DOE/EA–1840

FINAL ENVIRONMENTAL ASSESSMENT

Volume II

FOR
DEPARTMENT OF ENERGY LOAN GUARANTEE TO
HIGH PLAINS II, LLC FOR THE
CALIFORNIA VALLEY SOLAR RANCH PROJECT
IN SAN LUIS OBISPO COUNTY AND KERN COUNTY,
CALIFORNIA

U.S. Department of Energy
Loan Guarantee Program Office
Washington, D.C. 20585

August 2011

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A PG&E Morro Bay-Midway Reconductoring Project Site Plans

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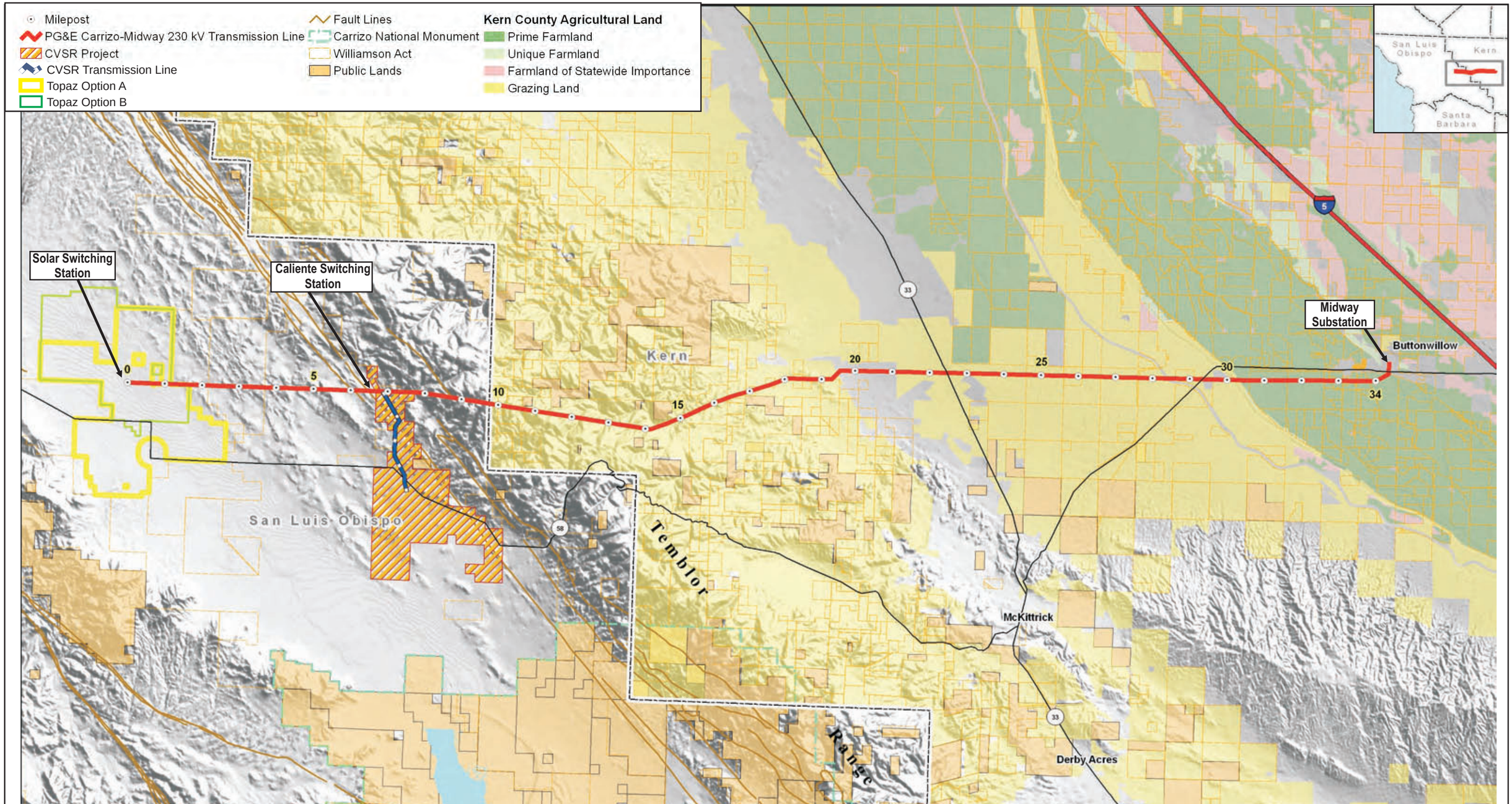
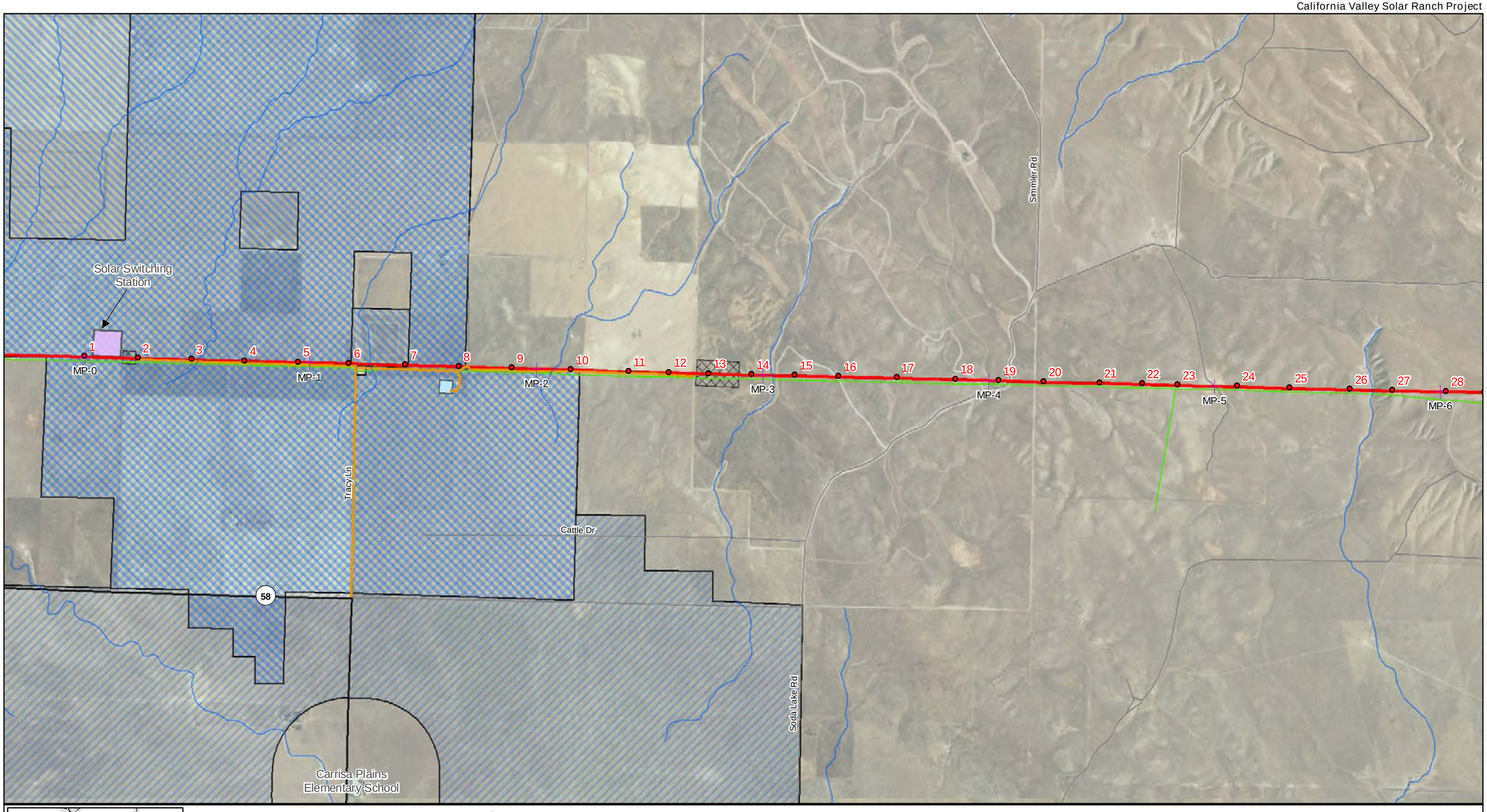


