe sanicle	<i>Sanicula maritima</i>	1B.1, SR	Coastal, grassy, open wet meadows, ravines, San Francisco Bay Area, Central Coast (+/-150m). Chaparral, coastal prairie, meadows and seeps, valley and foothill grassland/clay, serpentine (30-240m). Alameda, Monterey, San Francisco, San Luis Obispo counties.	Potential for occurrence within corridor not likely due to habitat preference for wetlands in dunes
Caper-fruited tropidocarpum	<i>Tropidocarpum capparideum</i>	1B.1	Presumed extinct, alkaline soils, low hills, valleys; NW San Joaquin Valley. Valley and foothill grassland (Alkaline hills) (1-455m). Alameda, Contra Costa, Fresno, Glenn, Monterey, Santa Clara, San Joaquin, San Luis Obispo counties.	Potential for occurrence within corridor not likely due to presumed extinction.
Dwarf calycadenia	<i>Calycadenia villosa</i>	1B.1	Dry rocky hills, ridges, outer south coast ranges; chaparral, cismontane woodland, meadows and seeps, valley and foothill	Found historically within ½ mile of transmission line corridor; potential for occurrence within corridor is likely

**Table 2.6-2**  
**Plant Species within Transmission Line Corridor**  
**(Continued)**

Common Name	Scientific Name	Status <sup>1</sup>	Habitat	Potential for Occurrence within Transmission Line Corridor
			grassland/rocky, fine soils (240-1350m). Fresno, Monterey, Santa Barbara, and San Luis Obispo counties.	where suitable habitat is present.
Most beautiful jewel-flower	<i>Streptanthus albidus</i> ssp. <i>peramoenus</i>	1B.2	Open, grassy or barren slopes, often serpentine. San Francisco Bay area. Chaparral, cismontane woodland, valley and foothill grassland/serpentine (94-1000m). Alameda, Contra Costa, Monterey, Santa Barbara, Santa Clara, San Luis Obispo, and Stanislaus counties.	Found historically within ½ mile of transmission line corridor; potential for occurrence within corridor is likely where suitable habitat is present.
Mouse-gray dudleya	<i>Dudleya abramsii</i> ssp. <i>murina</i>	1B.3	Serpentine outcrops, outer south coast ranges (120-300m). Chaparral, cismontane woodland, valley and foothill grassland/serpentine in San Luis Obispo county.	Found historically within ½ mile of transmission line corridor; potential for occurrence within corridor is likely where suitable habitat is present.
Saline clover	<i>Trifolium depauperatum</i> var. <i>hydrophilum</i>	1B.2	Possibly extinct. Salt marshes, swamps, valley and foothill grasslands, open areas in alkaline soils and in vernal pools (0-300m). Alameda, Colusa, Monterey, Napa, San Benito, Santa Clara, Santa Cruz, San Luis Obispo, San Mateo, Solano, and Sonoma counties.	Potential for occurrence within corridor not likely due to habitat preference for wetlands and vernal pools.
Straight-awned spineflower	<i>Chorizanthe rectispina</i>	1B.3	Chaparral, dry woodland, coastal scrub (85-1000m). Monterey, Santa Barbara, San Luis Obispo counties.	Found historically within ½ mile of transmission line corridor; potential for occurrence within corridor is likely where suitable habitat is present.
Yellow-flowered eriastrum	<i>Eriastrum luteum</i>	1B.2	Drying slopes, south coast ranges (<1000m); Broadleaf upland forest, chaparral, cismontane woodland (sandy/gravelly). San Luis Obispo and Monterey counties.	Found historically within ½ mile of transmission line corridor; potential for occurrence within corridor is likely where suitable habitat is present.

### *2.6.2.6 Administration Building Height*

Decreasing the height of the administration building does not create additional construction or operation related impacts to biological resources beyond those presented in Section 5.6.2 of the Project AFC.

### *2.6.2.7 Perimeter Fencing*

Decreasing the height of the perimeter fencing does not create additional construction or operation related impacts to biological resources beyond those presented in Section 5.6.2 of the Project AFC.

## **2.6.3 Cumulative Impacts**

No additional cumulative impacts to biological resources at the site have been identified as part of this supplemental analysis.

## **2.6.4 Mitigation Measures**

All demolition activities shall occur outside of bird breeding season or when no active nests are present in the trees near the existing structures.

Pull sites shall be chosen outside of habitat that supports sensitive species where practicable. If not possible, focused surveys must be conducted for any special-status species that may be impacted by activities at the pull sites affecting suitable habitat prior to implementation of reconductoring activities to minimize impacts to special status species and their habitats.

## **2.6.5 LORS Compliance**

The LORS presented in Section 5.6.5 of the Project AFC are applicable to the revised Project and no additional LORS are recommended. Similarly, the agency contact information presented in Section 5.6.5 of the Project AFC is unchanged and the proposed Project modifications do not affect the required permits or Project schedule presented in Section 5.6.5 of the Project AFC.

## **2.6.6 References**

Five additional references beyond those presented in Section 5.6.6 of the Project AFC were used for this supplemental analysis:

California Department of Fish and Game. California Natural Diversity Database. Endangered, Threatened, and Rare Plants List. April 2008.

California Native Plant Society. Inventory of Rare and Endangered Plants. June 2008. <<http://cnps.web.aplus.net/cgi-bin/inv/inventory.cgi>>

Jepson Online Interchange. June 2008. <<http://ucjeps.berkeley.edu/interchange.html>>

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**2.7 CULTURAL RESOURCES**

This Supplement to the Project AFC includes proposed changes to the CESF and its ancillary systems, which were originally described in Section 3.0, Facility Description and Location, of the Project AFC. This Supplement to the Project AFC, as described in Section 1.0, Supplemental Project Description, would not involve substantial changes to the findings and conclusions in Section 5.7, Cultural Resources, of the Project AFC.

**2.7.1 Affected Environment**

The discussion of the affected environment and its relationship to cultural resources in the Project AFC is adequate to describe the affected environment of the CESF and its ancillary systems for purposes of this supplemental filing.

In addition, the proposed changes to the CESF may involve system reconductoring to the 230 kV Morro Bay-Midway transmission Line 1 and Line 2. To help determine whether reconductoring to the 230 kV Morro Bay-Midway transmission Line 1 and 2 would be necessary as a result of this Project, PG&E, upon direction from CAISO, completed an ISIS. The results of the ISIS are described in Section 1.6.1, Reconductoring of 230 kV Morro Bay-Midway Transmission Line, of this Supplement to the Project AFC. At this point, it is unknown whether reconductoring of the transmission line would be required as part of the Project.

The potentially affected environment along the 230 kV Morro Bay-Midway transmission Line 1 and Line 2 includes the transmission line corridor which travels approximately 75-miles west-east from the Morro Bay Power Plant, Morro Bay, San Luis Obispo County to the Midway Substation, Buttonwillow, Kern County.

The transmission line corridor transverses areas that are distinctively rural in nature, and the landscape is characterized by steep rolling hills, mountainous terrain, alluvial plains, ranching activities for sheep and cattle (*e.g.*, grazing, rangeland), cultivation of agricultural products (*e.g.*, wheat), and oil and mineral extraction.

The transmission line corridor primarily transverses largely unpopulated and underdeveloped areas, such as the San Bernardo Grant, San Luis Obispo Wildlife Area, El Choro Grant, Los Padres National Forest, Santa Margarita Grant, Carrizo Plain, Navajo Grant, Temblor Range, and Temblor Valley. Waterways near the transmission line corridor include (but are not limited to) San Bernardo Creek, Chorro Creek, San Luisito Creek, Laguna Lake, San Luis Obispo Creek, Kern River, McGinnis Creek, Santa Margarita Lake, Buena Creek, Trout Creek, San Juan Creek, Yaro Creek, Pilnas Creek, Rinconada Creek, and Temblor Creek. Residential and commercial development near the transmission line is concentrated in populated areas, such as the communities of Morro Bay, San Luis Obispo, and Buttonwillow. Major infrastructure elements which are near or transverse the transmission line corridor include (but are not limited to) the West Side Canal, East Side Canal, Corn Camp Ditch, Whittier Ditch, Florida Drain, California Aqueduct, and several pipelines, railroad grades, and graded and paved roadways.

The portion of the transmission line corridor which transverses the CESF Project area (along the northern border of Section 28, Township 29 South, Range 18 East) was constructed between 1943 and 1952 (per USGS maps and aerial photographs) and was previously recorded as part of the Project AFC.

To identify the cultural resources sensitivity (and its potential environmental constraints) of the transmission line corridor from the Morro Bay Power Plant to the Midway Substation, a records search was performed at the Central Coast Information Center (CCIC) at the University of California, Santa Barbara for San Luis Obispo County; and at the Southern San Joaquin Valley Information Center (SSJVIC) at California State University, Bakersfield for Kern County. The records searches were completed through the California Historical Resource Information System (CHRIS) cultural resources database.

The CCIC records search was completed on June 4, 2008 and the SSJVIC records search was completed on June 8, 2008. As part of the records searches, investigators identified previously recorded cultural resources and previously conducted cultural resources investigations for a one-mile radius around the Morro Bay Power Plant and the Midway Substation, and for a quarter-mile on either side of the transmission line corridor (creating a half-mile corridor). The transmission line itself is approximately 100-feet wide. Information reviewed included locational maps for all previously recorded cultural resources, site record forms and updates for all previously recorded cultural resources, previous investigation boundaries and National Archaeological Database (NADB) citations for associated reports (or bibliographic information), historic maps, and historic addresses. In addition, on June 20, 2008, investigators contacted the San Luis Obispo County and Kern County Planning Departments and the San Luis Obispo and Kern County Historical Societies to identify cultural resources listed pursuant to ordinance or recognized by a local historical society or museum.

Confidential Appendix E, Cultural Resources, Exhibits E-1 and E-2, contain USGS 7.5-minute topographical quadrangle maps of the records search area and locational data regarding the boundaries of the previously recorded cultural resources and previously conducted cultural resources investigations. Confidential Appendix E, Cultural Resources, Exhibit E-3 contains a tabular listing and description of the previously recorded cultural resources and previously conducted investigations. Confidential Appendix E, Cultural Resources, Exhibit E-4 contains the site forms for the previously recorded cultural resources and records of correspondence regarding cultural resources from local agencies and historical societies. Confidential Appendix E, Cultural Resources, Exhibit E-5 contains the NADB citations and/or bibliographic information for the previously conducted cultural resources investigations. The results of the records search are summarized in Section 2.7.2.5, Electrical Systems.

## **2.7.2 Environmental Consequences**

This Supplement to the Project AFC does not include any proposed changes to the footprint of the Project site; and therefore, the Project is located within the site boundary and archaeological and architectural history Area of Potential Effect (APE) of the Project AFC, and no additional cultural resources surveys were required at this time for the Project site.

As identified in the Project AFC, Section 5.7.1.13, Archaeological Survey, and Section 5.7.1.14, Historic Architecture Survey, there were six cultural resources recorded within the Project Area (four built environment resources and two archaeological sites) and four built environment resources within a half-

mile of the CESF Project site. None of the cultural resources were recommended as appearing to be eligible for listing to the National Register of Historic Places (NRHP), California Register of Historical Resources (CRHR), or a local register of historical resources.

Therefore, proposed changes to the CESF and its ancillary systems within the archaeological and architectural history APE of the Project AFC are not anticipated to directly or indirectly impact significant cultural resources.

### *2.7.2.1 North/South Configuration*

The alternative configuration of the CESF would be within the Project site footprint identified in the Project AFC; and therefore, changes to the north/south configuration within the Project site footprint are not anticipated to impact significant cultural resources. Changes to the Project configuration do not create additional construction or operation related impacts to cultural resources beyond those presented in Section 5.7 of the Project AFC.

### *2.7.2.2 Emergency Generator*

The emergency generator does not create additional construction or operation related impacts to cultural resources beyond those presented in Section 5.7 of the Project AFC.

### *2.7.2.3 Onsite Manufacturing*

Onsite manufacturing will be limited to the north-central portion of the construction laydown area identified in the Project AFC; and therefore, onsite manufacturing within the laydown area does not create additional construction or operation related impacts to cultural resources beyond those presented in Section 5.7 of the Project AFC.

### *2.7.2.4 Demolition of Existing Structures*

The demolition of existing structures will be limited to the Project site and laydown area identified in the Project AFC; and therefore, the demolition of existing structures does not create additional construction or operation related impacts to cultural resources beyond those presented in Section 5.7 of the Project AFC.

### *2.7.2.5 Electrical Systems*

Due to the results of the ISIS, it is unknown whether reconductoring of the 230 kV Morro Bay-Midway transmission line would be required as part of this Project. If the transmission line is reconducted, it could potentially be associated with ground disturbance, the modification or repair of existing poles and towers and foundations, installation of new poles, and access-vehicle damage to archaeological sites. To preliminarily identify the cultural resources sensitivity and potential constraints of reconductoring the 230 kV Morro Bay-Midway transmission Line 1 and 2, CHRIS records searches were conducted (refer to Section 2.7.1, Affected Environment).

The Project area for the CHRIS records searches was defined as the actual footprints of the 230 kV Morro Bay-Midway transmission Line 1 and 2, Morro Bay Power Plant, and Midway Substation. The record search area for the CHRIS records searches extended a quarter-mile on either side of the transmission line corridor (creating a half-mile corridor) and one-mile around the Morro Bay Power Plant and Midway Substation.

#### 2.7.2.5.1 Previously Conducted Investigations

The records searches revealed 172 previously conducted investigations within a quarter-mile radius from the transmission line corridor and 49 previously conducted investigations within a one-mile radius of the Morro Bay Power Plant and Midway Substation. Of these investigations, 44 appeared within *both* a quarter-mile radius from the transmission line corridor and a one-mile radius of the Morro Bay Power Plant and Midway Substation.

Of the 172 previously conducted investigations within a quarter-mile radius from the transmission line corridor, there were 93 investigations which occurred within the transmission line project area. The majority of the investigations located within the transmission line project area either passed through (*i.e.*, linear survey) or partially encompassed a portion of the transmission line, and the investigations primarily occurred between 1962 and 2003. These investigations were completed generally in support of development, infrastructure, or utility projects, such as pipeline and fiber optic replacement and installation, roadway improvements, fence installation, and single-family and commercial property construction.

Of the 49 previously conducted investigations within a one-mile radius from the Morro Bay Power Plant and Midway Substation, there were 15 investigations which occurred within the power plant and substation project area. Of the 15 previously conducted investigations within the power plant and substation project area, ten were completed within the project area of the Morro Bay Power Plant and five were completed within the project area of the Midway Substation. The Morro Bay Power Plant project area has not been fully surveyed, and the majority of the investigations have occurred between 1962 and 2003. The investigations within the project area were completed generally in support of the continued operations of the power plant, such as fence replacement and early warning system and pipeline installation. The Midway Substation project area was fully surveyed in 1999 and 2003, and was also partially surveyed in 2001. The investigations within the project area were completed generally in support of continued and expanded operations at the substation, such as transmission line improvements and installation.

Confidential Appendix E, Cultural Resources, Exhibits E-2 and EX-3 contain a tabular listing and description of previously conducted investigations and maps depicting locational data regarding the boundaries of the previously conducted cultural resources investigations. Confidential Appendix E, Cultural Resources, Exhibit E-5 contains the NADB citations and/or bibliographic information for the previously conducted investigations.

#### 2.7.2.5.2 Previously Recorded Cultural Resources

Within a quarter-mile radius of the transmission line corridor, a total of 82 cultural resources were recorded. Of these 82 previously recorded cultural resources, 22 were located within the transmission

line project area. The 22 previously recorded cultural resources primarily passed through (*i.e.*, linear survey) or partially encompassed a portion of the transmission line. Of the 22 previously recorded cultural resources in the transmission line corridor project area, 17 were recorded as prehistoric sites, 3 were recorded as historic-period sites, and 2 were recorded as multi-component sites (prehistoric and historic-period). The prehistoric sites included small mounds, lithic scatters, chert debitage, temporary campsites, funerary materials, marine shell scatters, bedrock mortars and milling areas, pestles, metates, and manos. They were recorded between 1970 and 2005. The historic-period sites included a single family residence, a bridge fabricated by the American Bridge Company in 1917, and debris associated with early mining and homesteading activities. The historic-period sites were recorded between 1981 and 1994. The multi-component sites included a prehistoric processing site located alongside the ruins of a historic cabin, and a scatter containing prehistoric flakes, broken glass, and rusted cans. The multi-component sites were recorded between 1975 and 1981.

Of the 22 previously recorded cultural resources within the transmission line corridor project area, only one of the historic sites, the Rincondada-Las Pilicitas Bridge (Bridge #49C-190) in Santa Margarita, was previously recommended as eligible for listing to the NRHP and is listed individually on the CRHR and as a California Point of Historical Interest. The State Historic Property Data File indicated the bridge was evaluated in 1994; however, a site form for the resource was not available from the CCIC.

Within a one-mile radius of the Morro Bay Power Plant and Midway Substation, a total of 24 cultural resources were recorded. Of these 24 previously recorded cultural resources, three previously recorded cultural resources were located within the Morro Bay Power Plant and Midway Substation project areas. The three previously recorded cultural resources primarily encompassed a small portion of the project area. Of the three previously recorded cultural resources, two were prehistoric sites located within the Morro Bay Power Plant project area and one was a historic-period site located within the Midway Substation project area. The prehistoric sites consisted of a seasonal camp associated with shellfish collecting and a flexed and seated burial site with shell midden, mortars, projectile points, and metates. (The burials may no longer be present since the site was excavated in 1961). The prehistoric sites were recorded in 1900, 1963, 1991, 1999, and 2001. The historic site within the Midway Substation project area was associated with the San Joaquin Light and Power Company's Midway Steam Plant, which was constructed in 1921-1922 and dismantled in 1954. The historic site consisted of two control buildings and residential complex, which housed plant operators. The historic site was recorded in 1999.

None of the previously recorded cultural resources within the power plant and substation project area appeared to be evaluated for listing to the NRHP, CRHR, or a local register of historical resources.

Confidential Appendix E, Cultural Resources, Exhibits E-2 and E-3 contain a tabular listing and description of previously recorded cultural resources and maps depicting locational data regarding the boundaries of the previously recorded cultural resources. Confidential Appendix E, Cultural Resources, Exhibit E-4 contains the site forms for the previously recorded cultural resources.

### 2.7.2.5.3 County and Historical Society Record Searches

In addition to the record searches, on June 20, 2008, investigators contacted the San Luis Obispo County and Kern County Planning Departments and the San Luis Obispo and Kern County Historical Societies to identify cultural resources within a one-mile radius around the Morro Bay Power Plant and the Midway

Substation, and for a quarter-mile on either side of the transmission line corridor listed pursuant to ordinance or recognized by a local historical society or museum. On June 23, 2008, Elizabeth Kavanaugh, San Luis Obispo County Planner and Development Review, acknowledged receipt of the request and forwarded it to the appropriate staff (John McKenzie). No other response has been received from San Luis Obispo County. On June 24, 2008, Kimberly Alfaro, Executive Director of the San Luis Obispo County Historical Society, acknowledged receipt of the request, did not identify any cultural resources, and (due to limited resources and staff) recommended conducting research at the historical society for the transmission line corridor. No responses were received from the Kern County Planning Department and the Historical Society. Confidential Appendix E, Cultural Resources, Exhibit E-4 contains examples and records of correspondence regarding cultural resources from local agencies and historical societies.

#### **2.7.2.5.4 Records Search Conclusions**

Overall, the records search areas and project areas have not been extensively surveyed and the majority of the previously conducted investigations either passed through or partially encompassed the records search area and project area. It can be inferred from the data that the presence of 22 previously recorded cultural resources within the transmission line corridor project area and three previously recorded cultural resources within the power plant and substation project area that there is a moderately high sensitivity for cultural resources along the 230 kV Morro Bay-Midway transmission Line 1 and Line 2. If it is determined that the reconductoring of the 230 kV Morro Bay-Midway transmission Line 1 and 2 is required, then the project may require the completion of cultural resources surveys after the APE is established in order to identify the presence and significance of cultural resources and the potential effect (if any) that reconductoring of the transmission line may have to cultural resources. Areas that have been surveyed within the past five years may not have to be re-surveyed.

#### **2.7.2.6 Administration Building Height**

Decreasing the height of the administration building does not create additional construction or operation related impacts to cultural resources beyond those presented in Section 5.7.2 of the Project AFC.

#### **2.7.2.7 Perimeter Fencing**

Decreasing the height of the perimeter fencing does not create additional construction or operation related impacts to cultural resources beyond those presented in Section 5.7.2 of the Project AFC.

### **2.7.3 Cumulative Impacts**

The discussion of cumulative impacts in the Project AFC, Section 5.7.3, Cumulative Impacts, is adequate to describe the cumulative impacts of the CESF for purposes of this supplemental filing.

### **2.7.4 Mitigation Measures**

This Supplement to the Project AFC does not include any proposed changes to the footprint of the Project site; and therefore, the Project is located within the site boundary and archaeological and architectural history APE. Therefore, this Supplement to the Project AFC would not substantially change findings and conclusions discussed in the Project AFC, Section 5.7, Cultural Resources; and the discussion of

mitigation measures in the Project AFC, Section 5.7.4, Mitigation Measures, is adequate to describe the mitigation measures for the CESF for purposes of this supplemental filing.

In addition, due to the potential sensitivity for cultural resources along the transmission line corridor, if it is determined that the reconductoring of the 230 kV Morro Bay-Midway transmission Line 1 and 2 is required, then the Project may require the completion of cultural resources surveys after the APE is established in order to identify the presence and significance of cultural resources and the potential effect (if any) that reconductoring of the transmission line may have to cultural resources. Areas that have been surveyed within the past five years may not have to be re-surveyed.