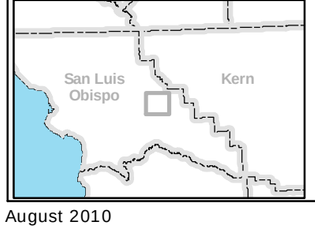
Aspen Environmental Group

0 1.25 2.5 5
Scale in Miles

N

Figure Ap.4-1
PG&E Reconductoring Project





Aspen Environmental Group

1 inch = 2,135 feet

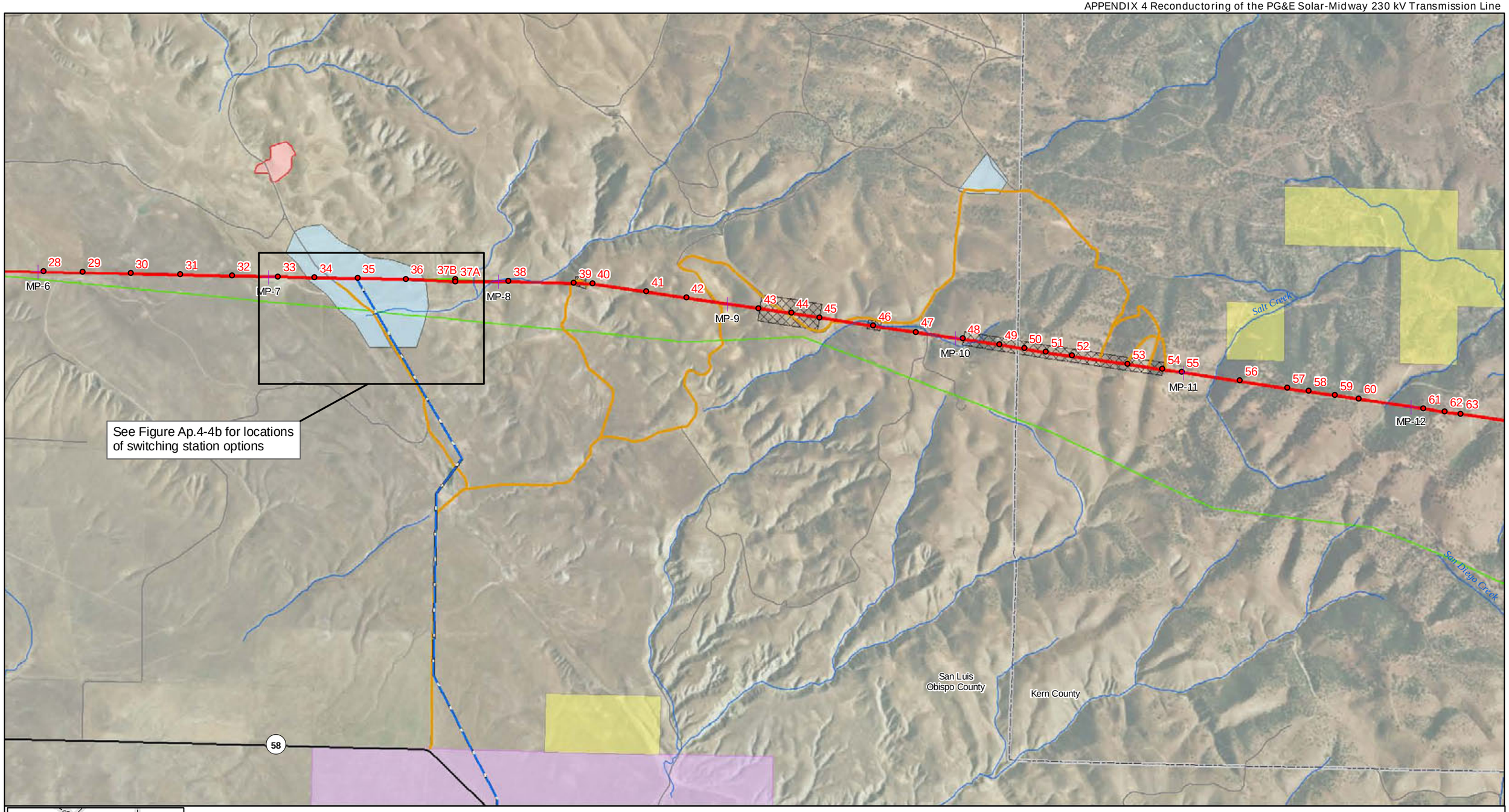
0 0.25 0.5 1 Miles

- Mileposts
- Existing Transmission Towers
- Water
- Access Roads
- Roads
- Existing Morro Bay-Midway Transmission Line
- Other Existing PG&E Transmission Lines
- Pull and Tension Sites
- Landing Zone
- Topaz Study Boundary Alt.A
- Topaz Study Boundary Alt.B

Source: PG&E, 2010.