Also, it is recommended that consultation with the Native American Heritage Commission (NAHC) and local Native American groups and individuals are initiated in order to identify Sacred Lands, Traditional Cultural Places, and important cultural resources associated with local Native Americans.

### **2.7.5 LORS Compliance**

The LORS presented in Section 5.7.5 of the Project AFC are applicable to the revised Project and no additional LORS are recommended. Similarly, the agency contact information presented in Section 5.7.5 of the Project AFC is unchanged and the proposed Project modifications do not affect the required permits or Project schedule presented in Section 5.7.5 of the Project AFC.

### **2.7.6 References**

Additional references beyond those presented in Section 5.7.6 of the Project AFC were used for this supplemental analysis:

Central Coast Information Center. RS 4527. Various Records and Files. June 2008.

California Energy Commission, 1992. Instructions to the California Energy Commission Staff for the Review of and Information Requirements for an Application for Certification.

California Energy Commission, 1997. Rules of Practice and Procedure and Power Plant Site Certification Regulations.

California Energy Commission, 2006. Rules of Practice and Procedure and Power Plant Site Certification Regulations Revisions.

California Energy Commission, 2007. Regulations Pertaining to the Rules of Practice and Procedure and Power Plant Site Certification.

California Energy Commission, 2007. Rules of Practice and Procedure and Power Plant Site Regulations Revisions.

California Polytechnic State University Kennedy Library Government Documents and Map Department. Special Collections and Maps and Government Publications. Various Materials. June 2007.

Farmer, Reid. 2007. Draft Report – Archaeological Survey Report for the Carrizo Energy Solar Farm, San Luis Obispo County, California.

Southern San Joaquin Valley Information Center. RS 08-170. Various Records and Files. June 2008.

United States Geological Survey, various dates. Various 7.5-minute and 15-minute quadrangle maps.

## 2.8 PALEONTOLOGICAL RESOURCES

This Supplement to the Project AFC includes proposed changes to the CESF and its ancillary systems, which were originally described in Section 3.0, Facility Description and Location, of the Project AFC. This Supplement to the Project AFC, as described in Section 1.0, Supplemental Project Description, would not involve substantial changes to the findings and conclusions in Section 5.8, Paleontological Resources, of the Project AFC.

### 2.8.1 Affected Environment

The discussion on the affected environment and its relationship to paleontological (fossil) resources in the Project AFC is adequate to describe the affected environment of the CESF and its ancillary systems for purposes of this supplemental filing.

In addition, the proposed changes to the CESF may involve the system reconductoring to the 230 kV Morro Bay-Midway transmission Line 1 and Line 2. To help determine whether reconductoring to the 230 kV Morro Bay-Midway transmission Line 1 and 2 would be necessary as a result of this project, PG&E, upon direction from CAISO, completed an ISIS. The results of the ISIS are described in Section 1.6.1, Reconductoring of 230 kV Morro Bay-Midway Transmission Line of this Supplement to the Project AFC. At this point, it is unknown whether reconductoring of the transmission line would be required as part of the Project.

The potentially affected environment of 230 kV Morro Bay-Midway transmission Line 1 and Line 2 includes the approximately 76-mile transmission line corridor which travels west-east from the Morro Bay Power Plant., Morro Bay, San Luis Obispo County to the Midway Substation, Buttonwillow, Kern County.

The transmission line corridor transverses areas that are distinctively rural in nature, and the landscape is characterized by steep rolling hills, mountainous terrain, alluvial plains, ranching activities for sheep and cattle (*e.g.*, grazing, rangeland), cultivation of agricultural products (*e.g.*, wheat), and oil and mineral extraction.

The transmission line corridor primarily transverses largely unpopulated and underdeveloped areas, such as the San Bernardo Grant, San Luis Obispo Wildlife Area, El Choro Grant, Los Padres National Forest, Santa Margarita Grant, Carrizo Plain, Navajo Grant, Temblor Range, and Temblor Valley. Waterways near the transmission line corridor include (but are not limited to) San Bernardo Creek, Chorro Creek, San Luisito Creek, Laguna Lake, San Luis Obispo Creek, Kern River, McGinnis Creek, Santa Margarita Lake, Buena Creek, Trout Creek, San Juan Creek, Yaro Creek, Pilnas Creek, and the Rinconada Creek. Residential and commercial development near the transmission line is concentrated in populated areas, such as the communities of Morro Bay, San Luis Obispo, and Buttonwillow. Major infrastructure elements which are near or transverse the transmission line corridor include (but are not limited to) the West Side Canal, East Side Canal, Corn Camp Ditch, Whittier Ditch, Florida Drain, California Aqueduct, and several pipelines, railroad grades, and roadways.

The two-degree geologic maps of Jennings 1958 and Smith 1964 were consulted to determine the general geology along the transmission line corridor. These maps indicate that sediments of Cretaceous, Miocene,

Pliocene, and Pleistocene ages are traversed by the transmission line corridor. These findings emphasized the need for paleontological records searches. Therefore, a paleontological records search was commissioned through the Natural History Museum of Los Angeles County. Those records search results have not yet been received. They will be submitted to the California Energy Commission as a supplemental report once they are received.

## **2.8.2 Environmental Consequences**

This Supplement to the Project AFC does not include any proposed changes to the footprint of the Project site; and therefore, the Project is located within the site boundary and paleontological APE of the Project AFC, and no additional paleontological resources surveys were required at this time for the Project site.

As identified in the CESF AFC, Section 5.8.1.5.3, Paleontological Resource Inventory, there were no paleontological localities recorded within the footprint of the project, but there was a single paleontological locality recorded within one mile of the Project. Measures for monitoring and mitigating the effect of construction activities on paleontological resources were recommended. Therefore, proposed changes to the CESF and its ancillary systems within the paleontological APE of the Project AFC are not anticipated to directly or indirectly impact significant paleontological resources.

### ***2.8.2.1 North/South Configuration***

The alternative configuration of the CESF would be within the Project site footprint identified in the Project AFC; and therefore, changes to the north/south configuration within the Project site footprint are not anticipated to impact significant paleontological resources. Changes to the Project configuration do not create additional construction or operation related impacts to paleontological resources beyond those presented in Section 5.8 of the Project AFC.

### ***2.8.2.2 Emergency Generator***

The emergency generator does not create additional construction or operation related paleontological resource impacts beyond those presented in Section 5.8 of the Project AFC.

### ***2.8.2.3 Onsite Manufacturing***

Onsite manufacturing will be limited to the north-central portion of the construction laydown area identified in the CESF AFC; and therefore, onsite manufacturing within the laydown area does not create additional construction or operation related impacts to paleontological resources beyond those presented in Section 5.8 of the Project AFC.

### ***2.8.2.4 Demolition of Existing Structures***

The demolition of existing structures will be limited to the Project site and laydown area identified in the CESF AFC; and therefore, the demolition of existing structures does not create additional construction or operation related impacts to paleontological resource beyond those presented in Section 5.8 of the Project AFC.

### **2.8.2.5 *Electrical Systems***

Due to the results of the ISIS, it is unknown whether reconductoring of the 230 kV Morro Bay-Midway transmission line would be required as part of this Project. If the transmission line is reconducted, it could potentially be associated with ground disturbance, the modification or repair of existing poles and foundations, installation of new poles, and access-vehicle damage to paleontological sites. To preliminarily identify the paleontological resources sensitivity and potential constraints of reconductoring the 230 kV Morro Bay-Midway transmission Line 1 and 2, a paleontological records search has been requested (refer to Section 2.8.1, Affected Environment).

### **2.8.2.6 *Administration Building Height***

Decreasing the height of the administration building does not create additional construction or operation related impacts to paleontological resources beyond those presented in Section 5.8.2 of the Project AFC.

### **2.8.2.7 *Perimeter Fencing***

Decreasing the height of the perimeter fencing does not create additional construction or operation related impacts to paleontological resources beyond those presented in Section 5.8.2 of the Project AFC.

## **2.8.3 Cumulative Impacts**

The discussion of cumulative impacts in the Project AFC, Section 5.8.3, Cumulative Impacts, is adequate to describe the cumulative impacts of the CESF for purposes of this supplemental filing.

## **2.8.4 Mitigation Measures**

This Supplement to the Project AFC would not substantially change findings and conclusions discussed in the Project AFC, Section 5.8, Paleontological Resources; and therefore, the discussion of mitigation measures in the Project AFC, Section 5.8.4, Mitigation Measures, is adequate to describe the mitigation measures for the CESF for purposes of this supplemental filing.

In addition, due to the potential sensitivity for paleontological resources along the transmission line corridor, if it is determined that the reconductoring of the 230 kV Morro Bay-Midway transmission Line 1 and 2 is required, then the Project may require the completion of paleontological resources surveys after the APE is established in order to identify the presence and significance of paleontological resources and the potential effect (if any) that reconductoring of the transmission line may have to paleontological resources. Areas that have been surveyed within the past five years may not have to be re-surveyed.

## **2.8.5 LORS Compliance**

The LORS presented in Section 5.8.5 of the Project AFC are applicable to the revised Project and no additional LORS are recommended. Similarly, the agency contact information presented in Section 5.8.5 of the Project AFC is unchanged and the proposed Project modifications do not affect the required permits or Project schedule presented in Section 5.8.5 of the Project AFC.

**2.8.6 References**

Additional references beyond those presented in Section 5.8.6 of the Project AFC were used for this supplemental analysis:

Jennings, C. W. 1958. Geologic Map of California, San Luis Obispo Sheet. California Division of Mines and Geology.

Smith, A. R. 1964. Geologic Map of California, Bakersfield Sheet. California Division of Mines and Geology.

**2.9 LAND USE**

This Supplement to the Project AFC includes proposed changes to the CESF and its ancillary systems, which were originally described in Section 3.0 of the Project AFC. This Supplement to the Project AFC, as described in Section 1.0, would not involve substantial changes to the findings and conclusions in Section 5.9, Land Use, of the Project AFC.

**2.9.1 Affected Environment**

The affected environment is unchanged from that presented in Section 5.9.1 of the Project AFC.

**2.9.2 Environmental Consequences**

Changes to the Project associated with this supplemental filing are not expected to cause additional environmental impacts related to land use.

***2.9.2.1 North/South Configuration***

The north/south configuration does not create additional construction or operation related impacts to land use beyond those presented in Section 5.9.2 of the Project AFC.

***2.9.2.2 Emergency Generator***

The emergency generator does not create additional construction or operation related impacts to land use beyond those presented in Section 5.9.2 of the Project AFC.

***2.9.2.3 Onsite Manufacturing***

Onsite manufacturing does not create additional construction or operation related impacts to land use beyond those presented in Section 5.9.2 of the Project AFC.

***2.9.2.4 Demolition of Existing Structures***

Sections 1.2, Facility Location and Description; 3.3.1, Existing Site Conditions; and 3.4.13.1.12, Materials and Equipment Staging Area, of the Project AFC indicate existing abandoned farm structures and residences currently located on Sections 28 and 33 will be demolished prior to change of ownership. Per the March 12, 2008 Data Responses Workshop, the CEC considers the demolition to be part of the Project because the demolition would be required for the Project to be constructed (for additional information, refer to the Transcript of the March 12, 2008 Data Responses Workshop). Therefore, all existing structures located within the Project site and laydown area in Sections 28 and 33 will be demolished as part of site preparation activities.

Demolition of existing structures is not expected to create any additional impacts to land use beyond those presented in Section 5.9.2 of the Project AFC. However, in addition to building and grading permits, a demolition permit from San Luis Obispo County would be necessary.

### *2.9.2.5 Electrical Systems*

Modification to the electrical system does not create additional construction or operation related impacts to land use beyond those presented in Section 5.9.2 of the Project AFC.

### *2.9.2.6 Administration Building Height*

The Project AFC indicates that the proposed administration building height is 40 feet; however, per this supplemental filing, the administration building will be no more than 35 feet in height. This height will comply with County ordinance 22.10.090 on building height for habitable structures and will make it unnecessary for a height exception to be granted by San Luis Obispo County under the Conditional Use Permit (CUP) that would have been necessary.

### *2.9.2.7 Perimeter Fencing*

Section 3.11.10.7.5, Site Security, of the Project AFC indicates the “facility will be fenced with a minimum 3 m (10-foot) chain link fence with three strands of barbwire on top and with privacy lattice around the perimeter.” Similarly, Section 3.11.13.1.1, Construction Site Security, of the Project AFC states the “construction laydown area will be fenced with a temporary 3 m (10-foot) chain link fence with a gated entrance from SR-58.” However, the fencing surrounding both the Project site and laydown area will be a maximum approximate 2m (6.5-foot) in height.

The reduction in fence height will bring the fence height into compliance with County ordinance 22.10.080 for fences built within the setback. The reduction of the perimeter fence height will make it unnecessary for a height exception to be granted by San Luis Obispo County under the CUP that would have been necessary.

## **2.9.3 Cumulative Impacts**

No additional cumulative impacts to land use have been identified as part of this supplemental analysis. For a further discussion of cumulative impacts see Section 2.18, Cumulative Impacts.

## **2.9.4 Mitigation Measures**

No additional mitigation measures are recommended based on the Project modifications.

## **2.9.5 LORS Compliance**

The LORS presented in Section 5.9.5 of the Project AFC are applicable to the revised Project and no additional LORS are recommended. Similarly, the agency contact information presented in Section 5.9.5 of the Project AFC is unchanged.

A demolition permit from San Luis Obispo County will be required prior to demolition of existing structures on Sections 28 and 33.

**2.9.6 References**

No additional references beyond those presented in Section 5.9.6 of the AFC were used for this supplemental analysis.

**2.10 SOCIOECONOMICS**

This Supplement to the Project AFC includes proposed changes to the CESF and its ancillary systems, which were originally described in Section 3.0 of the Project AFC. This Supplement to the Project AFC, as described in Section 1.0, would not involve substantial changes to the findings and conclusions in Section 5.10, Socioeconomics, of the Project AFC.

**2.10.1 Affected Environment**

The affected environment is unchanged from that presented in Section 5.10.1 of the Project AFC.

**2.10.2 Environmental Consequences***2.10.2.1 North/South Configuration*

The north/south configuration does not create additional construction or operation related impacts to socioeconomics beyond those presented in Section 5.10.2 of the Project AFC.

*2.10.2.2 Emergency Generator*

The emergency generator does not create additional construction or operation related impacts to socioeconomics beyond those presented in Section 5.10.2 of the Project AFC.

*2.10.2.3 Onsite Manufacturing*

An estimated thirty workers per day will be required to construct the onsite manufacturing building; an estimated ten workers per day will participate in onsite manufacturing activities; and an estimated thirty workers per day will be required to dismantle the onsite manufacturing building. The workforce identified in Table 3.4-11, Construction Labor Projected Monthly Manpower (by Craft), of the Project AFC is sufficient to include craftsmen associated with dismantling the onsite manufacturing building. Therefore, onsite manufacturing does not create additional construction or operation related impacts to socioeconomics beyond those presented in Section 5.10.2 of the Project AFC.

*2.10.2.4 Demolition of Existing Structures*

An estimated five workers per day will participate in demolition activities. The workforce identified in Table 3.4-11, Construction Labor Projected Monthly Manpower (by Craft), of the Project AFC is sufficient to include laborers associated with demolition activities; however, some additional specialty workers may be necessary to handle hazardous materials. Therefore, the demolition of existing structures does not create additional construction or operation related impacts to socioeconomics beyond those presented in Section 5.10.2 of the Project AFC.

## *2.10.2.5 Electrical Systems*

If required, the CESF Project will include system reconductoring to the 230 kV Morro Bay–Midway transmission Line 1 and Line 2. This potentially may increase local and regional labor demands temporarily during completion of the reconductoring.

## *2.10.2.6 Administration Building Height*

Decreasing the height of the administration building does not create additional construction or operation related impacts to socioeconomics beyond those presented in Section 5.10.2 of the Project AFC.

## *2.10.2.7 Perimeter Fencing*

Decreasing the height of the perimeter fencing does not create additional construction or operation related impacts to socioeconomics beyond those presented in Section 5.10.2 of the Project AFC.

## **2.10.3 Cumulative Impacts**

Cumulative impacts related to socioeconomics involve changes to the community structure as well as effects to the local economy. The cumulative impacts resulting from increased development to this region will not change from those discussed in Section 5.10.3 of the Project AFC. For further discussion, see Section 2.18, Cumulative Impacts.

## **2.10.4 Mitigation Measures**

No additional mitigation measures are recommended based on the Project modifications.

## **2.10.5 LORS Compliance**

The LORS presented in Section 5.10.5 of the Project AFC are applicable to the revised Project and no additional LORS are recommended. Similarly, the agency contact information presented in Section 5.10.5 of the Project AFC is unchanged and the proposed Project modifications do not affect the required permits or Project schedule presented in Section 5.10.5 of the Project AFC.

## **2.10.6 References**

No additional references beyond those presented in Section 5.10.6 of the Project AFC were used for this supplemental analysis.

**2.11 TRAFFIC AND TRANSPORTATION**

This section presents a discussion of the potential impacts of the updated Project construction trip generation and the addition of Bitterwater Road as a roadway analysis segment. The discussion below includes the environmental consequences associated with aforementioned changes during construction and operation of the proposed CESF; cumulative impacts; mitigation measures; and applicable LORS.

**2.11.1 Affected Environment**

This Supplement to the Project AFC includes proposed changes to the CESF and its ancillary systems. The Project includes the construction and operation of a solar power generating facility and its ancillary systems and will consist of approximately one hundred ninety-five CLFR solar concentrating lines, and associated steam drums, STGs, ACCs, and infrastructure, producing up to a nominal 177 MW net.

The Project will include limited onsite manufacturing in the north-central portion of the construction laydown area, located on Section 33, during the construction phase of the Project. The construction laydown area originally depicted on Figure 1.1-4 in the Project AFC was rearranged to accommodate onsite manufacturing. Limited onsite manufacturing will reduce truck trips to the site during construction.

All existing structures located within the Project site and laydown area in Sections 28 and 33 will be demolished as part of Project site preparation activities.

**2.11.2 Environmental Consequences*****2.11.2.1 North/South Configuration***

The north/south configuration does not create additional construction or operation related traffic and circulation impacts beyond those presented in Section 5.11.2 of the Project AFC.

***2.11.2.2 Emergency Generator***

The emergency generator does not create additional construction or operation related traffic and circulation impacts beyond those presented in Section 5.11.2 of the Project AFC.

***2.11.2.3 Onsite Manufacturing***

The following supplementary analyses were conducted to assess the effects of supplemental Project construction activities, as well as the addition of Bitterwater Road as a Project study roadway segment. The following analyses remain consistent with traffic analysis procedures and methodology used in Section 5.11.2 of the Project AFC. Figures 2.11-1 to 2.11-6 have been updated to incorporate the results of these analyses.

Table 2.11-1 presents the updated peak Project construction trip generation estimates for the proposed Project.

**Table 2.11-1  
Peak Construction Trip Generation**

	Peak Daily Trips	Average	AM Peak Hour Trips		PM Peak Hour Trips	
		Daily Trips	In	Out	In	Out
Peak CESF Construction (Workers) Buses	84	52	21	21	21	21
Equipment Deliveries	14	6	4	4	0	3
Construction Trucks	75	36	5	5	0	5
Onsite Manufacturing	15	12	2	2	1	2
<b>Total Trips Per Peak Hour</b>	<b>188</b>	<b>106</b>	<b>32</b>	<b>32</b>	<b>22</b>	<b>31</b>

The estimated construction passenger car equivalent traffic is summarized in Table 2.11-2.

**Table 2.11-2  
Estimated Peak Construction Traffic (PCE)**

Vehicle Type	Passenger Car Equivalence (PCE)	AM Peak Hour In	AM Peak Hour Out	PM Peak Hour In	PM Peak Hour Out
Peak CESF Construction (Workers) Buses	3	63	63	63	63
Equipment Deliveries	3	12	12	0	9
Construction Trucks	3	15	15		
Onsite Manufacturing	3	6	6	3	21
<b>TOTAL</b>		<b>96</b>	<b>96</b>	<b>66</b>	<b>93</b>

As shown in Table 2.11-2, during the peak Project construction period, it is conservatively estimated that there will be 192 AM peak hour and 159 PM peak hour trips commuting to and from the Project, respectively. These peak hour trips were used as the basis for the updated peak Project construction traffic analysis.

Table 2.11-3 presents the Project operations trip generation estimates for the proposed Project. This table remains unchanged from Table 5.11-6 of the Project AFC, but is presented as reference for the traffic impact analysis associated with the addition of Bitterwater Road as a roadway segment analysis location.

**Table 2.11-3  
Project Operations Trip Generation**

	Daily Trips	AM Peak Hour Trips		PM Peak Hour Trips	
		In	Out	In	Out
Operational Workforce <sup>1,2</sup>	150	70	5	5	70
Total Trips	150	70	5	5	70

Notes:

- 1 Operational workers (75 employees) were conservatively assumed to commute during the 7-9 AM and 4-6 PM adjacent street peak hour traffic.
- 2 Of the 75 employees, approximately 38 from Kern County, 19 from San Luis Obispo, and 18 from Paso Robles.

Year 2010 No Project Roadway Segment Analysis: Table 2.11-4 displays the LOS analysis results for the study area roadway segments under Year 2010 No Project conditions.

**Table 2.11-4  
Roadway Segment LOS - Year 2010 No Project Conditions**

Roadway	Segment	Cross-Section Classification	Peak Hour Traffic Volume	Level of Service (LOS)
SR-58	At Cammati Creek	2-Lane Collector	93	A
SR-58	West of Soda Lake Road	2-Lane Collector	58	A
Bitterwater Road	North of Bitterwater Valley	2-Lane Collector	10	A

As shown in Table 2.11-4, all of the study roadway segments are forecast to operate at acceptable LOS-A under Year 2010 No Project conditions.

Year 2010 Peak Project Construction Roadway Segment Analysis: Table 2.11-5 displays the LOS analysis results for the study area roadway segments under Year 2010 with Peak Project Construction conditions.

**Table 2.11-5  
Roadway Segment LOS -  
Year 2010 Peak Project Construction Conditions**

Roadway	Segment	Cross-Section Classification	Peak Hour Traffic Volume AM / PM	Level of Service (LOS) AM/PM
SR-58	At Cammati Creek	2-Lane Collector	123 / 123	A / A
SR-58	West of Soda Lake Road	2-Lane Collector	190 / 157	A / A
Bitterwater Road	North of Bitterwater Valley	2-Lane Collector	40 / 40	A / A

As shown in Table 2.11-5, all of the study roadway segments are forecast to operate at acceptable LOS-A under Year 2010 Peak Project Construction conditions.

Year 2011 No Project Roadway Segment Analysis: Table 2.11-6 displays the LOS analysis results for the study area roadway segments under Year 2011 No Project conditions.

**Table 2.11-6  
Roadway Segment LOS -  
Year 2011 No Project Conditions**

Roadway	Segment	Cross-Section Classification	Peak Hour Traffic Volume	Level of Service (LOS)
SR-58	At Cammati Creek	2-Lane Collector	96	A
SR-58	West of Soda Lake Road	2-Lane Collector	60	A
Bitterwater Road	North of Bitterwater Valley	2-Lane Collector	11	A

As shown in Table 2.11-6, all of the study roadway segments are forecast to operate at acceptable LOS-A under Year 2011 No Project conditions.

Year 2011 Project Operations Roadway Segment Analysis: Table 2.11-7 displays the LOS analysis results for the key study area roadway segments under Year 2011 Project Operations conditions.

**Table 2.11-7  
Roadway Segment LOS -  
Year 2011 Project Operations Conditions**

Roadway	Segment	Cross-Section Classification	Peak Hour Traffic Volume AM/PM	Level of Service (LOS) AM/PM
SR-58	At Cammati Creek	2-Lane Collector	115 / 115	A / A
SR-58	West of Soda Lake Road	2-Lane Collector	98 / 98	A / A
Bitterwater Road	North of Bitterwater Valley	2-Lane Collector	29 / 29	A / A

As shown in Table 2.11-7, all of the study roadway segments are forecast to operate at acceptable LOS-A under Year 2011 Project Operations conditions.

Consistent with the findings presented in Section 5.11 of the Project AFC, and based on the San Luis Obispo County Department of Public Works traffic impact threshold criteria, none of the Project study roadway segments would be significantly impacted during either peak Project construction in Year 2010 or during Project operations in Year 2011.

**2.11.2.4 Demolition of Existing Structures**

Tables 2.11-8 and 2.11-9 show the proposed demolition activities and resultant trip generation that are anticipated as part of Project site preparation.

**Table 2.11-8  
Proposed Demolition Activities**

<b>Component</b>	<b>Cavanaugh Property Section 33 (lbs.)<sup>1,2,3,4</sup></b>	<b>King Property Section 28 (lbs.)<sup>1,2,3,4</sup></b>	<b>Lbs. per Truck<sup>5</sup></b>	<b>Lbs. (adjusted) per Truck<sup>6</sup></b>	<b>Number of Trucks</b>
Wood	778,096	427,740	40,000	20,000	61
Roofing	226,064	139,160	40,000	20,000	19
Drywall	143,280	88,200	40,000	30,000	8
Concrete	298,104	310,760	40,000	35,000	18
Brick	52,536	32,340	40,000	35,000	3
Glass	7,960	4,925	40,000	40,000	1
Metals	307,564	121,260	40,000	25,000	18
Plastics	14,328	8,920	40,000	20,000	2
Other	124,308	73,180	40,000	20,000	10
Hazardous Materials	7,960	4,960	40,000	25,000	1
<b>Total</b>	<b>1,960,200</b>	<b>1,211,445</b>			<b>141</b>

Notes:

<sup>1</sup> For residential-type structures, assumed 115 lb/sf based on Table 5, from "Characterization of Building-Related construction and Demolition Debris in the United States," Franklin Associates, prepared for EPS, June 1998.

<sup>2</sup> For trailers and mobile homes, referenced "A Feasibility Study of Mobile Home Recycling", Manufactured Housing Institute, October, 2000.

<sup>3</sup> For silos, tanks, etc., debris was estimated based on the size of the structure; dimensional data and materials were used where available.

<sup>4</sup> Remaining features were calculated based on estimated volume of the debris field less estimated void space and the general distribution of materials within the debris field.

<sup>5</sup> A truck haul weight of 40,000 lbs. was assumed in consideration of SR-58.

<sup>6</sup> This value considers the density of the component and the amount of air (empty space) that would be shipped with each load.

**Table 2.11-9  
Proposed Demolition Activities Trip Generation Summary**

<b>Function</b>	<b>Total Trips</b>	<b>Daily Trips</b>	<b>AM Peak Hour</b>	<b>PM Peak Hour</b>
Demo existing buildings	141	20	0	3

The short term nature and low trip generation of the demolition activities could be reasonably accommodated by the existing capacity (LOS A) of the study roadway segments. As shown in Table 2.11-9, the minimal demolition related trip generation during the peak analysis hours will not change pre-demolition LOS A conditions.

**2.11.2.5 Electrical Systems**

Modification to the electrical systems will not create additional construction or operation related traffic impacts beyond those presented in Section 5.11.2 of the Project AFC

**2.11.2.6 Administration Building Height**

Decreasing the height of the administration building will not create additional construction or operation related traffic impacts beyond those presented in Section 5.11.2 of the Project AFC.

**2.11.2.7 Perimeter Fencing**

Decreasing the height of the perimeter fencing will not create additional construction or operation related traffic impacts beyond those presented in Section 5.11.2 of the Project AFC.

**2.11.3 Cumulative Impacts**

Findings of no cumulative impacts as described in Section 5.11.3 of the Project AFC remain the same.

**2.11.4 Mitigation Measures**

No study roadway segment would be significantly impacted by the proposed Project during either Year 2010 Peak Project Construction or Year 2011 Project Operations conditions. Based on these findings, the proposed Project would not require traffic mitigation.

Implementation of Mitigation Measures TRAFFIC-1 and TRAFFIC-2, as described in Section 5.11.4 of the Project AFC, are voluntarily offered by CESF either as part of the construction activity requirements, or as proactive measures initiated by CESF to minimize construction related tripmaking and resultant increases of traffic to the surrounding roadway circulation system. No further mitigation is proposed.

**2.11.5 LORS Compliance**

The LORS presented in Section 5.11.5 of the Project AFC are applicable to the revised Project and no additional LORS are recommended. Similarly, the agency contact information presented in Section 5.11.5 of the Project AFC is unchanged and the proposed Project modifications do not affect the required permits or Project schedule presented in Section 5.11.5 of the Project AFC. The State Highway Transportation Permit presented in Table 5.11-3 in the Project AFC includes requirements for the use of pilot cars on SR-58 as the need arises.

**2.11.6 References**

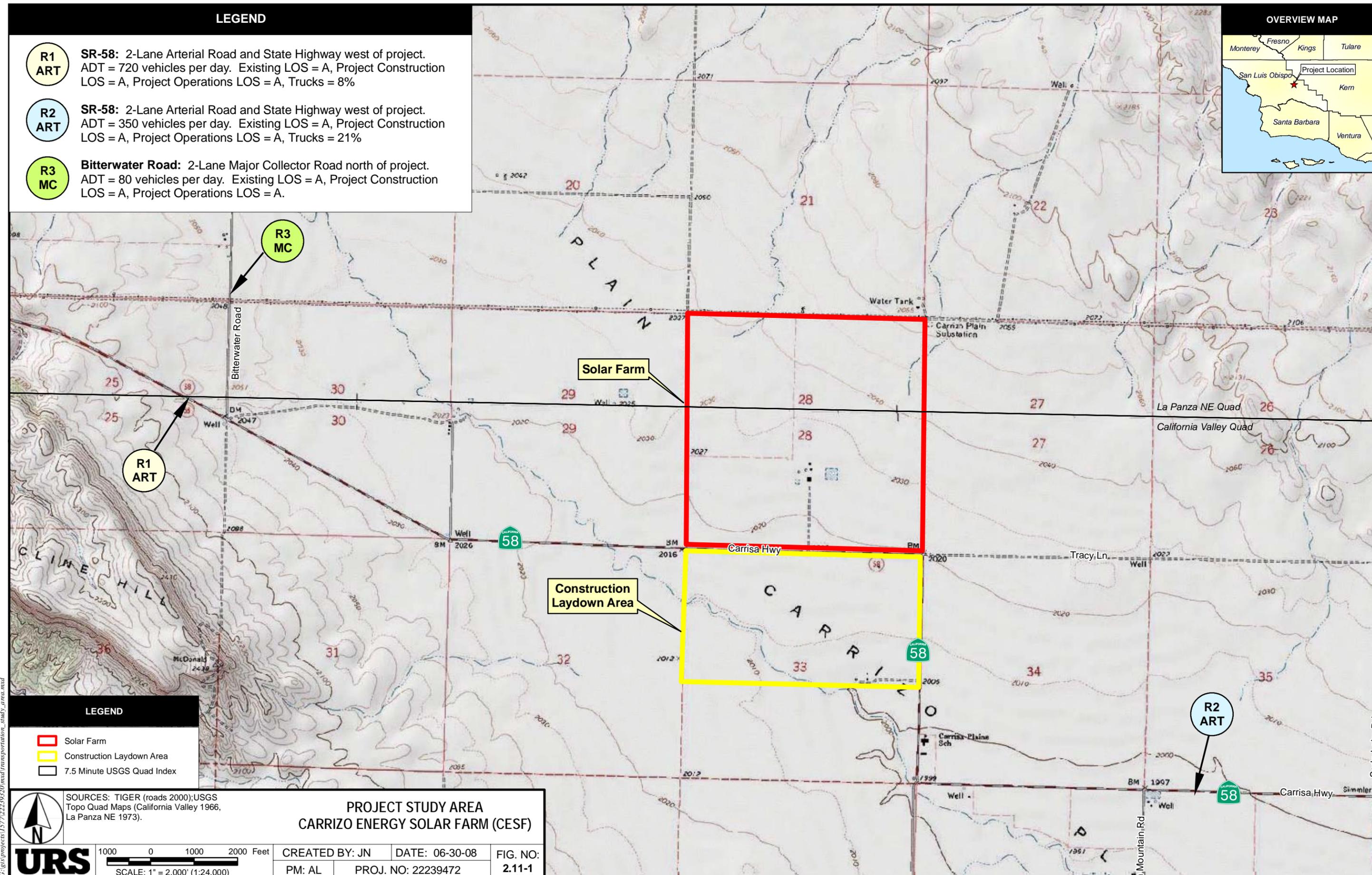
One additional reference beyond those presented in Section 5.11.6 of the Project AFC was used for this supplemental analysis:

Kern County Roads Department, 2006. Average Daily Traffic Count for Bitterwater Road.

**LEGEND**

- R1 ART** **SR-58:** 2-Lane Arterial Road and State Highway west of project.  
ADT = 720 vehicles per day. Existing LOS = A, Project Construction LOS = A, Project Operations LOS = A, Trucks = 8%
- R2 ART** **SR-58:** 2-Lane Arterial Road and State Highway west of project.  
ADT = 350 vehicles per day. Existing LOS = A, Project Construction LOS = A, Project Operations LOS = A, Trucks = 21%
- R3 MC** **Bitterwater Road:** 2-Lane Major Collector Road north of project.  
ADT = 80 vehicles per day. Existing LOS = A, Project Construction LOS = A, Project Operations LOS = A.

**OVERVIEW MAP**

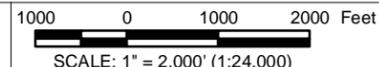


**LEGEND**

- Solar Farm
- Construction Laydown Area
- 7.5 Minute USGS Quad Index

SOURCES: TIGER (roads 2000); USGS Topo Quad Maps (California Valley 1966, La Panza NE 1973).

**PROJECT STUDY AREA  
CARRIZO ENERGY SOLAR FARM (CESF)**

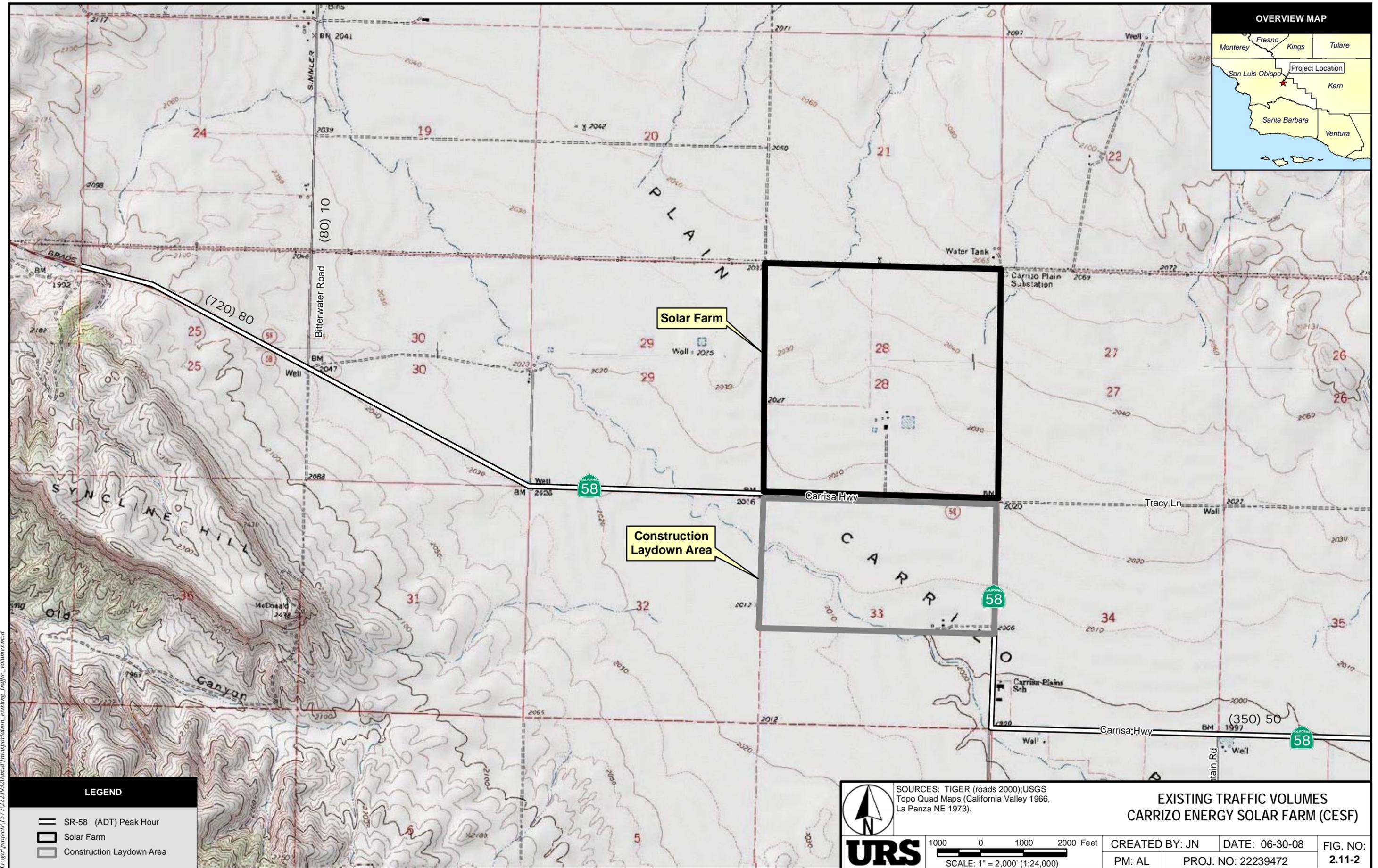


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PM: AL    PROJ. NO: 22239472

FIG. NO:  
2.11-1

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Soda Lake Rd

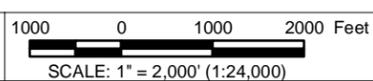


**LEGEND**

	SR-58 (ADT) Peak Hour
	Solar Farm
	Construction Laydown Area



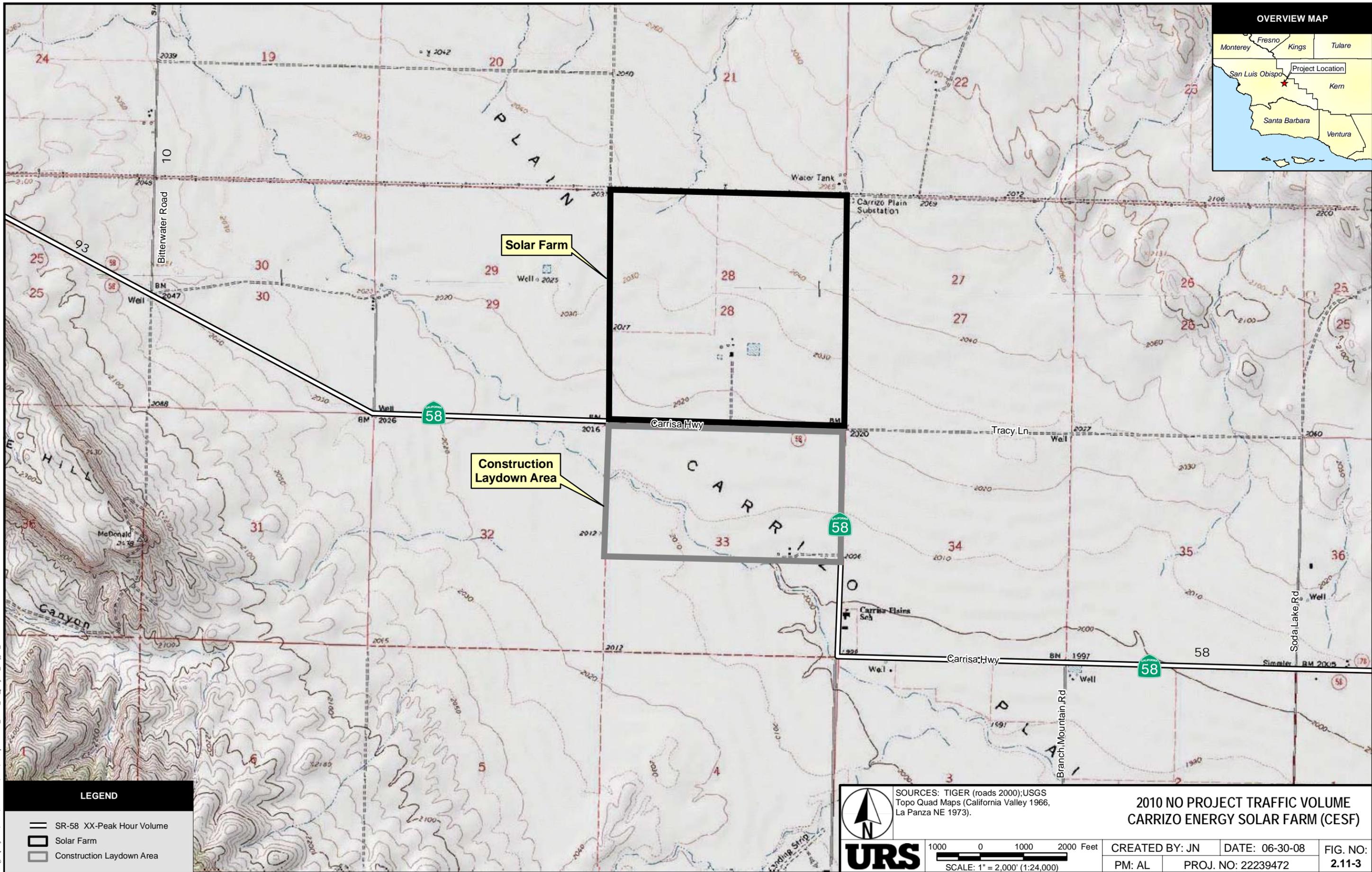
SOURCES: TIGER (roads 2000); USGS Topo Quad Maps (California Valley 1966, La Panza NE 1973).