Figure Ap.4-2a

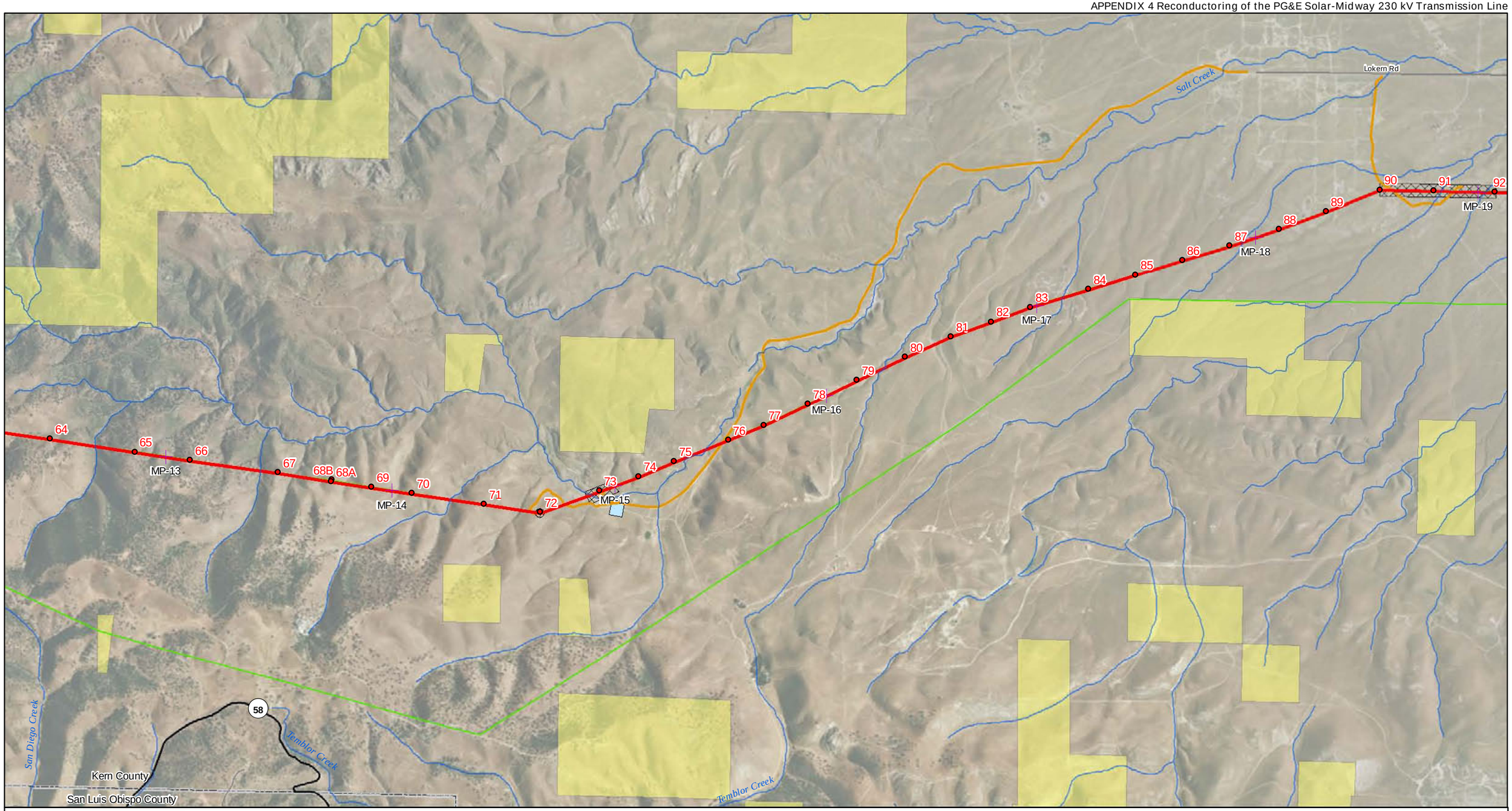
Reconductoring of Solar-Midway 230 kV Transmission Line



Source: PG&E, 2010.