**EXISTING TRAFFIC VOLUMES  
CARRIZO ENERGY SOLAR FARM (CESF)**

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PM: AL	PROJ. NO: 22239472	

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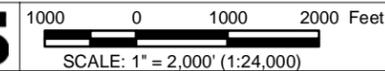
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**LEGEND**

- SR-58 XX-Peak Hour Volume
- Solar Farm
- Construction Laydown Area

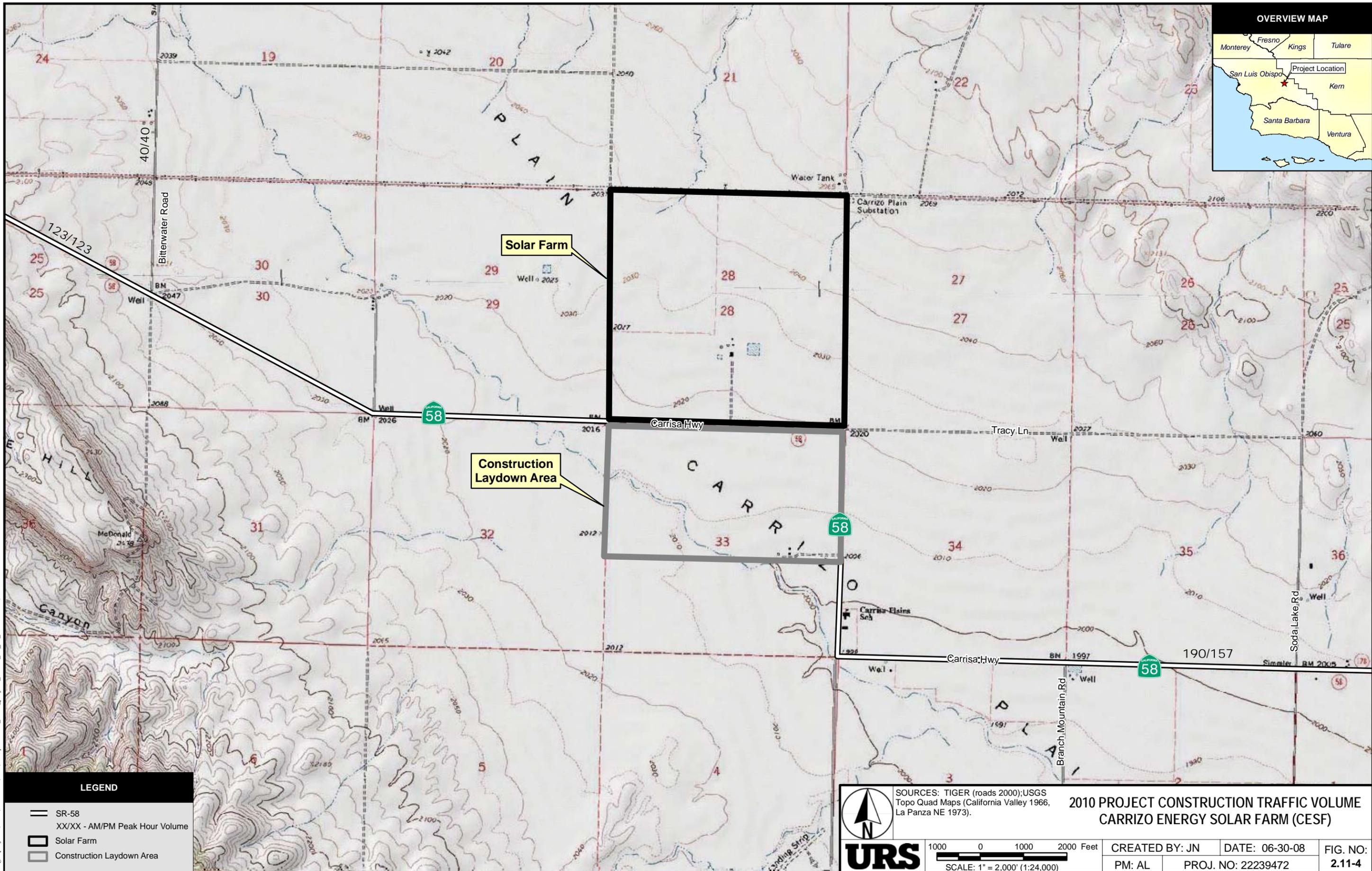


SOURCES: TIGER (roads 2000); USGS Topo Quad Maps (California Valley 1966, La Panza NE 1973).



**2010 NO PROJECT TRAFFIC VOLUME  
CARRIZO ENERGY SOLAR FARM (CESF)**

CREATED BY: JN	DATE: 06-30-08	FIG. NO:	
PM: AL	PROJ. NO: 22239472	2.11-3	



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**LEGEND**

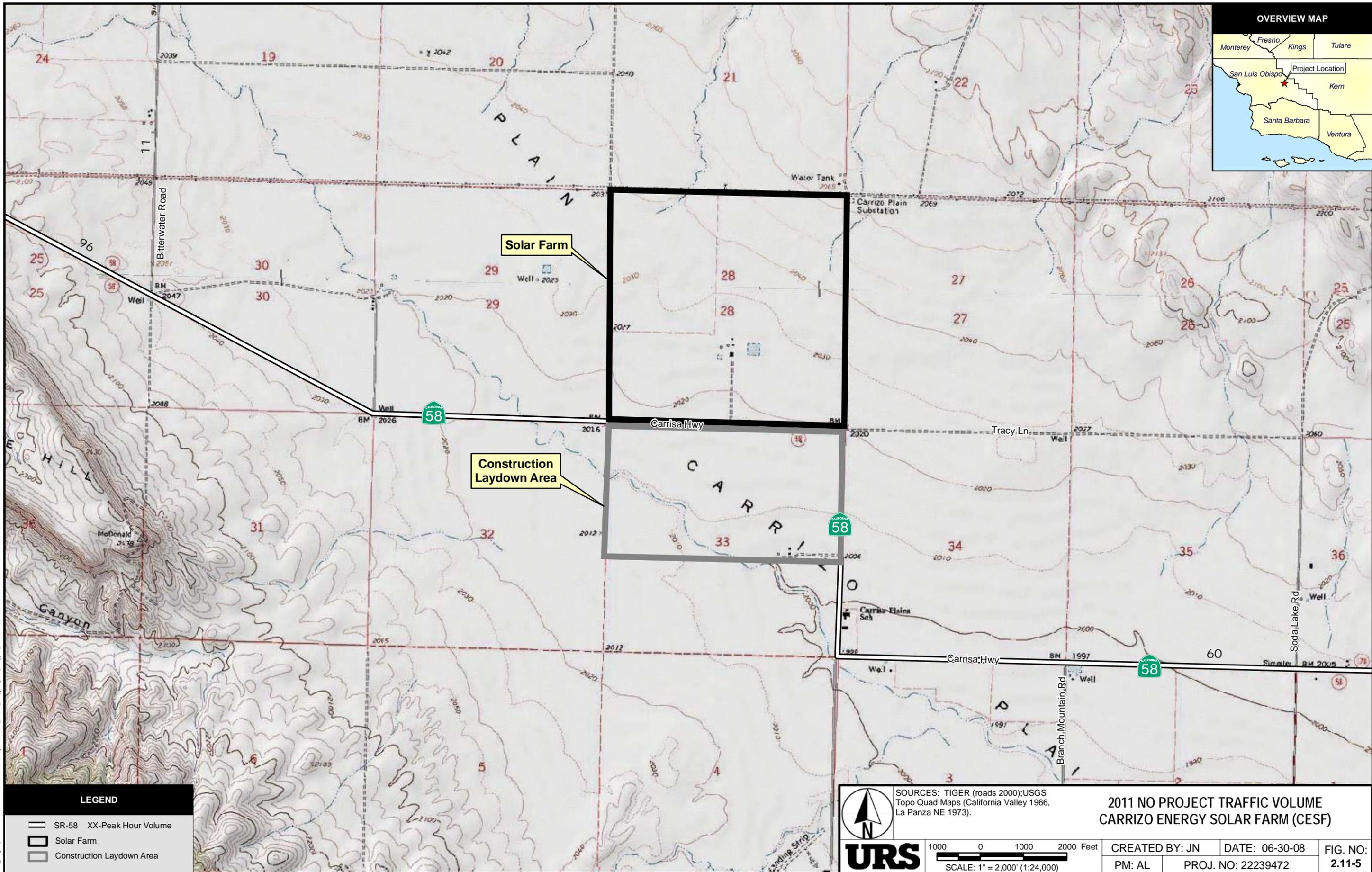
- SR-58
- XX/XX - AM/PM Peak Hour Volume
- Solar Farm
- Construction Laydown Area

SOURCES: TIGER (roads 2000); USGS Topo Quad Maps (California Valley 1966, La Panza NE 1973).

2010 PROJECT CONSTRUCTION TRAFFIC VOLUME  
 CARRIZO ENERGY SOLAR FARM (CESF)

1000 0 1000 2000 Feet  
 SCALE: 1" = 2,000' (1:24,000)

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PM: AL	PROJ. NO: 22239472	2.11-4	



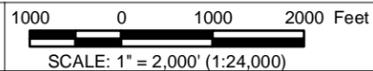
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**LEGEND**

- SR-58 XX-Peak Hour Volume
- Solar Farm
- Construction Laydown Area

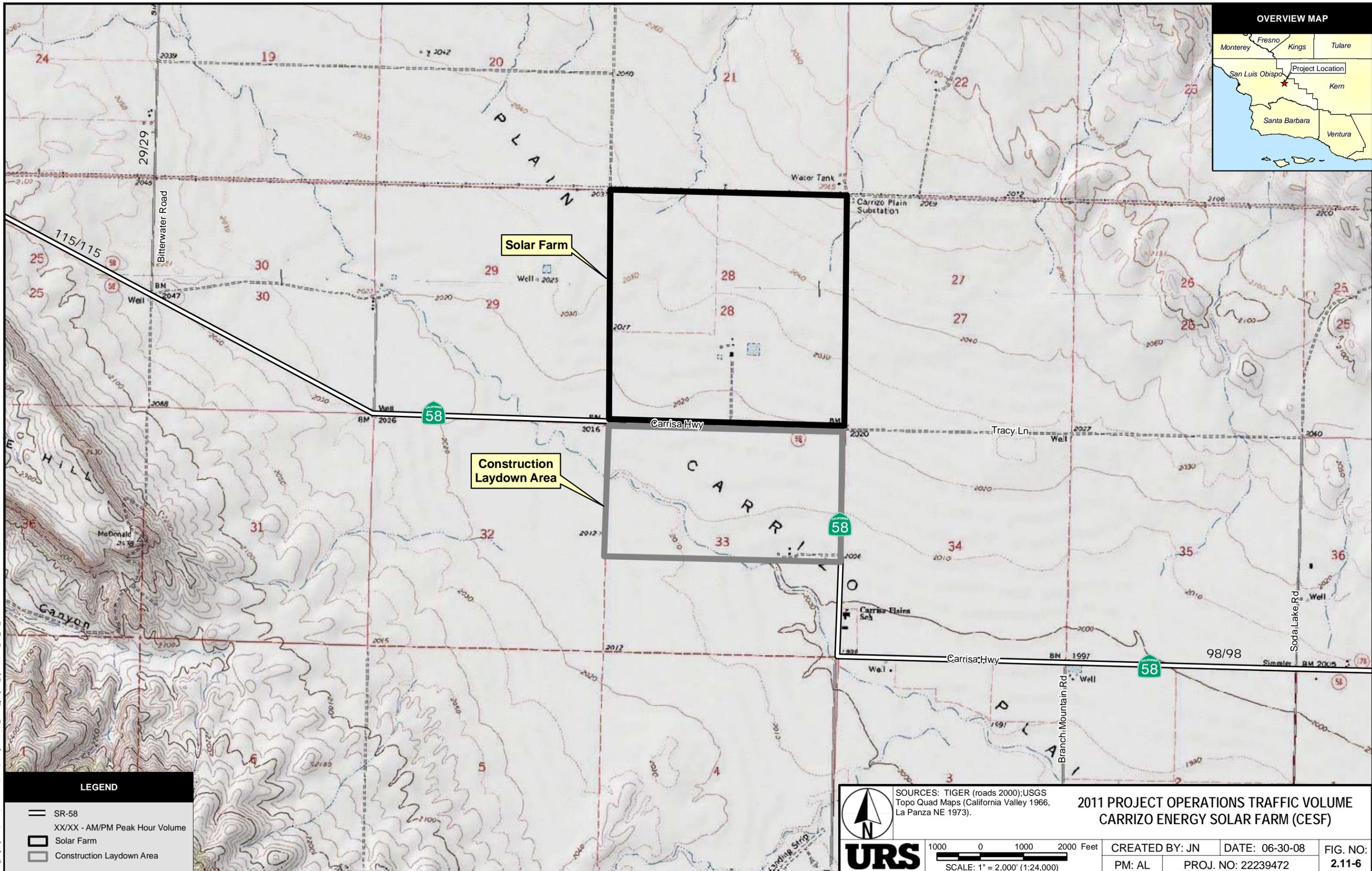


SOURCES: TIGER (roads 2000); USGS Topo Quad Maps (California Valley 1966, La Panza NE 1973).



**2011 NO PROJECT TRAFFIC VOLUME  
CARRIZO ENERGY SOLAR FARM (CESF)**

CREATED BY: JN	DATE: 06-30-08	FIG. NO: 2.11-5
PM: AL	PROJ. NO: 22239472	



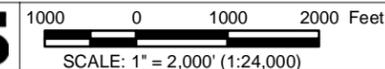
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**LEGEND**

- SR-58
- XX/XX - AM/PM Peak Hour Volume
- Solar Farm
- Construction Laydown Area



SOURCES: TIGER (roads 2000); USGS Topo Quad Maps (California Valley 1966, La Panza NE 1973).



**2011 PROJECT OPERATIONS TRAFFIC VOLUME  
CARRIZO ENERGY SOLAR FARM (CESF)**

CREATED BY: JN	DATE: 06-30-08	FIG. NO:	
PM: AL	PROJ. NO: 22239472	2.11-6	

**2.12 NOISE**

This Supplement to the Project AFC includes proposed changes to the CESF and its ancillary systems, which were originally described in Section 3.0, Facility Description and Location, of the Project AFC. This Supplement to the Project AFC, as described in Section 1.0, Supplemental Project Description, would not involve substantial changes to the findings and conclusions in Section 5.12, Noise, of the Project AFC.

**2.12.1 Affected Environment**

The affected environment is unchanged from that presented in Section 5.12.1 of the Project AFC.

**2.12.2 Environmental Consequences**

The following noise analyses are applicable to supplemental Project changes including, but not limited to, the north/south configuration, emergency generator, onsite manufacturing, and demolition of existing structures. These changes are first discussed holistically with respect to construction and operation noise, then reviewed individually in subsequent subsections.

**Construction Noise**

The construction noise prediction has been modified from the Project AFC based on Section 1.2, North/South Configuration, and Section 1.4, Onsite Manufacturing, of this supplemental filing. The north/south configuration would have the CLFR solar lines aligned in the north/south direction and the power block would be located on the eastern side of the northwestern quadrant of Section 28, and resituated in a north/south direction, as shown in Figure 1.2-1. Section 1.4, Onsite Manufacturing, describes the construction of an onsite manufacturing building (OMB) within the construction laydown area on Section 33.

Table 3.4-14, Projected Monthly Construction Equipment Use, of the Project AFC is sufficient to include equipment associated with OMB construction activities. However, for purposes of this noise analysis, the OMB serves as a second focal point of construction activity. Therefore, Table 5.12-5 of the Project AFC was revised to include both the newly positioned power block and the OMB as focal points (see Table 2.12-1).

**Table 2.12-1  
Calculated Construction Levels at Sensitive Receivers**

<b>Measurement and Studied Receiver Locations</b>	<b>Direction from Center of Power Block</b>	<b>Distance from Center of Power Block (ft)</b>	<b>Distance from Center of On-Site Manufacturing Building (ft)</b>	<b>Calculated Level Over 35 months (dBA L<sub>eq</sub>)</b>
SR01	West	7,954	8,679	51-57
SR02	Southwest	8,960	8,364	51-56

**Table 2.12-1  
Calculated Construction Levels at Sensitive Receivers  
(Continued)**

Measurement and Studied Receiver Locations	Direction from Center of Power Block	Distance from Center of Power Block (ft)	Distance from Center of On-Site Manufacturing Building (ft)	Calculated Level Over 35 months (dBA L <sub>eq</sub> )
SR07	Southeast	21,320	18,223	43-48
SR08	Southeast	21,395	19,253	43-48
SR09	Southeast	21,615	19,627	43-48
SR10	Southeast	5,740	4,014	55-60
ML01	Southwest	7,216	6,323	53-58
SR11 / ML02 <sup>1</sup>	East	3,201	6,232	59-65
ML03	Northeast	6,317	9,758	53-59
LT-1	Southeast	9,348	4,972	52-56
x-quad 1	Onsite: WSW of power block	1,230	5,051	67-73
x-quad 2	Onsite: SSW of power block	3,280	2,624	60-65
x-Access Way	Onsite: South of power block	1,886	2,952	64-69
x-quad 3	Onsite: SE of power block	2,099	4,657	63-68
x-quad 4	Onsite: SSE of power block	4,920	2,492	57-62
APN072-051-026 Strobbridge	North	3,230	8,307	59-65
APN072-301-001 Bell Future Residence	West	10,207	11,662	49-55
APN072-311-004 Bell Existing Residence	West	12,356	13,594	48-53

Note:

<sup>1</sup>The identified noise-sensitive receiver at location SR11 in Figure 2.12-1 is, acoustically speaking (< 1dB difference), represented by the measurement location ML02.

The methodology of the construction noise prediction for this supplemental filing is generally the same as that described in the Project AFC, Section 5.12.2.1; however, the prediction now includes the OMB as a focal point that is assumed to conservatively represent twenty percent (20%) of the total construction resources for the first four months of the Project's construction. Demolition of existing structures at the

OMB site is considered part of this resource allocation and resulting construction noise activity intensity. Subsequently, it is assumed the OMB involves only about a dozen noise-producing systems as follows: two pick-up trucks, two all-terrain vehicles (ATVs), a telescopic handler (3-ton), a crane (15-ton), an air compressor (250 CFM), two gensets (representing the robotic reflector assembly system), and a light plant. In the last four months of the Project's construction, the OMB would be dismantled.

The values for two parameters in the construction noise prediction model have also undergone revision as follows:

- **Duty Cycle.** The Project AFC assumes 50% utilization (a.k.a., duty cycle) for all construction equipment as shown in the Project AFC, Appendix P, Noise, Table P-1. Per this supplemental filing, Appendix F, Noise Data, now shows a variety of duty cycle values that are more consistent with information from the Beranek & Ver reference cited in Section 5.12.6 of the Project AFC.
- **Base Sound.** The sound pressure level (SPL) values at 1 meter distance for many equipment types have been adjusted to reflect consistency with data from Table 1 of the Federal Highway Administration (FHWA) Roadway Construction Noise Model. For others, the base sound levels have remained unchanged.

All studied sensitive receiver locations are presented in Figure 2.12-1. The calculations are provided in Appendix F, Noise Data. Although Section 22.10.120 (A.4) of the San Luis Obispo (SLO) County Code exempts construction activities and their sound generation from the noise ordinance standards, provided such activities take place within a stated period (7:00 am to 9:00 pm on weekdays, and 8:00 am to 5:00 pm on weekends). The value ranges in Table 2.12-1 indicate that for some locations appearing in Table 5.12-2 and 5.12-3 of the Project AFC, greater than 5 dBA increases are expected. Consistent with the findings of the Project AFC, while these increases are potential impacts, they are temporary (*i.e.*, to last no longer than the overall 35-month construction duration of the Project) in nature and therefore, considered less than significant.

### *Occupational Noise*

Supplemental Project changes do not create additional construction related occupational noise impacts beyond those presented in Section 5.12.2.1.1 of the Project AFC.

### *Offsite Construction Laydown, Staging and Parking Area*

Supplemental Project changes do not create additional construction related noise impacts beyond those presented above and in Section 5.12.2.1.2 of the Project AFC.

### *Construction Traffic*

Due to the inclusion of the onsite manufacturing building as part of the Project's construction, the estimate of noise from construction traffic requires the following re-consideration. The Project AFC, Section 5.12.2.1.3, describes the existing traffic volumes on SR-58, which were used to calculate existing sound levels as re-appearing in Table 2.12-2. Using newly estimated traffic volumes as provided in Section 2.11 of this supplemental filing, the new sound level estimates from traffic at a distance of 50 feet

are shown for three roadway segments in Table 2.12-2. Only during Project construction, and at this distance of 50' from Bitterwater Road, is there expected to be an increase above existing levels by more than 5 dBA. But because the nearest recognized noise-sensitive receiver (*i.e.*, the Bell existing property, at which location an ambient sound level of approximately 39 dBA was recently measured) is 800' away from Bitterwater Road and would thereby experience a distance-attenuated construction traffic noise level of only 43 dBA, the difference is less than 5 dBA and hence considered a less than significant impact.

**Table 2.12-2**  
**Project Construction and Operation Traffic Noise Assessments**

Roadway Segment	Existing Sound Level (dBA)	Future (2010-2011) No Project (dBA)	2010 Project Construction (dBA)	2011 Project Operation (dBA)
Cammati Creek	61.5	62.3	62.8	62.9
Soda Lake Road	61.1	61.9	65.9	63.4
Bitterwater Road	n/a	49.3	55.4	53.5

### Operational Noise

The prediction method utilized is unchanged from that of the Project AFC, Section 5.12.2.2.1. The air-cooled condenser (ACC) units have been reconfigured. Each ACC will now consist of 20 fans, a 20% reduction as compared to the equipment previously identified in Table 5.12-6 of the Project AFC. Other equipment additions include the diesel-powered emergency generator. The sound power levels of this equipment, in addition to the firewater pump previously identified in the Project AFC, are shown in Table 2.12-3.

**Table 2.12-3**  
**Noise Model Parameters**

Project Component	Type of Source	Sound Power Level (PWL) at Octave Band Center Frequency (Hz)									A-Weighted	Unweighted (linear)	Acoustic Height (feet)
		31.5	63	125	250	500	1000	2000	4000	8000			
Air-Cooled Condenser (ACC) (Qty: 2)	Area	119	116	116	112	110	104	102	96	91	112	123	57
Emergency Generator (components combined)	Point	98	98	117	119	108	105	104	96	92	114	123	8
Firewater Pump	Point	72	74	86	95	102	107	110	107	102	114	114	8

Reference:

Levels for ACC provided by SPX Corporation. Emergency generator decibel values include enclosure adjustment to data provided by Caterpillar Firewater pump decibel values based on data provided by Clarke Fire.