Figure Ap.4-2b

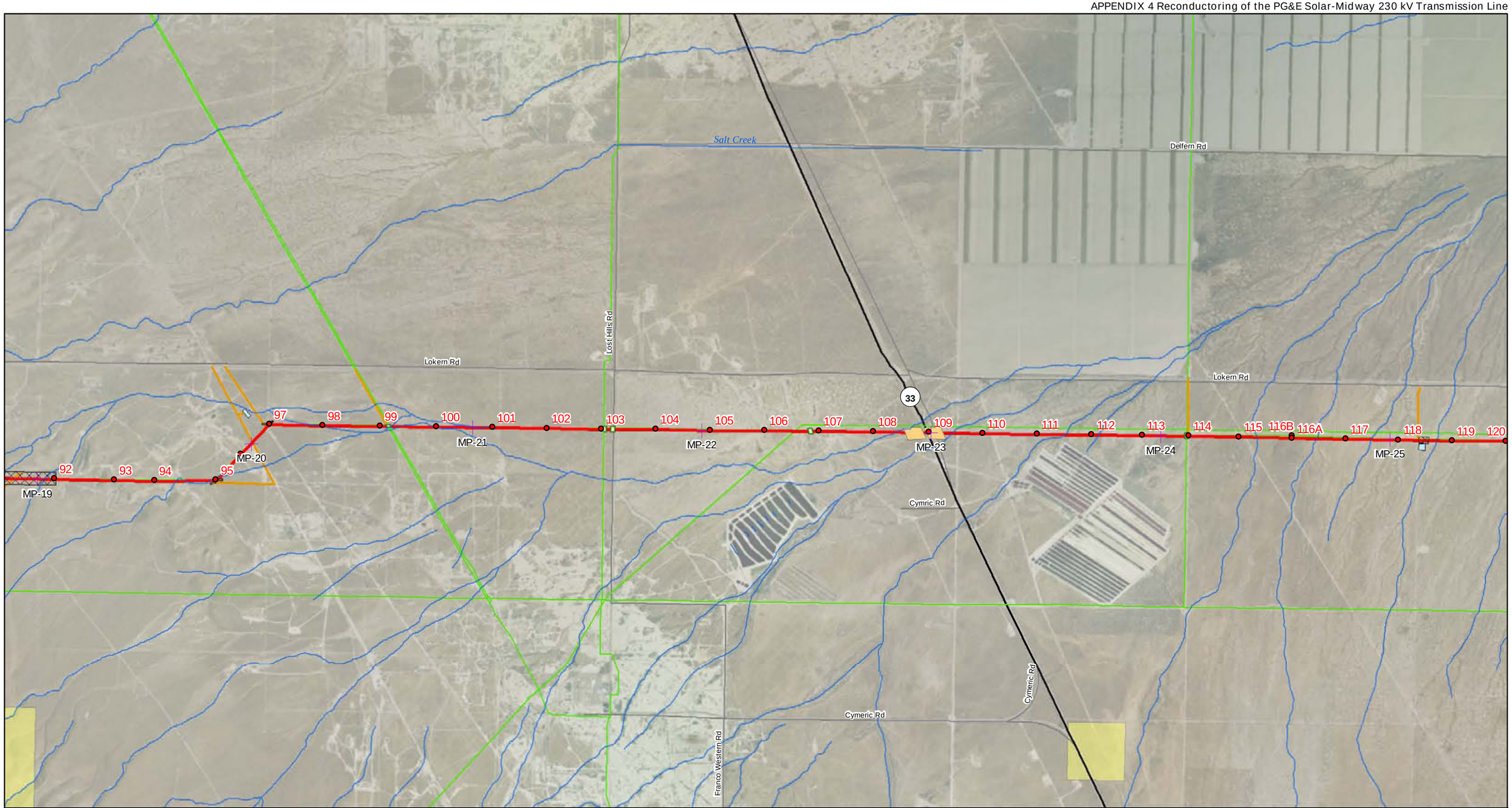
Reconductoring of Solar-Midway 230 kV Transmission Line



Source: PG&E, 2010.

Figure Ap.4-2c

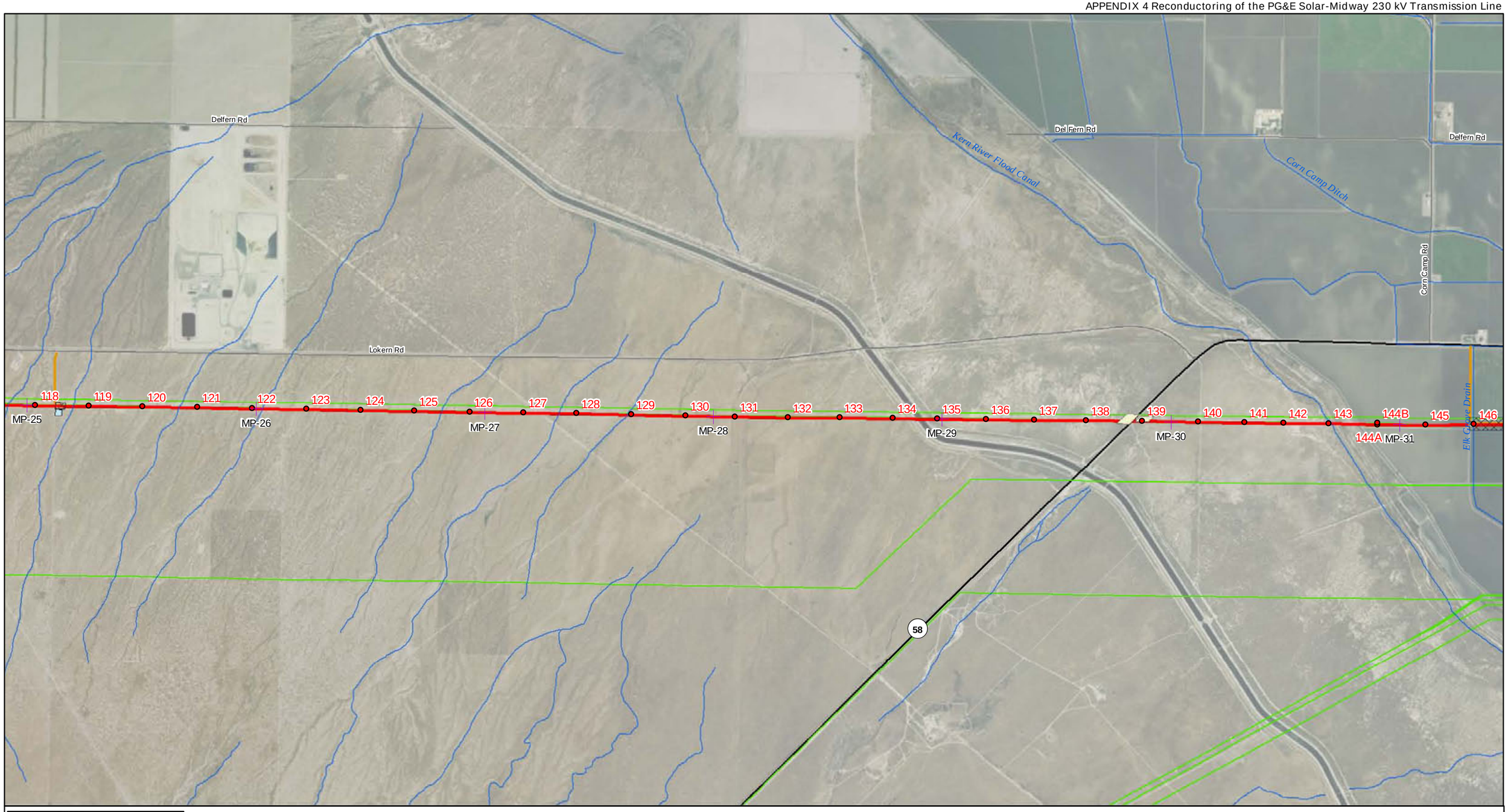
Reconductoring of Solar-Midway 230 kV Transmission Line

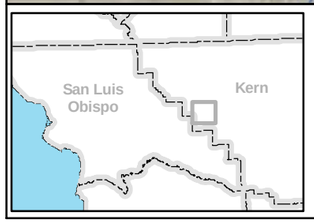


Source: PG&E, 2010.