*Community Noise*

The results of the predicted calculations are summarized in Table 2.12-4. Figure 2.12-1 depicts iso-dB level contours for the Project in 5 dB increments at a receiver height of 5 feet. The calculated sound levels at offsite receivers are up to 47 dBA  $L_{eq}$ . Table 2.12-4 can be compared to the levels previously identified in Table 5.12-7 of the Project AFC.

Per this supplemental filing, the predicted Project operational noise levels at all recognized noise-sensitive receivers would be in compliance with both the local 50 dBA  $L_{eq}$  daytime/45 dBA  $L_{eq}$  nighttime requirement and the CEC threshold of 5 dBA increase over ambient. Hence, potential impacts from nominal Project operation are expected to be less than significant.

Please refer to Section 5.12.4.1 of the Project AFC for a presentation of mitigation steps intended to keep these operational noise levels compliant.

**Table 2.12-4  
Calculated Operation Levels at Sensitive Receivers**

Sensitive Receiver Identification	Existing (dBA)	Supplement to the Project AFC <sup>6</sup>		
		Calculated (dBA)	Existing + Calculated <sup>5</sup> (dBA)	Difference from Existing (dB)
SR01 <sup>1</sup>	43	31.5	43	0
SR02 <sup>1</sup>	43	29.9	43	0
SR07 <sup>2</sup>	49	17.4	49	0
SR08 <sup>2</sup>	49	16.9	49	0
SR09 <sup>2</sup>	49	15.1	49	0
SR10	43	35.7	44	1
ML01 <sup>3</sup>	43	32.8	43	0
ML02 <sup>3</sup>	44	42.0	46	2
ML03 <sup>3</sup>	46	33.3	46	0
LT-1 <sup>4</sup>	47	29.2	47	0
x-quad 1	N/A	53.1	N/A	N/A
x-quad 2	N/A	42.5	N/A	N/A
x-Access Way	N/A	48.6	N/A	N/A
x-quad 3	N/A	47.4	N/A	N/A
x-quad 4	N/A	37.2	N/A	N/A
Strobridge Residence	44	40.5	45	1
Bell Existing	39	25.7	39	0

**Table 2.12-4  
Calculated Operation Levels at Sensitive Receivers  
(Continued)**

Sensitive Receiver Identification	Existing (dBA)	Supplement to the Project AFC <sup>6</sup>		
		Calculated (dBA)	Existing + Calculated <sup>5</sup> (dBA)	Difference from Existing (dB)
Bell Future	41	28.4	41	0

Notes:

<sup>1</sup> Based on daytime  $L_{eq}$  at ML01.

<sup>2</sup> Based on daytime  $L_{eq}$  at ML07.

<sup>3</sup> ML01, ML02, ML03 based on daytime  $L_{eq}$  at those locations.

<sup>4</sup> LT-1 based on 25-hour  $L_{eq}$  at Carrizo Plains School.

<sup>5</sup> This is a logarithmic sum of Existing and Calculated, not algebraic.

<sup>6</sup> The Supplement to the Project AFC is based on Section 1.0 of this document.

### *Occupational Noise*

Supplemental Project changes do not create additional operation related occupational noise impacts beyond those presented in Section 5.12.2.2.3 of the Project AFC.

### *Power Transmission*

Supplemental Project changes do not create additional operation related noise impacts beyond those presented in Section 5.12.2.2.4 of the Project.

### *Operational Traffic*

The influence of the Project's operation on traffic noise was not considered significant and hence not detailed in Section 5.12 of the Project AFC. Using newly estimated traffic volumes as provided in Section 2.11 of this supplemental filing, the new sound level estimates from traffic (as augmented by Project operation, not construction) at a distance of 50 feet are shown for three roadway segments in Table 2.12-2. At all three studied roadway segments, the expected differences in traffic noise levels are less than 5 dBA and hence are considered less than significant impacts.

#### *2.12.2.1 North/South Configuration*

The north/south configuration changes the orientation of the power block as well as the alignment of a number of components within the power block, including the two ACCs, the two STGs, and the main General Step-UP Transformer (GSU). The reconfiguration of the power block results in lower sound levels experienced by the sensitive residential receivers in the vicinity of the Project during operation as shown in Table 2.12-4. Consequentially, the north/south configuration helps minimize construction or operation related noise impacts beyond those presented in Section 5.12.2 of the Project AFC. Refer to the Operational Noise discussion of Section 2.12.2, which precedes this subsection, for the predicted sound levels.

### ***2.12.2.2 Emergency Generator***

The supplemental filing introduces an emergency diesel generator to the list of potential operational noise sources. The firewater pump engine, originally identified in the Project AFC, will be rated at approximately 300 horsepower, while the emergency generator engine will be rated at approximately 1,341 horsepower. Both systems will be installed within a weather enclosure, which manufacturer data suggests is capable of providing adequate mechanical (*i.e.*, casing and intake) and exhaust attenuation (*e.g.*, typical mufflers) to enable the prediction model input parameters appearing in Table 2.12-3. Conservatively, operation of both the emergency generator and the firewater pump engine were included in the predicted results shown in Table 2.12-4. Because the Difference from Existing quantities are all less than 5 dBA, the associated impacts are expected to be less than significant.

Consistent with the Project AFC's consideration of the firewater pump engine operation with respect to noise, when the emergency generator and firewater pump are not in use, they have no impact on Project operations noise.

### ***2.12.2.3 Onsite Manufacturing***

As discussed in the Construction Noise portion of Section 2.12.2 of this supplemental filing, the inclusion of onsite manufacturing does not alter the planned total amount of construction resources (both equipment and personnel). However, erecting and operating the onsite manufacturing building draws some of these resources away from construction of the power block and other Project components. The result is consistent with the findings of the Project AFC in that there are anticipated potential impacts due to expected increases (*i.e.*, greater than a 5 dBA increment) in sound over existing ambient levels at noise-sensitive receivers; however, these impacts are temporary (*i.e.*, to last no longer than the overall 35-month construction duration of the Project) in nature and therefore, considered less than significant.

### ***2.12.2.4 Demolition of Existing Structures***

Demolition of onsite structures will not require additional workers or equipment compared with the Project as originally proposed. Accordingly, and as mentioned in Construction Noise of Section 2.12.2 of this supplemental filing, demolition of existing structures has been considered part of the set of Project construction activities and—consistent with the findings of the Project AFC—potential noise impacts are anticipated but considered temporary in nature and therefore described as less than significant.

### ***2.12.2.5 Electrical Systems***

Modification to the electrical systems does not create additional construction or operation related noise impacts beyond those presented in Section 5.12.2 of the Project AFC.

### ***2.12.2.6 Administration Building Height***

Decreasing the height of the administration building does not create additional construction or operation related noise impacts beyond those presented in Section 5.12.2 of the Project AFC.

### ***2.12.2.7 Perimeter Fencing***

Decreasing the height of the perimeter fencing does not create additional construction or operation related noise impacts beyond those presented in Section 5.12.2 of the Project AFC.

### **2.12.3 Cumulative Impacts**

No additional cumulative impacts have been identified as part of this supplemental analysis.

### **2.12.4 Mitigation Measures**

The mitigation measures and related discussion presented in Section 5.12.4 of the Project AFC remain applicable to the Project as described and considered in this supplemental filing.

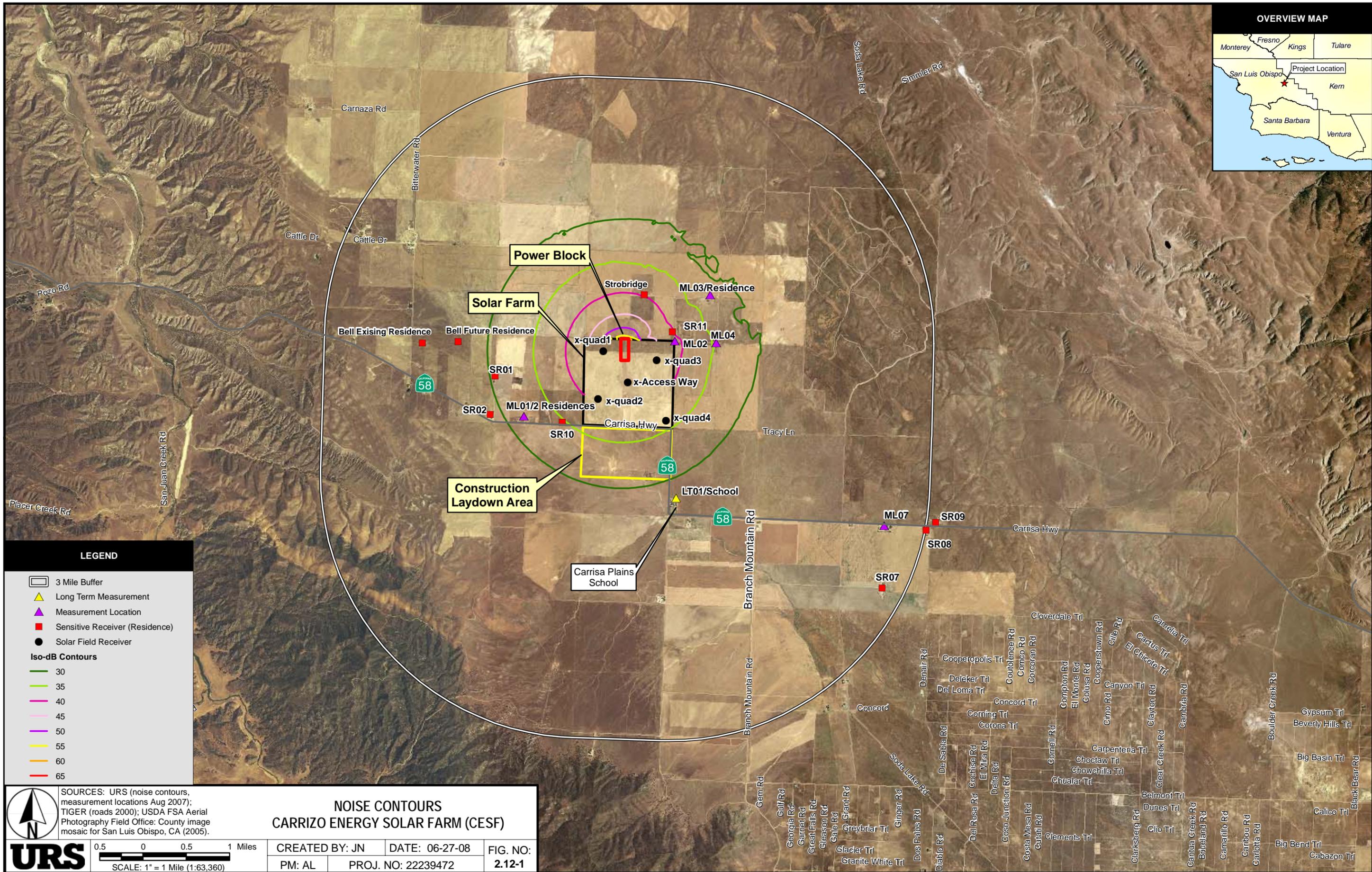
### **2.12.5 LORS Compliance**

The LORS presented in Section 5.12.5 of the Project AFC are applicable to the revised Project and no additional LORS are recommended. Similarly, the agency contact information presented in Section 5.12.5 of the Project AFC is unchanged and the proposed Project modifications do not affect the required permits or Project schedule presented in Section 5.12.5 of the Project AFC.

### **2.12.6 References**

One additional reference beyond those presented in Section 5.12.6 of the Project AFC was used for this supplemental analysis:

Federal Highway Administration, *FWHA Roadway Construction Noise Model User's Guide*, FHWA-HEP-05-054, DOT-VNTSC-FHWA-05-01, Jan. 2006.



**LEGEND**

- 3 Mile Buffer
- ▲ Long Term Measurement
- ▲ Measurement Location
- Sensitive Receiver (Residence)
- Solar Field Receiver

**Iso-dB Contours**

- 30
- 35
- 40
- 45
- 50
- 55
- 60
- 65

**URS**

0.5 0 0.5 1 Miles

SCALE: 1" = 1 Mile (1:63,360)

**NOISE CONTOURS  
CARRIZO ENERGY SOLAR FARM (CESF)**

SOURCES: URS (noise contours, measurement locations Aug 2007); TIGER (roads 2000); USDA FSA Aerial Photography Field Office: County image mosaic for San Luis Obispo, CA (2005).

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**2.13 VISUAL RESOURCES**

This Supplement to the Project AFC includes proposed changes to the CESF and its ancillary systems, which were originally described in Section 3.0 of the Project AFC. This Supplement to the Project AFC, as described in Section 1.0, would not involve substantial changes to the findings and conclusions in Section 5.13, Visual Resources, of the Project AFC.

**2.13.1 Affected Environment**

The affected environment is unchanged from that presented in Section 5.13.1 of the Project AFC with the exception of potential reconductoring of the 230 kV Morro Bay - Midway transmission line. The potentially affected environment along the 230 kV Morro Bay-Midway transmission Line 1 and Line 2 includes the transmission line corridor which travels approximately 75-miles west-east from the Morro Bay Power Plant, Morro Bay, San Luis Obispo County to the Midway Substation, Buttonwillow, Kern County (see Figure 2.13-1). The transmission line corridor transverses areas that are distinctively rural in nature, and the landscape is characterized by steep rolling hills, mountainous terrain, alluvial plains, ranching activities for sheep and cattle (*e.g.*, grazing, rangeland), cultivation of agricultural products (*e.g.*, wheat), and oil and mineral extraction.

The transmission line corridor primarily transverses largely unpopulated and underdeveloped areas, such as the San Bernardo Grant, San Luis Obispo Wildlife Area, El Choro Grant, Los Padres National Forest, Santa Margarita Grant, Carrizo Plain, Navajo Grant, Temblor Range, and Temblor Valley. Waterways near the transmission line corridor include (but are not limited to) San Bernardo Creek, Chorro Creek, San Luisito Creek, Laguna Lake, San Luis Obispo Creek, Kern River, McGinnis Creek, Santa Margarita Lake, Buena Creek, Trout Creek, San Juan Creek, Yaro Creek, Pilnas Creek, Rinconada Creek, and Temblor Creek. Residential and commercial development near the transmission line is concentrated in populated areas, such as the communities of Morro Bay, San Luis Obispo, and Buttonwillow. Major infrastructure elements which are near or transverse the transmission line corridor include (but are not limited to) the West Side Canal, East Side Canal, Corn Camp Ditch, Whittier Ditch, Florida Drain, California Aqueduct, several pipelines, railroad grades, and graded and paved roadways.

**2.13.2 Environmental Consequences**

The analysis of impacts related to visual resources from the CESF is based on significance criteria described in Section 5.13.2 of the Project AFC.

The simulations for each of the five identified Key Observation Points (KOP) have been revised to reflect the proposed supplemental changes to the CESF and its ancillary systems (see Figures 2.13-1 through 2.13-6).

**2.13.2.1 North/South Configuration**

As described in Section 1.0, Supplemental Project Description, the power block, solar reflectors and receivers have been revised from an east/west configuration to a north/south configuration. The Project site boundary remains unchanged. Additionally, the power block would be reoriented as a result of the new configuration. The power block would be located on the eastern side of the northwestern quadrant of

Section 28, and resituated in a north/south direction (see Figure 1.2-1). With the Project configuration described above in place, potential visual impacts to each of the KOPs as described in the Project AFC, will vary slightly from the original configuration. Potential impacts to visual resources; however, will remain unchanged. Changes to each of the KOPs, changes to glint and glare, and changes to Project lighting, and their potential to change impacts to visual resources are described further below.

### *Key Observation Points (KOP) Changes*

As the power block will be located further away from KOP 1 (see Figure 2.13-2, and Figures 5.13-12 and 5.13-13 of the Project AFC), potential visual impacts for this KOP are expected to be slightly reduced. While the power block would be located closer to KOP 2 (see Figure 2.13-3, and Figures 5.13-14 and 5.13-15 of the Project AFC), perimeter fencing with privacy slats and solar reflectors/receivers between the viewer and the power block limit views of the power block from this KOP. No change to views from KOPs 3 or 4 (see Figures 2.13-4 through 2.13-7, and Figures 5.13-16 through 5.13-21 of the Project AFC) would occur due to their distance from the power block. Therefore, changes to KOP views do not create additional construction or operation related visual impacts beyond those presented in Section 5.13.2 of the Project AFC.

### *Glint and Glare Changes*

A Glint and Glare Study (dated February 26, 2008) was prepared by Ausra CA II, LLC (dba Carrizo Energy, LLC) in response to CEC Data Requests #70. The February Glint and Glare Study was based on the original east/west Project configuration identified in the Project AFC. The February Study found that in the east/west configuration, as reflectors move from a stow position into tracking position with light focused on absorber pipes, there is the possibility of a concentrated beam being directed horizontally to the north or south of the CESF boundary or spilling out to the east or west.

The Glint and Glare Study has since been amended to reflect the revised north/south Project configuration identified in this supplemental filing and is included as an appendix to this section (see Appendix G, Glint and Glare Study). With the revised north/south configuration, the potential concentrated beam will now be directed horizontally to the east or west of the CESF boundary or spilling out to the north. There is a possibility of glare affecting pedestrians within 60 feet of the Project area to the north, east, and west of the Project site. However, the glare would be mitigated by the incorporation of privacy slats on perimeter fencing so pedestrians will not be exposed to glare. With incorporation of the privacy slats, impacts from glint and glare on surrounding visual receptors will be mitigated to a level less than significant.

Directly south of the Project site is SR-58. Because of the Project reconfiguration and according to the amended Glint and Glare Study, it would be virtually impossible to direct beams south towards SR-58 (see Appendix G, Glint and Glare Study). Therefore, changes to glint and glare do not create additional construction or operation related visual impacts beyond those presented in Section 5.13.2 of the Project AFC.

### *Lighting Changes*

In addition to the revised Glint and Glare Study, a Lighting Plan (see Appendix B, Lighting Plan) was prepared by Ausra CA II, LLC (dba Carrizo Energy, LLC) in response to CEC Data Request #100. This

lighting plan was prepared to evaluate potential lighting impacts for the new north/south Project configuration, including the new power block arrangement. It was concluded that with mitigation measures in place (*e.g.*, shielded low-impact lighting being used only where necessary for safety or plant security), potential impacts from lighting were found to be either temporary or less than significant. As a result, changes to Project lighting do not create additional construction or operation related visual impacts beyond those presented in Section 5.13.2 of the Project AFC.

Overall, changes to the Project configuration - including changes to the power block, changes to glint and glare, and changes to Project lighting - do not create additional construction or operation related visual impacts beyond those presented in Section 5.13.2 of the Project AFC.

#### ***2.13.2.2 Emergency Generator***

The emergency generator does not create additional construction or operation related visual impacts beyond those presented in Section 5.13.2 of the Project AFC.

#### ***2.13.2.3 Onsite Manufacturing***

As described in Section 1.4.7, Supplemental Project Description, a manufacturing facility will be located in the northern portion of the construction laydown area, south of the CESF Project site. The manufacturing facility will be assembled within the first 4 months of Project construction and dismantled in the last 4 months of the Project construction schedule. While, visual changes associated with construction activities at the onsite manufacturing building would create potential visual impacts to sensitive viewers within the nearby Project vicinity, construction activities would be conducted within a three year period (35 months); therefore, visual impacts are considered temporary and thus, less than significant. Onsite manufacturing does not create additional operation related visual impacts because the manufacturing facilities are considered temporary.

#### ***2.13.2.4 Demolition of Existing Structures***

As described in the Project AFC, demolition of existing structures within the Project site was to happen prior to land transfer. This demolition is now considered part of the Project. Demolition of existing structures does not create additional construction or operation related visual impacts beyond those presented in Section 5.13.2 of the Project AFC.

#### ***2.13.2.5 Electrical Systems***

According to the Carrizo Plain Solar Interconnection System Impact Study, reconductoring of the 230 kV Morro Bay – Midway Transmission line may occur in the future. If reconductoring is required, it would include modifications to the CESF transmission lines and/or modifications to switching station(s). Reconductoring of the 230kV transmission lines may involve replacing existing transmission lines and modifying associated existing transmission poles to accept the reconducted lines.

As no new transmission poles are proposed, and reconductoring includes modifying existing transmission systems within an existing transmission line right-of-way, modification to the electrical systems does not

create additional construction or operation related visual impacts beyond those presented in Section 5.13.2 of the Project AFC.

### 2.13.2.6 Administration Building Height

Decreasing the height of the administration building does not create additional construction or operation related visual impacts beyond those presented in Section 5.13.2 of the Project AFC.

### 2.13.2.7 Perimeter Fencing

As described in Section 1.0, Supplemental Project Description, perimeter fencing for the CESF Project site and construction laydown will be a maximum of 6.5 feet in height (reduced from the previous height of 10 feet, described in the Project AFC). The 6.5 foot perimeter fence will still provide adequate security to the Project site.

The reduction of 3.5 feet in height of the perimeter fence would potentially result in negligible visual impacts to sensitive viewers within the nearby Project vicinity. However, privacy slats will be incorporated to the Project perimeter fence in efforts to screen views of the Project site as well as block potential glint and glare from the solar reflectors. Decreasing the height of the perimeter fencing does not create additional construction or operation related visual impacts beyond those presented in Section 5.13.2 of the Project AFC.

## 2.13.3 Cumulative Impacts

Since the submittal of the Project AFC in October 2007, three building permits have been issued by the County of San Luis Obispo within a 5 mile radius of the Project site. The proposed projects can be characterized primarily as residential development (*i.e.*, new single-family dwellings). Table 2.13-1, provided below, includes assessor parcel numbers (APN), descriptions of proposed development, and date of permit issuance.

**Table 2.13-1  
Additional Potential Cumulative Projects Considered**

APN #	Permit/Case	Site Address	Description of Proposed Development	Application Date
072-051-026	PMT2007-02192	Unknown	Single-Family Dwelling	3/10/2008
082-291-078	PMT2007-00690	13765 Georgia Road California Valley	Single-Family Dwelling	9/18/2007
082-211-050	PMT2007-00689	13750 Grant Road California Valley	Single-Family Dwelling	2007

The closest proposed residential development, APN 072-052-026, is located approximately 0.7-mile north of the CESF Project site. The other two proposed developments, APNs 082-291-078 and 082-211-050, are located approximately 5.0 miles south of the CESF Project site. The discussion of cumulative impacts

in the Project AFC, Section 5.13.3, is adequate to describe the cumulative impacts of the CESF for purposes of this supplemental filing.

**2.13.4 Mitigation Measures**

No additional mitigation measures are recommended based on the Project modifications.

**2.13.5 LORS Compliance**

The LORS presented in Section 5.13.5 of the Project AFC are applicable to the revised Project; however, two additional local LORS regarding fencing height and screening materials are listed in Table 2.13-2.

**Table 2.13-2  
Summary of LORS**

<b>Jurisdiction</b>	<b>LORS</b>	<b>Requirements</b>	<b>Conformance Section</b>	<b>Administering Agency</b>	<b>Agency Contact</b>
<b>Local</b>					
	San Luis Obispo County Code – Title 22, Land Use Ordinance. 22.10.080. A. 4b.	A solid wall or fencing shall be located on the side and rear property lines of any site within an Industrial or Commercial Service category that abuts another land use category.	2.13.2.7	San Luis Obispo County	1
	San Luis Obispo County Code – Title 22, Land Use Ordinance. 22.10.080. E. 3.	Chain-link fencing with slats and landscaping may be substituted for a solid wall or fence in an Industrial category, except where screening or fencing is required adjacent to another land use category.	2.13.2.7	San Luis Obispo County	1

The agency contact information presented in Section 5.13.5 of the Project AFC is unchanged and the proposed Project modifications do not affect the required permits or Project schedule presented in Section 5.13.5 of the Project AFC.

**2.13.6 References**

No additional references beyond those presented in Section 5.13.6 of the Project AFC were used for this supplemental analysis.



**Character Photo 1:** Existing PG&E Midway Substation, Buttonwillow, Kern County

**CHARACTER PHOTO OF PG&E MIDWAY SUBSTATION  
CARRIZO ENERGY SOLAR FARM (CESF)**

**URS**

NO SCALE

CREATED BY: VT

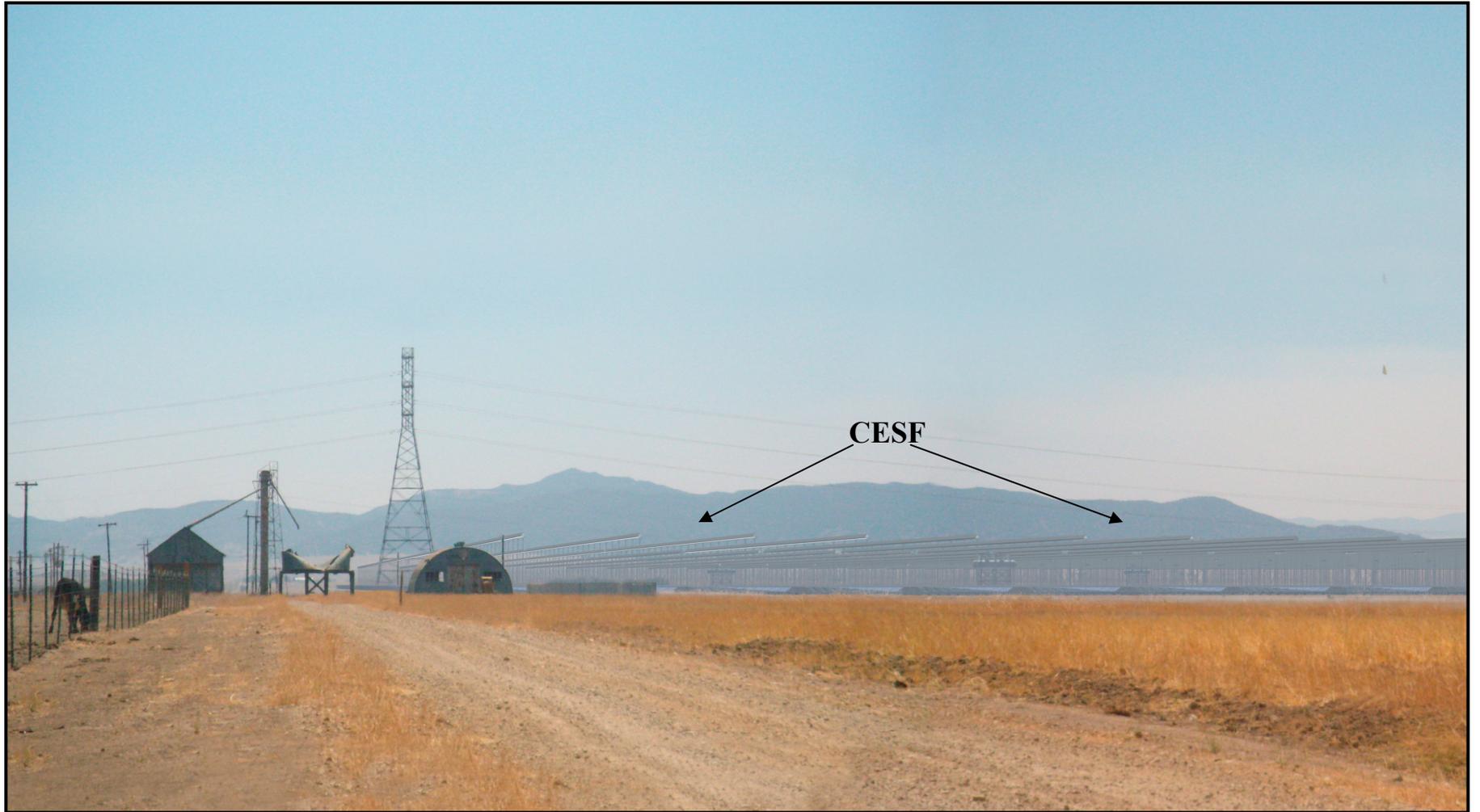
DATE: 06-30-08

FIG. NO:

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2.13-1



**KOP 1:** Simulated front yard view from the closest residence to the north, looking southwest toward CESF site (approximately 0.3-mile north of CESF). This photo location is meant to represent “worst-case” views from residential viewers to the north of CESF.



This photograph has been cropped to show a wide angle view with the above photograph's area shown in yellow.

**SIMULATED VIEW OF CESF FROM KOP #1  
CARRIZO ENERGY SOLAR FARM (CESF)**

**URS**

NO SCALE

CREATED BY: VT

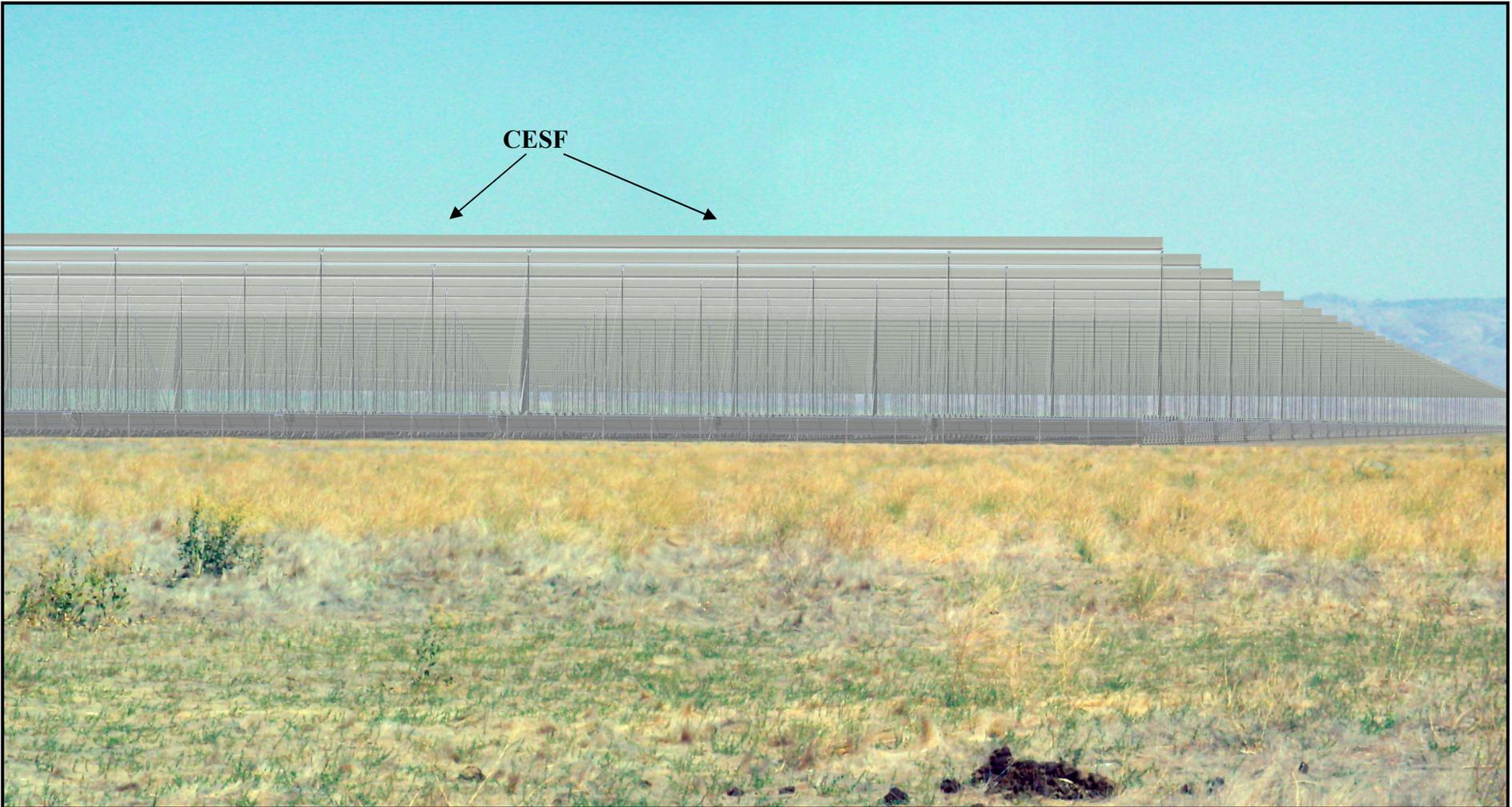
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FIG. NO:

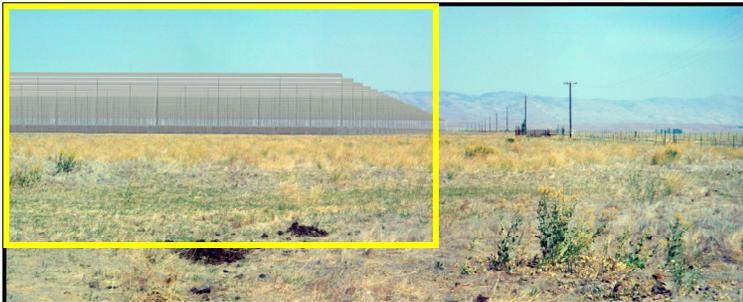
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2.13-2



**KOP 2:** Simulated front yard view from the closest residence to the west, looking northeast toward CESF site (approximately 0.2-mile west of CESF). This photo location is meant to represent “worst-case” views from residential viewers to the west.



This photograph has been cropped to show a wide angle view with the above photograph's area shown in yellow.

**\*\*Note:**

1. Slight distortion caused by panoramic merging of photos.
2. Simulation was placed on existing site topography. Proposed grading plan for terracing of landscape was not available at time of simulation. preparation, and therefore, is not reflected.

**SIMULATED VIEW OF CESF FROM KOP #2  
CARRIZO ENERGY SOLAR FARM (CESF)**



NO SCALE

CREATED BY: VT

DATE: 6-30-08

FIG. NO:

PM:AL

PROJ. NO: 22239472

2.13-3



**KOP 3 (West):** Simulated traveler view from intersection of SR-58 and Tracy Lane, looking northwest toward CESF site. This photo location is meant to represent “worst-case” traveler views from SR-58.

**SIMULATED VIEW OF CESF FROM KOP #3 (WEST)  
CARRIZO ENERGY SOLAR FARM (CESF)**

**URS**

NO SCALE

CREATED BY: VT

DATE: 6-30-08

FIG. NO:

PM:AL

PROJ. NO: 22239472

2.13-4



**KOP 3 (North):** Simulated traveler view from intersection of SR-58 and Tracy Lane, looking north up Tracy Lane (CESF site is on the west). This photo location is meant to represent “worst-case” traveler views from SR-58.

**SIMULATED VIEW OF CESF FROM KOP #3 (NORTH)  
CARRIZO ENERGY SOLAR FARM (CESF)**

**URS**

NO SCALE

CREATED BY: VT

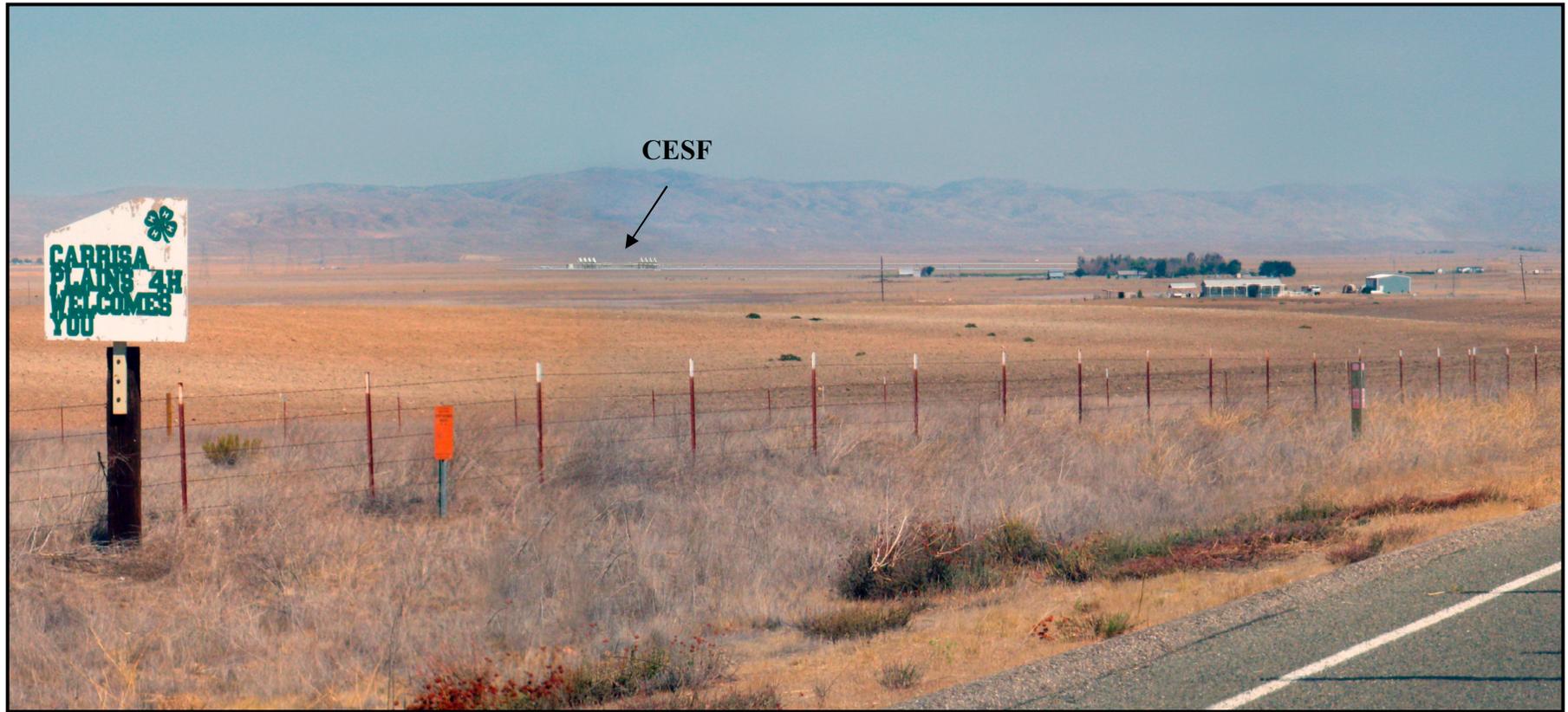
DATE: 06-30-08

FIG. NO:

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PROJ. NO: 22239472

2.13.5



**KOP 4:** Simulated view from the Hubbard Hill - Freeborn Mountain open space area looking northeast toward CESF site (approximately 3.5 miles southwest of CESF). This photo location is meant to represent “worst-case” views (e.g. elevated, unscreened, closest proximity views) for potential recreational users within the Hubbard Hill-Freeborn Mountain area.\*



\*This photo location also represents traveler views along SR-58 from an elevated location.

This photograph has been cropped to show a wide angle view with the above photograph’s area shown in yellow.

**SIMULATED VIEW OF CESF FROM KOP #4  
CARRIZO ENERGY SOLAR FARM (CESF)**

**URS**

NO SCALE

CREATED BY: VT DATE: 6-30-08

PM:AL PROJ. NO: 22239472

FIG. NO:  
2.13-6



**KOP 5:** Simulated traveler view from SR-58, looking east toward CESF site. This photo location is meant to represent “worst-case” traveler views from SR-58

**SIMULATED VIEW OF CESF FROM KOP #5  
CARRIZO ENERGY SOLAR FARM (CESF)**

**URS**

NO SCALE

CREATED BY: VT

DATE: 6-30-08

FIG. NO:

PM:AL PROJ. NO: 22239472

2.13-7

**2.14 WASTE MANAGEMENT**

This section presents a discussion of potential impacts from the generation, storage, and disposal of supplemental hazardous and non-hazardous wastes from the proposed CESF. Included in the discussion below are descriptions of the supplemental waste streams to be generated during construction and operation, descriptions of applicable waste disposal sites to be used by the facility, proposed waste mitigation methods to minimize impacts to the environment, and applicable LORS.

**2.14.1 Affected Environment**

This Supplement to the Project AFC includes proposed changes to the CESF and its ancillary systems. The Project includes the construction and operation of a solar power generating facility and its ancillary systems and will consist of approximately one hundred ninety-five CLFR solar concentrating lines, and associated steam drums, STGs, ACCs, and infrastructure, producing up to a nominal 177 MW net.

The Project will include limited onsite manufacturing in the north-central portion of the construction laydown area, located on Section 33, during the construction phase of the Project. The construction laydown area originally depicted on Figure 1.1-4 in the Project AFC, was rearranged to accommodate onsite manufacturing.

The Project will include the use of an emergency diesel generator in order to supply power for control and monitoring instrumentation as well as other essential services, including, but not limited to communications, control air, steam turbine lube oil and tuning gear, emergency lighting, transient 480V motor operated valve loads, and other miscellaneous loads. The generator and its associated fuel tank will be located within a weather enclosure in the power block.

All existing structures located within the Project site and laydown area in Sections 28 and 33 will be demolished as part of Project site preparation activities.

As described in more detail in Section 2.14.2, Environmental Consequences, the CESF will generate supplemental hazardous and non-hazardous wastes during the construction and operational phases of the Project.

**2.14.2 Environmental Consequences**

The analysis of impacts related to waste management from the CESF is based on significance criteria described in Section 5.14.2 of the Project AFC.

The following sections describe the supplemental wastes that are expected to be generated during construction and operation of the CESF, and how these wastes will be disposed.

**2.14.2.1 North/South Configuration**

The north/south configuration does not create additional construction or operation related impacts to waste management beyond those presented in Section 5.14.2 of the Project AFC.

### *2.14.2.2 Emergency Generator*

Small amounts of waste lubricating oils will be generated from the use of the emergency generator. Waste lubricating oil will be taken offsite for recycling or disposal by a permitted hazardous waste transporter and is not anticipated to impact recycling or disposal facility capacity.

### *2.14.2.3 Onsite Manufacturing*

The onsite manufacturing process involves a proprietary automated production cell that manufactures reflector frames. Trained employees will operate the automated production cell to manufacture reflectors that will comprise the CESF.

Wastes generated from the manufacturing process include discarded mirror glass and empty adhesive drums.

Waste welding fume extraction system bag house filters may contain zinc particulate. The bag house filters will have a self cleaning cycle resulting in wastes generated being deposited into non-permeable bag lined bins. Sheets of mirror glass may be broken during the manufacturing process and would be collected for disposal offsite. Similarly, empty polyurethane adhesive drums will be crushed and disposed of offsite. All waste materials generated will be disposed of in accordance with Section 5.14, Waste Management, of the Project AFC.

Waste generated during onsite manufacturing will be segregated, where practical, for recycling. Non-hazardous waste that can not be recycled will be placed in covered dumpsters and removed on a regular basis by a certified waste handling contractor for disposal at a Class III landfill. Hazardous waste generated during onsite manufacturing will be taken offsite for recycling or disposal by a permitted hazardous waste transporter to a permitted treatment, storage, and disposal facility or Class I landfill.

Hazardous and non-hazardous waste generated during onsite manufacturing is not expected to significantly impact available landfill capacity.