Figure Ap.4-2d

Reconductoring of Solar-Midway 230 kV Transmission Line





Aspen Environmental Group

1 inch = 2,110 feet

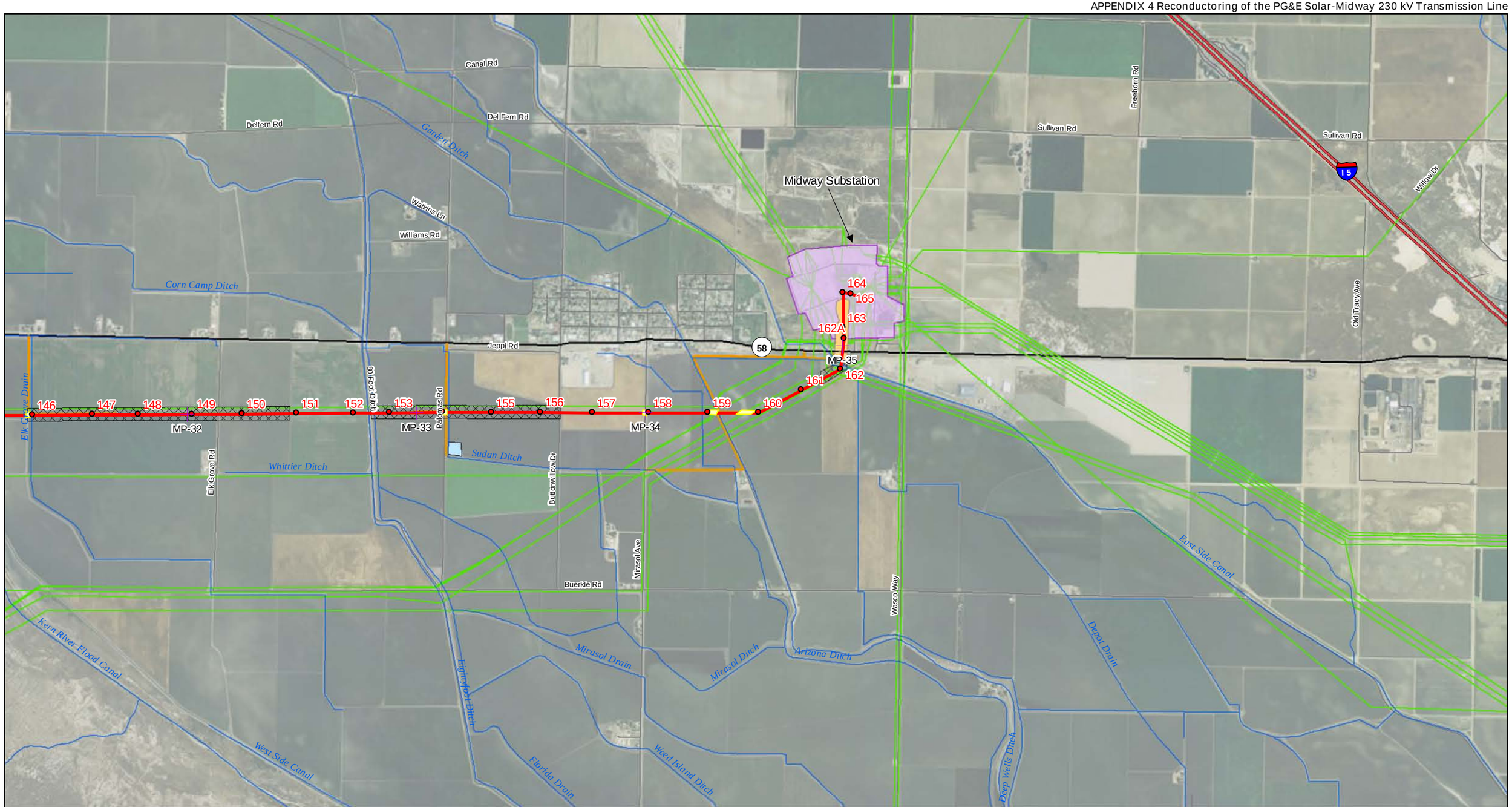
0 0.25 0.5 1 Miles

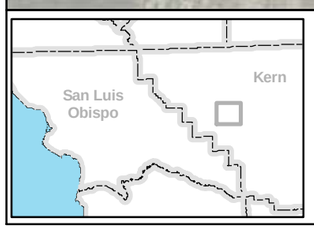
- Mileposts
- Existing Transmission Towers
- Water
- Access Roads
- Roads
- Existing Morro Bay-Midway Transmission Line
- Other Existing PG&E Transmission Lines
- Pull and Tension Sites
- Landing Zone
- Road Crossing Work Area

Source: PG&E, 2010.

Figure Ap.4-2e

Reconductoring of Solar-Midway 230 kV Transmission Line





Aspen Environmental Group

1 inch = 2,110 feet

0 0.25 0.5 1 Miles

- Mileposts
- Existing Transmission Towers
- Water
- Existing Morro Bay-Midway Transmission Line
- Other Existing Transmission Lines
- Roads
- Access Roads
- Distribution Line Crossing
- Pull and Tension Sites
- Landing Zone
- Road Crossing Work Area

Source: PG&E, 2010.