### *2.14.2.4 Demolition of Existing Structures*

Existing structures are associated with the King property on Section 28 and the Cavanaugh property on Section 33. Structures on Section 28 include a residence, barn, garage, storage shed, several cylindrical water storage tanks and silos, foundations, and smaller related agricultural, ranching, and farming buildings and structures. Structures on Section 33 include three residential structures, barns and sheds, several cylindrical water storage tanks and silos, and smaller related agricultural, ranching, and farming buildings and structures.

Prior to any demolition activities, hazardous materials, including asbestos-containing materials (ACMs) and lead-based paint (LBP), will be removed from the existing structures. While such materials are not known to exist, CESF is including their presence in the demolition planning. Removal of hazardous materials, demolition of existing structures, sorting of waste materials, and shipment of waste materials is anticipated to last approximately 15 working days and would take place at the beginning of site clearing and grading activities, during the first month of the 35-month Project schedule.

To the extent practicable, waste materials generated from the demolition would be separated into three categories: 1) hazardous materials (*e.g.*, ACM and LBP, 2) recyclable materials (*e.g.*, wood, concrete, brick, glass, and metal), and 3) mixed non-hazardous materials. An estimated 70 to 90 percent of the waste materials would be recyclable. Anticipated waste materials are presented in Table 2.14-1.

**Table 2.14-1  
Waste Materials To Be Generated from Demolition of Existing Structures**

Component	Cavanaugh Property Section 33 (lbs.) <sup>1,2,3,4</sup>	King Property Section 28 (lbs.) <sup>1,2,3,4</sup>	Lbs. per Truck <sup>5</sup>	Lbs. (adjusted) per Truck <sup>6</sup>	Number of Trucks
Wood	778,096	427,740	40,000	20,000	61
Roofing	226,064	139,160	40,000	20,000	19
Drywall	143,280	88,200	40,000	30,000	8
Concrete	298,104	310,760	40,000	35,000	18
Brick	52,536	32,340	40,000	35,000	3
Glass	7,960	4,925	40,000	40,000	1
Metals	307,564	121,260	40,000	25,000	18
Plastics	14,328	8,920	40,000	20,000	2
Other	124,308	73,180	40,000	20,000	10
Hazardous Materials	7,960	4,960	40,000	25,000	1
<b>Total</b>	<b>1,960,200</b>	<b>1,211,445</b>			<b>141</b>

Notes:

<sup>1</sup> For residential-type structures, assumed 115 lb/sf based on Table 5, from "Characterization of Building-Related construction and Demolition Debris in the United States," Franklin Associates, prepared for EPS, June 1998.

<sup>2</sup> For trailers and mobile homes, referenced "A Feasibility Study of Mobile Home Recycling", Manufactured Housing Institute. October, 2000.

<sup>3</sup> For silos, tanks, etc., debris was estimated based on the size of the structure; dimensional data and materials were used where available.

<sup>4</sup> Remaining features were calculated based on estimated volume of the debris field less estimated void space and the general distribution of materials within the debris field.

<sup>5</sup> A truck haul weight of 40,000 lbs. was assumed in consideration of SR-58.

<sup>6</sup> This value considers the density of the component and the amount of air (empty space) that would be shipped with each load.

Suitable disposal facilities for all three waste materials categories are located in both the Paso Robles area, approximately 50 miles west of the Project, and the Bakersfield area, approximately 70 miles east of the Project. Waste material to be recycled can be transported to either area. Waste material that cannot be recycled will be disposed in San Luis Obispo County and will be transported to the Class III landfills identified in Table 5.14-1, Waste Recycling/Disposal Facilities, of the Project AFC. In addition, construction and demolition debris can be recycled at a number of facilities, including North County Recycling, Paso Robles Recycling Facility, and Troesh Recycling.

Hazardous and non-hazardous waste generated during demolition of existing structures is not expected to significantly impact available landfill capacity.

## *2.14.2.5 Electrical Systems*

Modification to the electrical systems does not create additional construction or operation related impacts to waste management beyond those presented in Section 5.14.2 of the Project AFC.

## *2.14.2.6 Administration Building Height*

Decreasing the height of the administration building does not create additional construction or operation related impacts to waste management beyond those presented in Section 5.14.2 of the Project AFC.

## *2.14.2.7 Perimeter Fencing*

Decreasing the height of the perimeter fencing does not create additional construction or operation related impacts to waste management beyond those presented in Section 5.14.2 of the Project AFC.

## **2.14.3 Cumulative Impacts**

The Class I and Class III landfills and recycling facilities in the CESF site area have adequate recycling and disposal capacities for the CESF. Therefore, cumulative impacts from the Project site and other projects in the region are not expected to be significant.

## **2.14.4 Mitigation Measures**

Implementation of Mitigation Measures WM-1 through WM-7, as described in Section 5.14.4 of the Project AFC, provide waste management procedures for handling demolition, construction, and operation debris and hazardous wastes. A supplemental mitigation measure is described below.

WM-8 – Demolition Hazardous Building Materials Management Plan: This plan would be implemented if ACMs and LBP are confirmed to exist during demolition of existing structures. The plan would include the following:

Asbestos-Containing Materials Abatement and Management Plan. Prior to demolition work that would disturb identified ACMs, a licensed asbestos abatement removal contractor would remove the ACMs under the oversight of a California Certified Asbestos Consultant. Asbestos abatement would be conducted during demolition activities, consistent with appropriate regulations. All identified ACMs would be removed and appropriately disposed of by a state-certified asbestos contractor. The proposed Project would include notification of demolition activities to San Luis Obispo County Air Pollution Control District.

Lead-Based Paint Abatement and Management Plan. A LBP Abatement Plan would be prepared and implemented. Elements of the plan would include the following:

- Containment of all work areas to prohibit offsite migration of paint chip debris.
- Removal of all peeling and stratified LBP on building surfaces and on non-building surfaces to the degree necessary to properly complete demolition activities per the recommendations of the

survey. The demolition contractor would properly contain and dispose of intact LBP on all equipment to be cut and/or removed during demolition.

- Providing onsite air monitoring during all abatement activities and perimeter monitoring to ensure no contamination of work in adjacent areas.
- Cleanup and/or HEPA vacuum paint chips.
- Collection, segregation, and profiling waste for disposal determination.
- Post-demolition testing of soil to ensure that soil at the site is not contaminated by LBP.
- Providing for appropriate disposal of all waste.

These procedures and programs will minimize potential construction-related and operations-related impacts to a less than significant level. No further mitigation is proposed.

#### **2.14.5 LORS Compliance**

The LORS presented in Section 5.14.5 of the Project AFC are applicable to the revised Project and no additional LORS are recommended. Similarly, the agency contact information presented in Section 5.14.5 of the Project AFC is unchanged and the proposed Project modifications do not affect the required permits or Project schedule presented in Section 5.14.5 of the Project AFC.

#### **2.14.6 References**

No additional references beyond those presented in Section 5.14.6 of the Project AFC were used for this supplemental analysis.

**2.15 HAZARDOUS MATERIALS HANDLING**

This section presents a discussion of the potential impacts from storage and use of supplemental hazardous materials during construction and operation of the Project. Design features have been incorporated into the CESF regarding the use of hazardous materials, specifically storage procedures, in order to keep maximum potential impacts below defined thresholds of significance.

The discussion below includes the existing conditions; the environmental consequences associated with supplemental hazardous materials usage during construction and operation of the proposed CESF; cumulative impacts; mitigation measures; and applicable laws, ordinances, regulations, and standards (LORS).

**2.15.1 Affected Environment**

This Supplement to the Project AFC includes proposed changes to the CESF and its ancillary systems. The Project includes the construction and operation of a solar power generating facility and its ancillary systems and will consist of approximately one hundred ninety-five Compact Linear Fresnel Reflector (CLFR) solar concentrating lines, and associated steam drums, steam turbine generators (STGs), air cooled condensers (ACCs), and infrastructure, producing up to a nominal 177 megawatts (MW) net.

The Project will include limited onsite manufacturing in the north-central portion of the construction laydown area, located on Section 33, during the construction phase of the Project. The construction laydown area originally depicted on Figure 1.1-4 in the Project AFC was rearranged to accommodate onsite manufacturing.

The Project will include the use of an emergency diesel generator in order to supply power for control and monitoring instrumentation as well as other essential services including, but not limited to communications, control air, steam turbine lube oil and tuning gear, emergency lighting, transient 480V motor operated valve loads, and other miscellaneous loads. The generator and its associated fuel tank will be located within a weather enclosure in the power block.

All existing structures located within the Project site and laydown area in Sections 28 and 33 will be demolished as part of Project site preparation activities.

As described in more detail in Section 2.15.2, Environmental Consequences, the CESF will generate supplemental hazardous and non-hazardous wastes during the construction and operational phases of the Project.

**2.15.2 Environmental Consequences**

The following sections describe the supplemental hazardous materials that are expected to be used during the Project and the management methods for the use and storage of these materials.

### *2.15.2.1 North/South Configuration*

The north/south configuration does not create additional construction or operation related impacts to hazardous materials handling beyond those presented in Section 5.15.2 of the Project AFC.

### *2.15.2.2 Emergency Generator*

In the event there is a loss of power from the PG&E system, an approximate 1 MW emergency diesel generator will power the 4160V bus in order to supply power for control and monitoring instrumentation as well as other essential services. The generator and its associated fuel tank will be located within a weather enclosure in the power block.

While no specific equipment has been selected at this time, based on a typical engine for this application, approximately 700 gallons of diesel fuel will be stored in an aboveground storage tank (AST) with secondary containment. Additionally, approximately 20 gallons of lubricating oil will also be stored in the generator.

As described Section 5.15 of the Project AFC, a Hazardous Materials Business Plan (HMBP) which outlines hazardous materials handling, storage, spill and release response, and reporting procedures will be prepared prior to construction activities. Impacts associated with the use of hazardous materials during construction are anticipated to be less than significant as a result of the Applicant implementing procedures and mitigation measures as discussed in Section 5.15 of the Project AFC.

### *2.15.2.3 Onsite Manufacturing*

The onsite manufacturing process involves a proprietary automated production cell that manufactures reflector frames. Trained employees will operate the automated production cell to manufacture reflectors that will comprise the CESF.

Polyurethane adhesive is used to affix mirrors to the reflector frames. The adhesive was selected because it meets California VOC and HAP regulations for use in well ventilated buildings.

Small amounts of argon will be used and stored as part of the manufacturing process. The potential impact associated with the use of this compressed gas is not considered to be significant based on the following:

- A limited quantity of the gas will be stored at the facility.
- The gases will be stored in DOT-approved safety cylinders, secured to prevent upset and physical damage.
- The gases will be stored in multiple, standard-sized portable cylinders, in contrast to larger cylinders, generally limiting the quantity released from an individual cylinder failure.
- The use of compressed gases will be included in the HMBP which outlines hazardous materials handling, storage, spill and release response, and reporting procedures.

As described in the Project AFC, a HMBP will be prepared prior to construction activities. Impacts associated with the use of hazardous materials during construction are anticipated to be less than significant as a result of the Applicant implementing procedures and mitigation measures as discussed in Section 5.15 of the Project AFC.

#### ***2.15.2.4 Demolition of Existing Structures***

Existing structures are associated with the King property on Section 28 and the Cavanaugh property on Section 33. Structures on Section 28 include a residence, barn, garage, storage shed, several cylindrical water storage tanks and silos, foundations, and smaller related agricultural, ranching, and farming buildings and structures. Structures on Section 33 include three residential structures, barns and sheds, several cylindrical water storage tanks and silos, and smaller related agricultural, ranching, and farming buildings and structures.

Prior to any demolition activities, hazardous materials, including ACMs and LBP, will be removed from the existing structures. While such materials are not known to exist, CESF is including their presence in the demolition planning. Removal of hazardous materials, demolition of existing structures, sorting of waste materials, and shipment of waste materials is anticipated to last approximately 15 working days and would take place at the beginning of site clearing and grading activities, during the first month of the 35-month Project schedule.

To the extent practicable, waste materials generated from the demolition would be separated into three categories: 1) hazardous materials (*e.g.*, ACMs and LBP), 2) recyclable materials (*e.g.*, wood, concrete, brick, glass, and metal), and 3) mixed non-hazardous materials. An estimated 70 to 90 percent of the waste materials would be recyclable.

Impacts associated with the demolition of hazardous building materials are anticipated to be less than significant as a result of Mitigation Measure WM-8, Demolition Hazardous Building Materials Management Plan, as described in Section 2.14, Waste Management, of this Supplement to the Project AFC, and the mitigation measures discussed in the Project AFC.

#### ***2.15.2.5 Electrical Systems***

Modification to the electrical systems does not create additional construction or operation related impacts to hazardous materials handling beyond those presented in Section 5.15.2 of the Project AFC.

#### ***2.15.2.6 Administration Building Height***

Decreasing the height of the administration building does not create additional construction or operation related impacts to hazardous materials handling beyond those presented in Section 5.15.2 of the Project AFC.

#### ***2.15.2.7 Perimeter Fencing***

Decreasing the height of the perimeter fencing does not create additional construction or operation related impacts to hazardous materials handling beyond those presented in Section 5.15.2 of the Project AFC.

**2.15.3 Cumulative Impacts**

Based on land uses in the surrounding area and the limited amount and type of supplemental hazardous materials to be used as part of the CESF, no significant cumulative impacts due to hazardous materials handling are expected from future projects in combination with the CESF.

**2.15.4 Mitigation Measures**

Implementation of Mitigation Measures HAZMAT-1 through HAZMAT-8, as described in Section 5.15.4 of the Project AFC, provides management procedures for the handling of hazardous materials during construction and operation of the Project. These procedures and programs will minimize potential construction-related and operations-related impacts to a less than significant level. No further mitigation is proposed.

**2.15.5 LORS Compliance**

The LORS presented in Section 5.15.5 of the Project AFC are applicable to the revised Project and no additional LORS are recommended. Similarly, the agency contact information presented in Section 5.15.5 of the Project AFC is unchanged and the proposed Project modifications do not affect the required permits or Project schedule presented in Section 5.15.5 of the Project AFC.

**2.15.6 References**

No additional references beyond those presented in Section 5.15.6 of the Project AFC were used for this supplemental analysis.

**2.16 PUBLIC HEALTH AND SAFETY**

This section addresses potential health impacts from the proposed CESF Project changes identified in this Supplement to the Project AFC. Potential effects from individual changes to the Project design are analyzed separately in the following subsections.

**2.16.1 Affected Environment**

The affected environment is unchanged from that presented in Section 5.16.1 of the Project AFC.

**2.16.2 Environmental Consequences****2.16.2.1 North/South Configuration**

The north/south configuration does not create additional construction or operation related impacts to public health and safety beyond those presented in Section 5.16.2 of the Project AFC.

**2.16.2.2 Emergency Generator**

The potential human health risks posed by the Project's emissions were assessed using procedures consistent with the Office of Environmental Health Hazard Assessment (OEHHA) Air Toxics Hot Spots Program Risk Assessment Guidelines – The Air Toxics Hot Spots Program Guidance Manual for Preparation of HRA (OEHHA, 2003). The OEHHA guidelines were developed to provide risk assessment procedures, as required under the Air Toxics Hot Spots Information and Assessment Act of 1987, Assembly Bill 2588 (Health and Safety Code Sections 44360 *et seq.*). The Hot Spots law established a statewide program for inventorying emissions of toxic air contaminants from individual facilities, as well as requirements for risk assessment and public notification of potential health risks.

The health risk assessment (HRA) was conducted in three steps by: 1) determining the toxic air contaminants (TAC) emitted from the Project; 2) calculating the ground level concentrations for each TAC; and 3) characterizing the health risks, based on the TAC emission rates, "unit" ground-level concentrations, and toxicological data.

The only toxic air contaminant emitted from the operations of the Project is diesel particulate from the periodic testing of the emergency firewater pump and emergency generator. Emissions are calculated based on vendor guaranteed PM<sub>10</sub> emission rates. Diesel particulate only has long-term health risk thresholds, thus only cancer risk and the chronic non-cancer total hazard index (THI) have been calculated in this HRA. There is no acute non-cancer reference exposure level (REL) for diesel particulate, thus no acute non-cancer THI will be calculated.

To perform the HRA, the SCREEN3 model was run separately for the emergency firewater pump and the emergency generator with the full meteorology option that examines a range of stability classes and wind speeds. Building downwash was taken into account because of the proximity and size of the ACC to the locations of these engines. Both complex and simple terrain were analyzed in SCREEN3 for both of the emission sources. In the complex terrain option, the elevation for the receptor at each specified downwind distance is assigned the highest terrain elevation at that distance, regardless of direction. The SCREEN3

model was run with a unit emission rate (1 g/s) for each of the sources to calculate the  $\chi/Q$  “unit” ground-level 1-hour concentration in  $(\mu\text{g}/\text{m}^3)/(\text{g}/\text{s})$ . The 1-hour  $\chi/Q$  concentration was used to estimate a maximum annual concentration by multiplying it by 0.08, per the United States Environmental Protection Agency (U.S. EPA) Screening Procedures (EPA, 1992). This annual  $\chi/Q$  concentration was then multiplied by the annual diesel particulate emission rates in g/s for the firewater pump and emergency generator to estimate the maximum annual ground-level particulate concentration due to each engine. Diesel particulate only has health risk factors for cancer and chronic non-cancer risks; thus, only annual ground-level particulate concentrations need to be calculated.

Risk characterization was performed to integrate the health effects and public exposure information and provide quantitative estimates of health risks from Project emissions. Since only one TAC is emitted from stationary sources of the operational CESF, risk modeling was performed using an Excel spreadsheet to estimate cancer and non-cancer chronic health risks for the Project. The chronic non-cancer risk is calculated by dividing the maximum predicted annual ground level particulate concentration by the diesel particulate matter chronic REL from OEHHA. The cancer risk is calculated by estimating the inhalation dose (mg/kg-day) from the predicted annual ground-level particulate concentration, and then multiplying this value by the diesel particulate inhalation cancer potency factor from OEHHA. For the calculation of cancer risk, the duration of exposure to the Project’s emissions was assumed to be 24 hours per day, 365 days per year, for 70 years, at all receptors.

Detailed descriptions of the model input parameters and results of the HRA are presented later in this section and in Appendix H, Public Health and Safety Data.

The firewater pump and emergency generator will normally be operated only for short periods in testing mode to ensure their operability if needed. The  $\text{PM}_{10}$  emissions were calculated based on vendor guaranteed emission factors and are presented in Table 2.16-1. Detailed emissions calculations can be found in Appendix H, Public Health and Safety Data.

**Table 2.16-1**  
**Emission Rates from Normal Operation of the Diesel Firewater Pump and Emergency Generator**

Source	Chemical Species	Emission Factor (g/hp-hr)	Maximum Hourly Emission Rate	Annual Emission Rate
			(lb/hr)	(lb/yr)
Firewater Pump	Diesel particulate	0.14	0.05	1.39
Emergency Generator	Diesel	0.023	0.03	1.02

Calculation of potential health effects is consistent with the Project AFC, Section 5.16.2.5. Various state and local agencies use different significance criteria for cancer and non-cancer health effects. For carcinogenic health effects, an exposure to a new emissions source is normally considered potentially significant when the predicted incremental lifetime cancer risk of the source exceeds 10 in 1 million ( $10 \times 10^{-6}$ ) if T-BACT is applied or 1 in a million without T-BACT. For non-carcinogenic health effects (chronic or acute), an exposure that affects each target organ is considered potentially significant when

the THI exceeds a value of 1 if T-BACT is applied or 0.1 without T-BACT. The above thresholds are defined in SLOCAPCD Rule 219.

Based on the risk assessment methodology described above and in Section 5.16 of the Project AFC, the maximum incremental cancer risk resulting from the combined firewater pump and emergency generator particulate emissions was estimated to be 0.102 in 1 million. The maximum offsite cancer risk from the firewater pump alone was predicted to occur on an unpaved road at the base of a hill 135 meters away from the firewater pump just outside the northern CESF property line. The much lower predicted maximum risks calculated for other directions occur at substantially greater distances, because of the much greater distances from the engine to the other site boundaries.

The maximum offsite cancer risk from the emergency generator alone was predicted to occur 225 meters away from the emergency generator, which is also on the unpaved road adjacent to the northern boundary of the Project site. The much lower maximum values in all other directions occur at much greater downwind distances, because the emergency generator is nearest to the northern property boundary. Cancer risks were not calculated at any of the sensitive receptors, since the risk at the point of maximum impact (PMI) was well below the significance thresholds.

Table 2.16-2 presents the results of the HRA for the Project operations for the estimated maximum cancer risk and chronic non-cancer risk due to the combined emissions of the firewater pump and emergency generator. All model files, along with all air quality modeling files are provided electronically on a CD that is supplied separately with this supplement to the AFC.

**Table 2.16-2**  
**Estimated Cancer Risk and Chronic THI Due to Combined Emissions of Emergency Firewater Pump and Emergency Generator**

Cancer Risk at Point of Maximum Impact	Chronic Risk at Point of Maximum Impact
0.102 excess risk in 1 million	0.00033 THI

The estimated cancer risk at all locations is well below both significance criteria of 10 in 1 million for T-BACT or 1 in 1 million without T-BACT. Thus, it is concluded that the Project's emissions from the firewater pump and emergency generator will not pose a significant cancer risk to any populations potentially exposed to these emissions.

The maximum chronic THI resulting from the Project's emissions was estimated to be 0.00033. The locations of the maximum predicted chronic THI for the emergency generator and firewater pump are the same as the locations of the maximum cancer risk, since these risk calculations were both based on each engines' maximum annual PM<sub>10</sub> concentration. The chronic THI at any of the sensitive receptors was not calculated since the THI at the PMI was predicted to be well below the significance threshold.