Figure Ap.4-2f

Reconductoring of Solar-Midway 230 kV Transmission Line

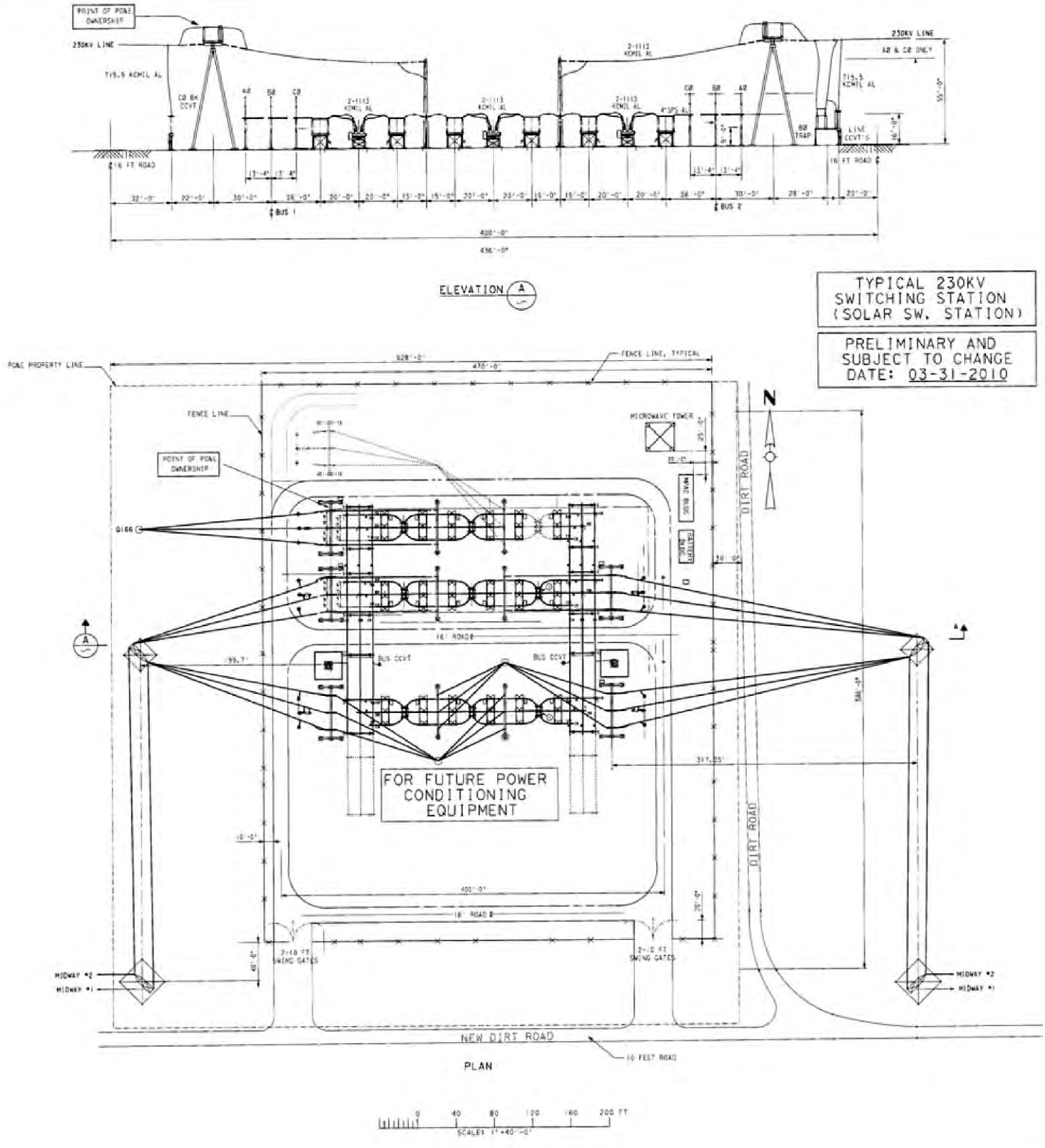
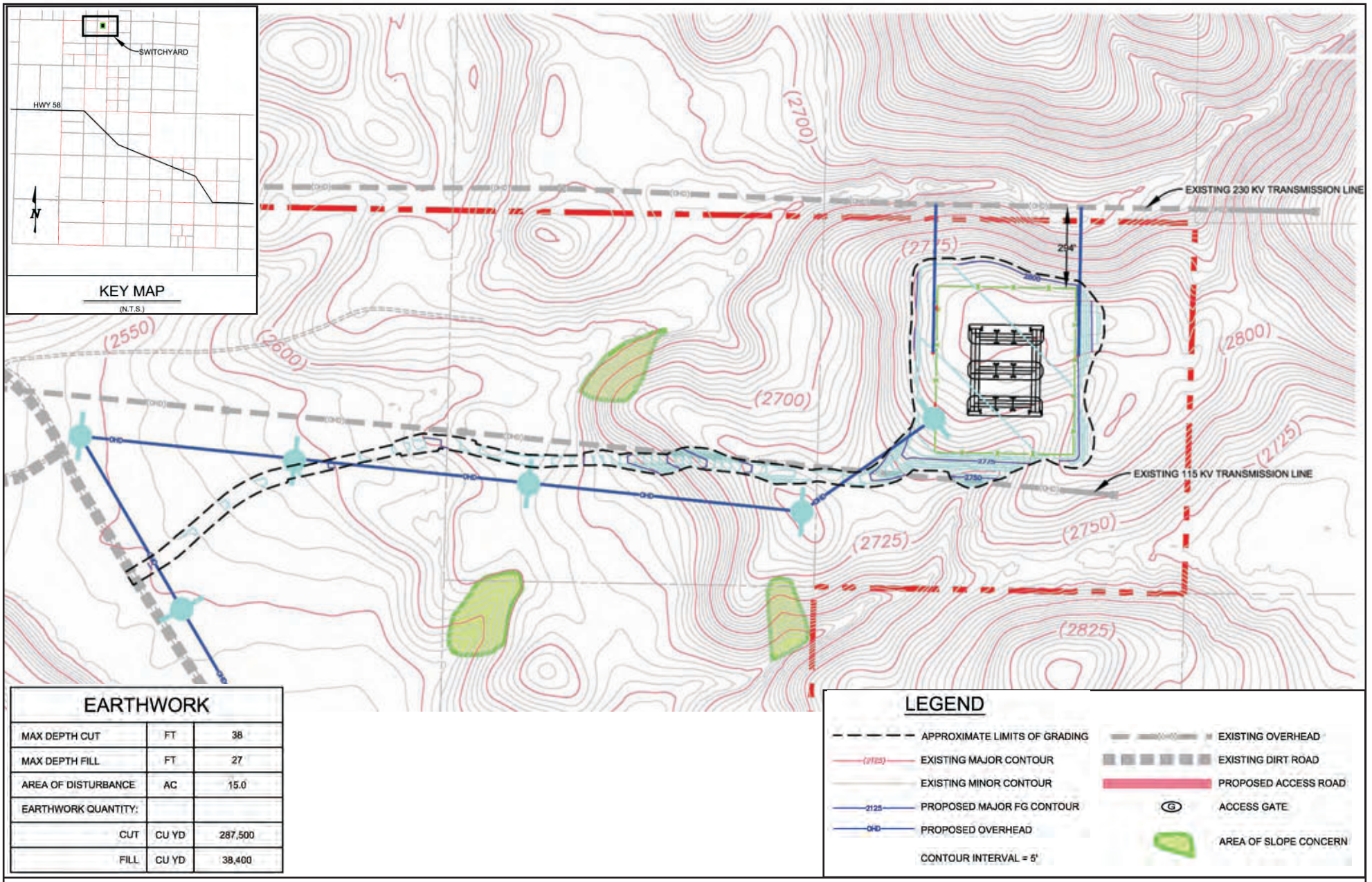


Figure Ap.4-3
Solar Switching Station Preliminary Design

Source: PG&E, 2010.



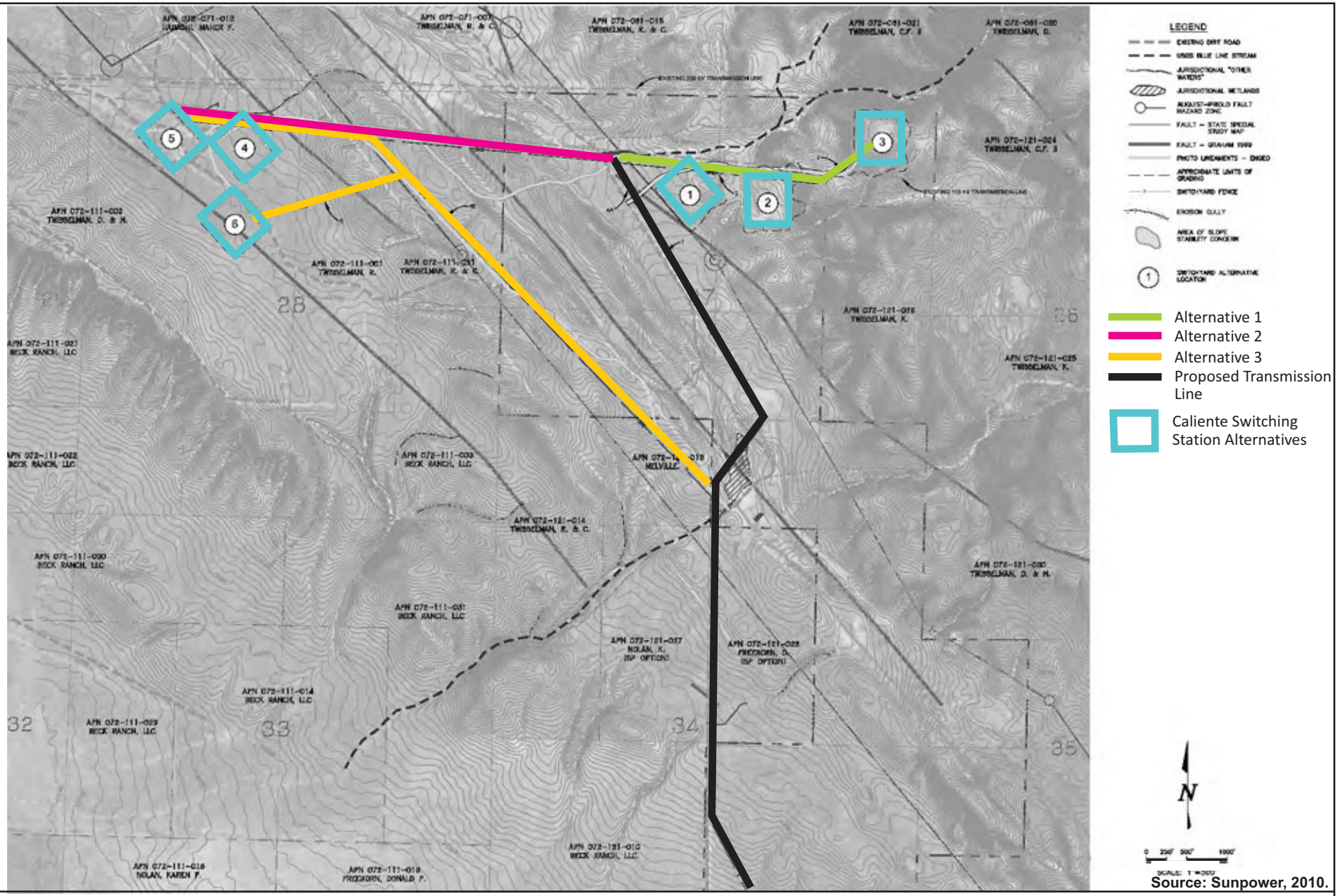
Aspen Environmental Group

Source: SunPower 2010a.

N

0 200 400 800
Scale in Feet

Figure Ap.4-4a
Proposed Caliente Switching Station



Source: Sunpower, 2010.

Aspen Environmental Group

Source: SunPower 2010a.