As shown in Table 2.16-2, the estimated chronic THI is well below the significance criterion of 1 for T-BACT or 0.1 without T-BACT. Thus, it is concluded the Project's emissions from the firewater pump

and emergency generator will not pose a significant non-cancer chronic health risk to any populations potentially exposed to these emissions.

The firewater pump and emergency generator annual PM<sub>10</sub> emission rates were derived using vendor data assuming the anticipated testing schedule at a maximum load for a maximum number of annual operating hours requested in this application. Under actual operating conditions, the firewater pump and/or emergency generator may operate less, and the actual load may be less than 100 percent of capacity. Consequently, the emissions used for this HRA may be higher than those that actually occur. The Project AFC, Section 5.16.2.9, describes other sources of uncertainty in this public health impact assessment and the manner in which conservative assumptions have been used to ensure that health impacts are not underestimated.

Emissions of the criteria pollutants (NO<sub>2</sub>, CO, SO<sub>2</sub>, and PM<sub>10</sub>) from the Project from the firewater pump and emergency generator were modeled and an evaluation of their impacts on air quality is presented in Section 2.2, Air Quality. The National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) specify allowable levels of specific air pollutants that should not be exceeded in order to protect the public health. The results presented in Section 2.2, Air Quality, show that the Project will not cause or significantly contribute to exceedances of any CAAQS or NAAQS. Thus, no significant adverse health effects are anticipated to result from the Project's criteria pollutant emissions.

#### ***2.16.2.3 Onsite Manufacturing***

Onsite manufacturing does not create additional construction or operation related impacts to public health and safety beyond those presented in Section 5.16.2 of the Project AFC.

#### ***2.16.2.4 Demolition of Existing Structures***

Sections 1.2, Facility Location and Description; 3.3.1, Existing Site Conditions; and 3.4.13.1.12, Materials and Equipment Staging Area, of the Project AFC indicate existing abandoned farm structures and residences currently located on Sections 28 and 33 will be demolished prior to change of ownership. Per the March 12, 2008 Data Responses Workshop, the CEC considers the demolition to be part of the Project because the demolition would be required for the Project to be constructed (for additional information, refer to the Transcript of the March 12, 2008 Data Responses Workshop). Therefore, all existing structures located within the Project site and laydown area in Sections 28 and 33 will be demolished as part of site preparation activities.

All hazardous materials (*e.g.*, asbestos-containing materials and lead-based paint) must be removed before Project construction/demolition begins.

#### ***2.16.2.5 Electrical Systems***

Modification to the electrical system does not create additional construction or operation related impacts to public health and safety beyond those presented in Section 5.16.2 of the Project AFC.

**2.16.2.6 Administration Building Height**

Decreasing the height of the administration building does not create additional construction or operation related impacts to public health and safety beyond those presented in Section 5.16.2 of the Project AFC.

**2.16.2.7 Perimeter Fencing**

Decreasing the height of the perimeter fencing does not create additional construction or operation related impacts to public health and safety beyond those presented in Section 5.16.2 of the Project AFC.

**2.16.3 Cumulative Impacts**

No additional cumulative impacts to public health and safety been identified as part of this supplemental analysis.

**2.16.4 Mitigation Measures**

The criteria pollutant and TAC emissions from the Project's sources, the diesel firewater pump and emergency generator, will be mitigated by the use of BACT. A complete discussion of these measures is included in Section 2.2, Air Quality.

The HRA presented in previous subsections shows that the health effect impacts of the Project as proposed in this supplemental filing will be well below significance thresholds identified in Project AFC Section 5.16.2.6; therefore, no further mitigation of emissions from the Project is required to protect public health.

**2.16.5 LORS Compliance**

The LORS presented in Section 5.16.5 of the Project AFC are applicable to the revised Project and no additional LORS are recommended. Similarly, the agency contact information presented in Section 5.16.5 of the Project AFC is unchanged and the proposed Project modifications do not affect the required permits or Project schedule presented in Section 5.16.5 of the Project AFC.

**2.16.6 References**

No additional references beyond those presented in Section 5.16.6 of the Project AFC were used for this supplemental analysis.

**2.17 WORKER SAFETY**

This section addresses safety and health issues and describes or outlines systems and procedures that will be implemented to provide occupational safety and health protection for CESF workers, proposed worker safety mitigation methods to minimize impacts to CESF workers, and applicable LORS. All applicable elements of the Title 8 California Code of Regulations (CCR), General Industry Safety Orders (GISO), Construction Safety Orders (CSO), and Electrical Safety Orders (ESO), are addressed in the Project AFC or described below.

**2.17.1 Affected Environment**

The Supplement to the Project AFC includes proposed changes to the CESF and its ancillary systems. The Project includes the construction and operation of a solar power generating facility and its ancillary systems and will consist of approximately one hundred ninety-five CLFR solar concentrating lines, and associated steam drums, STGs, ACCs, and infrastructure, producing up to a nominal 177 MW net.

The Project will include limited onsite manufacturing in the north-central portion of the construction laydown area, located on Section 33, during the construction phase of the Project. The construction laydown area originally depicted on Figure 1.1-4 in the Project AFC was rearranged to accommodate onsite manufacturing.

All existing structures located within the Project site and laydown area in Sections 28 and 33 will be demolished as part of Project site preparation activities.

**2.17.2 Environmental Consequences**

Construction, operation, and maintenance activities may expose workers to the hazards identified in Table 5.17-1, Potential Worker Hazards During Facility Construction and Operation, of the Project AFC. Exposure to these hazards can be minimized through adherence to appropriate engineering design criteria and administrative controls, use of applicable personal protective equipment (PPE), and compliance with all applicable health and safety LORS. The programs, regulations, and preventive measures intended to control potential worker health and safety impacts associated with these hazards are described in the Project AFC and encompass a comprehensive health, safety, and fire prevention program and an accident/injury prevention program intended to ensure healthful and safe operations at the project site.

***2.17.2.1 North/South Configuration***

The north/south configuration does not create additional construction or operation related impacts to worker safety beyond those presented in Section 5.17.2 of the Project AFC.

***2.17.2.2 Emergency Generator***

The emergency generator does not create additional construction or operation related impacts to worker safety beyond those presented in Section 5.17.2 of the Project AFC.

### *2.17.2.3 Onsite Manufacturing*

The onsite manufacturing process involves a proprietary automated production cell that manufactures reflector frames in compliance with applicable health and safety laws, including OSHA requirements. Trained employees will operate the automated production cell to manufacture reflectors that will comprise the CESF.

Workers manually load reflector frame components onto a welding jig. The loaded jig shuttles into an electric robotic welding cell within a protective barrier (*i.e.*, flash fence and light curtain). Welding cell operations are controlled via computers outside the welding cell. No workers are within the welding cell during operations. The welding robots weld the various frame components together to form a completed reflector frame (of desired optical specification).

As the automated cell continues operations, a mirror handling robot simultaneously removes mirrors from their packaging and inspects them for any deficiencies. Mirrors that pass inspection are affixed in the proper position onto the reflector frame within the automated production cell. No human contact is required in mirror handling operations within the automated production cell.

Once the mirrors have been affixed to the reflector frame, the welding flash fence and light curtain opens and the completed reflector shuttles to the unload position. Workers guide joists to the completed reflector and an electric crane lifts the reflector and places it onto a trolley. For ease of handling, completed reflectors will be deployed directly into the solar field.

The Applicant's welding process is very specialized and designed to minimize the generation of fumes. Workers are neither required nor allowed within the welding cell while manufacturing takes place. A protective barrier surrounds the welding cell for safety purposes. In addition, fumes are extracted through a system of ducts and bag filters.

Polyurethane adhesive is used to affix mirrors to the reflector frames. The adhesive was selected because it meets California VOC and HAP regulations for use in well ventilated buildings.

All workers will complete appropriate Environmental Health and Safety training prior to working in the onsite manufacturing building. All workers will be required to wear designated PPE.

To protect the health and safety of workers during onsite manufacturing, the Applicant (or construction contractor) will ensure compliance with the Construction Health & Safety Program, and all federal, state, and local health standards that pertain to worker health and safety, as described in the Project AFC.

### *2.17.2.4 Demolition of Existing Structures*

All existing structures located within the Project site and laydown area in Sections 28 and 33 will be demolished as part of Project site preparation activities.

Prior to any demolition activities, hazardous materials, including ACMs and LBP, will be removed from the existing structures. While such materials are not known to exist, CESF is including their presence in the demolition planning. Removal of hazardous materials, demolition of existing structures, sorting of

waste materials, and shipment of waste materials is anticipated to last approximately 15 working days and would take place at the beginning of site clearing and grading activities, during the first month of the 35-month Project schedule.

To the extent practicable, waste materials generated from the demolition would be separated into three categories: 1) hazardous materials (*e.g.*, ACMs and LBP), 2) recyclable materials (*e.g.*, wood, concrete, brick, glass, and metal), and 3) mixed non-hazardous materials. An estimated 70 to 90 percent of the waste materials would be recyclable.

To protect the health and safety of workers during demolition activities, the Applicant (or construction contractor) will ensure compliance with the Construction Health & Safety Program, and all federal, state, and local health standards that pertain to worker health and safety, as described in the Project AFC.

#### ***2.17.2.5 Electrical Systems***

Modification to the electrical systems does not create additional construction or operation related impacts to worker safety beyond those presented in Section 5.17.2 of the Project AFC.

#### ***2.17.2.6 Administration Building Height***

Decreasing the height of the administration building does not create additional construction or operation related impacts to worker safety beyond those presented in Section 5.17.2 of the Project AFC.

#### ***2.17.2.7 Perimeter Fencing***

Decreasing the height of the perimeter fencing does not create additional construction or operation related impacts to worker safety beyond those presented in Section 5.17.2 of the Project AFC.

### **2.17.3 Cumulative Impacts**

As the various projects in the cumulative impact evaluation will be responsible for complying individually with applicable worker safety requirements, no cumulative impacts on worker safety are expected as a result of the CESF.

### **2.17.4 Mitigation Measures**

Environmental consequences related to worker safety are not foreseen at this time; therefore, additional measures beyond those proposed below in the Project AFC are not considered necessary.

The Health and Safety Program described in detail in the Project AFC would also incorporate the following:

- The Asbestos Standard for the Construction Industry (29 CFR 1926.1101; 8 CCR 1529), which specifies how workers and the public are to be protected during removal, provides medical surveillance requirements for workers, provides detailed requirements for how asbestos is to be removed, and defines training requirements for abatement personnel.

- Interim Final Rule found in 29 CFR Part 1926.62, which covers demolition work where employees may be exposed to lead during activities such as demolition and removal. The OSHA-specified method of compliance includes respiratory protection, protective clothing, housekeeping, hygiene facilities, and medical surveillance and training.

No significant unavoidable adverse impacts to worker safety are anticipated from the proposed Project.

## **2.17.5 LORS Compliance**

The LORS presented in Section 5.17.5 of the Project AFC are applicable to the revised Project and no additional LORS are recommended. Similarly, the agency contact information presented in Section 5.17.5 of the Project AFC is unchanged and the proposed Project modifications do not affect the required permits or Project schedule presented in Section 5.17.5 of the Project AFC.

## **2.17.6 References**

No additional references beyond those presented in Section 5.17.6 of the Project AFC were used for this supplemental analysis.

## 2.18 CUMULATIVE IMPACTS

This Supplement to the CESF AFC includes proposed changes to the CESF and its ancillary systems, which were originally described in Section 3.0 of the Project AFC. This Supplement to the Project AFC, as described in Section 1.0, would not involve substantial changes to the findings and conclusions in Section 5.18, Cumulative Impacts, of the Project AFC.

### 2.18.1 Affected Environment

The Project includes the construction and operation of a solar power generating facility and its ancillary systems and will consist of approximately one hundred ninety-five CLFR solar concentrating lines, and associated steam drums, STGs, ACCs, and infrastructure, producing up to a nominal 177 MW net.

Projects that will potentially contribute to cumulative impacts are those located in the same general geographic area of influence as the CESF Project. For this cumulative assessment, the area of influence is defined as the area within a 5-mile radius of the solar power plant. Projects or proposed projects of potential regional significance are also considered in the cumulative analysis.

As part of this supplemental filing, San Luis Obispo County provided a list of all permit applications filed since the original list documented in Section 5.18, Cumulative Impacts, Table 5.18-1, Potential Cumulative Projects Considered, of the Project AFC (original results dated July 17, 2007). San Luis Obispo County provided a list of permits with an application date of July 17, 2007 to the current date (June 27, 2007) within five miles of the CESF Project site that includes the following parcels: 072-051-026, 082-211-050, and 082-291-078. Table 2.18-1 lists each permit application submitted to San Luis Obispo County since July 17, 2007 and outlines specific project information including parcel number, permit/case number, site address, proposed project, and application date.

### 2.18.2 Environmental Consequences

Since July 17, 2007, three projects with permits or permit applications have been identified within a 5-mile radius of the Project area (see Table 2.18-1 and Figure 2.18-1); however no projects fall within the CESF Project site or within the construction laydown area. The proposed projects that are considered as part of this analysis are presented in the table below.

**Table 2.18-1  
Additional Potential Cumulative Projects Considered**

#	Parcel #	Permit/Case	Site Address	Description of Proposed Development	Application Date
1	072-051-026	PMT2007-02192	UKN	Single-Family Dwelling	3/10/2008
2	082-291-078	PMT2007-00690	13765 Georgia Road California Valley	Single-Family Dwelling	9/18/2007
3	082-211-050	PMT2007-00689	13750 Grant Road California Valley	Single-Family Dwelling	2007

### ***2.18.2.1 North/South Configuration***

The north/south configuration does not affect the cumulative impact analysis presented in Section 5.18.2 of the Project AFC.

### ***2.18.2.2 Emergency Generator***

The emergency generator does not affect the cumulative impact analysis presented in Section 5.18.2 of the Project AFC.

### ***2.18.2.3 Onsite Manufacturing***

Because the Project will be incorporating the addition of onsite manufacturing, there will be less construction vehicle trips made on major roads to and from the Project site. This will help to minimize potential impacts to local traffic, thereby reducing any traffic-related cumulative impacts to the surrounding area.

### ***2.18.2.4 Demolition of Existing Structures***

Demolition of existing structures does not affect the cumulative impacts analysis presented in Section 5.18.2 of the Project AFC.

### ***2.18.2.5 Electrical Systems***

Due to the results of the Carrizo Plain Interconnection System Impact Study Report, it is unknown whether reconductoring of the 230 kV Morro Bay-Midway transmission line would be required in the future as part of this Project. If reconductoring is required, the Project may require the completion of additional environmental analysis (e.g., cultural resources or biological surveys) once an APE is determined.

### ***2.18.2.6 Administration Building Height***

Decreasing the height of the administration building does not affect the cumulative impacts analysis presented in Section 5.18.2 of the Project AFC.

### ***2.18.2.7 Perimeter Fencing***

Decreasing the height of the perimeter fencing does not affect the cumulative impacts analysis presented in Section 5.18.2 of the Project AFC.

## **2.18.3 Cumulative Impacts**

As noted in the Project AFC, Section 5.18, Cumulative Impacts, and after analyzing the three additional projects listed in Table 2.18-1, it is expected that the Project will not cause significant cumulative impacts to environmental resource areas, including but not limited to, air quality, land use, cultural resources, water resources, or traffic during the construction or operation phases. As depicted in Table 2.18-1, all the

existing and proposed projects identified as part of this supplemental cumulative impacts analysis can be characterized primarily as residential development (i.e., new single-family dwellings).

Of these projects, the closest permitted project is located approximately 0.7-mile north of the CESF Project site and includes the addition of a single family dwelling. The remaining two permitted projects within a 5.0 mile radius of the Project are also single-family dwellings. No significant cumulative impacts are anticipated as a result of the construction, operation, maintenance, or long term presence of the CESF.

**2.18.4 Mitigation Measures**

No additional mitigation measures are recommended based on the Project modifications.

**2.18.5 LORS Compliance**

The information presented in Section 5.18.5 of the Project AFC is applicable to the revised Project and no additional LORS are recommended. Similarly, the proposed Project modifications do not affect the information regarding permits presented in Section 5.18.5 of the Project AFC.

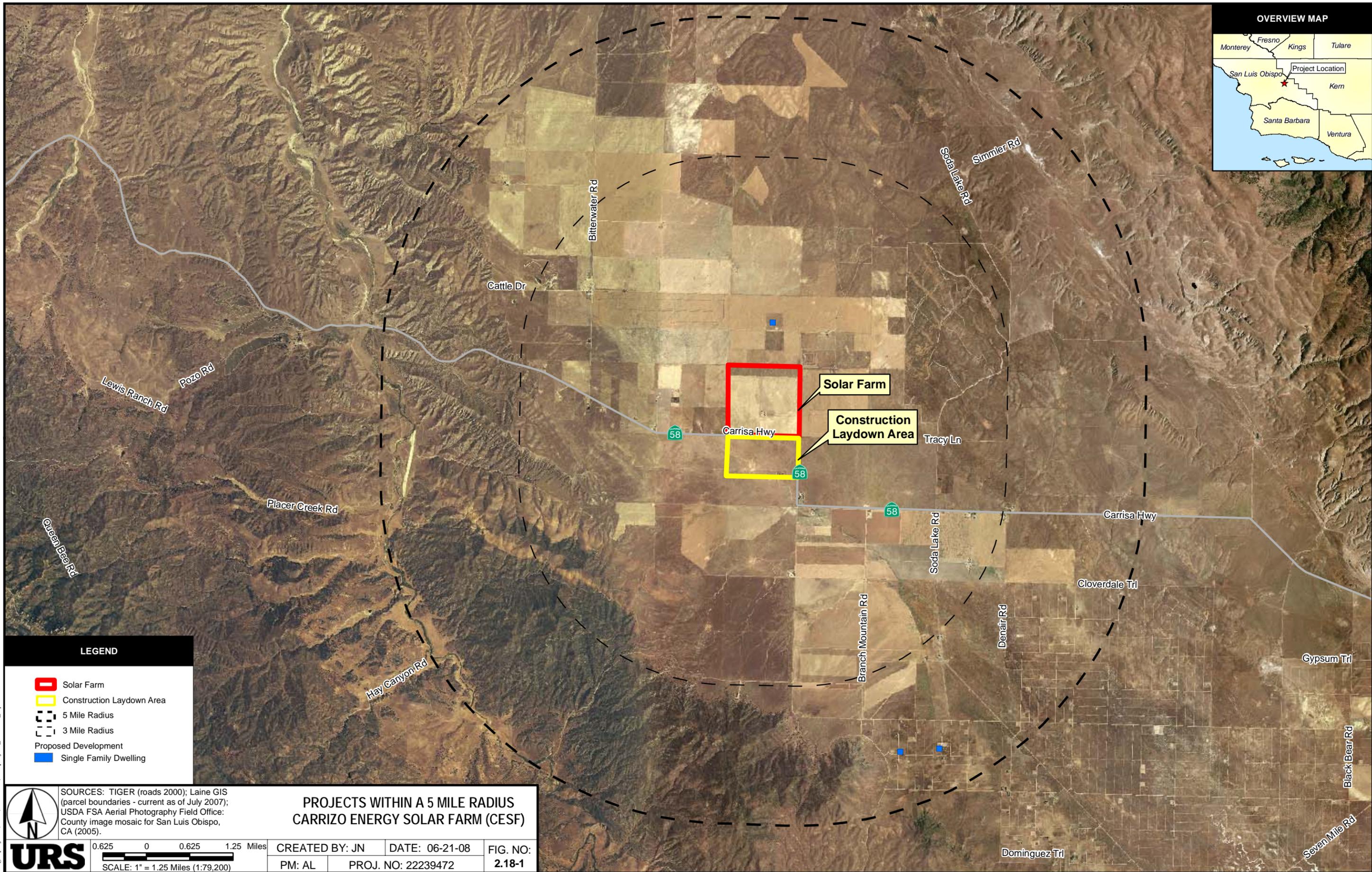
San Luis Obispo County was contacted to request an updated list of all permit applications filed within 5 miles of the Project area (see Table 2.18-2).

**Table 2.18-2  
Agency Contact List**

	<b>Agency</b>	<b>Contact</b>	<b>Address</b>	<b>Telephone</b>
1	San Luis Obispo County	John McKenzie	Department of Planning & Building 976 Osos Street, Room 300, San Luis Obispo, CA 93408	(805) 781-5452

**2.18.6 References**

John McKenzie, of the San Luis Obispo County Planning and Building, was contacted on March 17, June 18, and June 25, 2008 regarding a list of permit applications submitted to the County between June 2007 and June 25, 2008. Mr. McKenzie supplied this list to URS Corporation for the purposes of this cumulative impact analysis.



**LEGEND**

- Solar Farm
- Construction Laydown Area
- 5 Mile Radius
- 3 Mile Radius
- Proposed Development
- Single Family Dwelling

**URS**

0.625 0 0.625 1.25 Miles

SCALE: 1" = 1.25 Miles (1:79,200)

**PROJECTS WITHIN A 5 MILE RADIUS  
CARRIZO ENERGY SOLAR FARM (CESF)**

SOURCES: TIGER (roads 2000); Laine GIS (parcel boundaries - current as of July 2007); USDA FSA Aerial Photography Field Office; County image mosaic for San Luis Obispo, CA (2005).

CREATED BY: JN	DATE: 06-21-08	FIG. NO: 2.18-1
PM: AL	PROJ. NO: 22239472	

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