Figure Ap.4-4b

Caliente Switching Station Alternatives

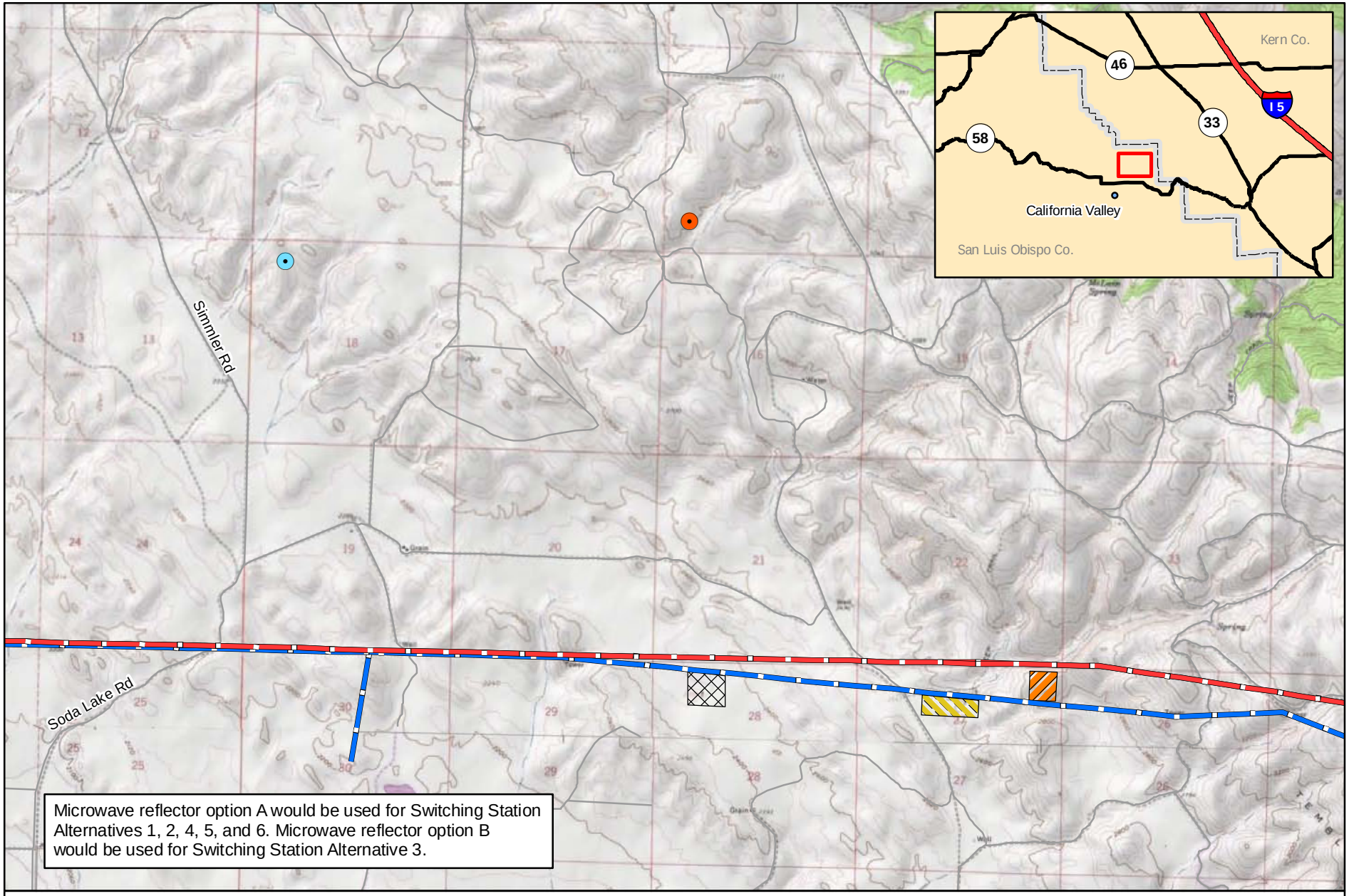
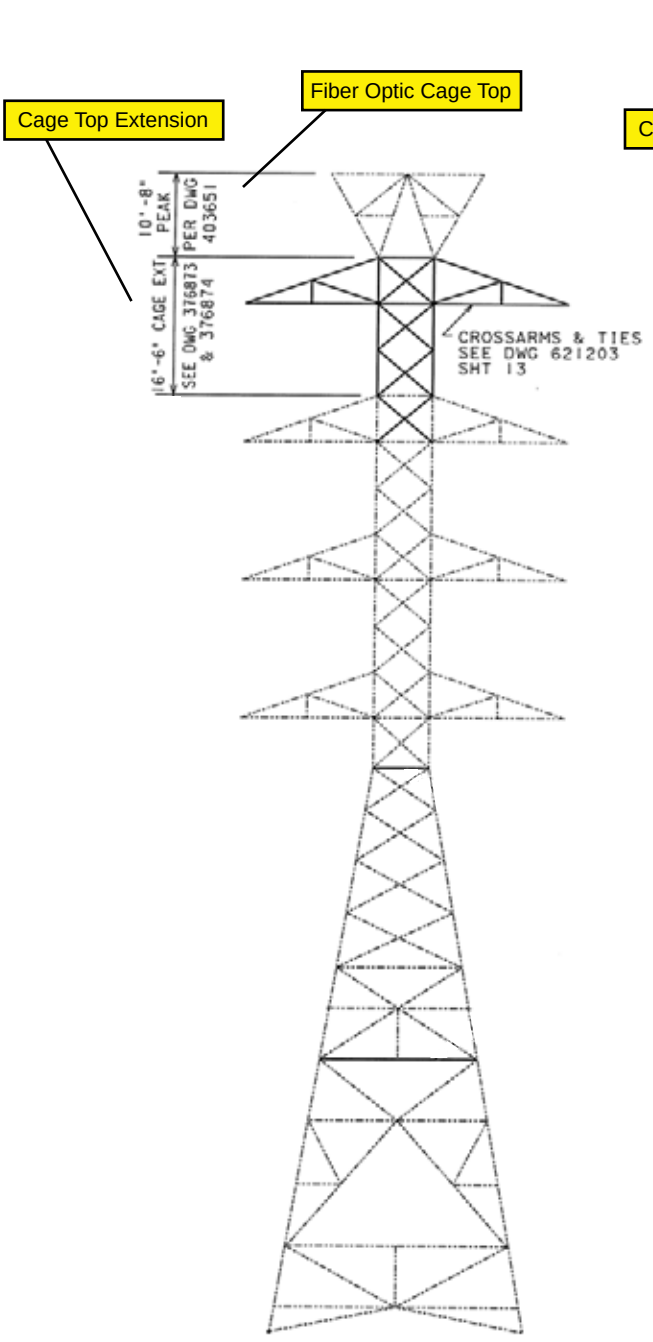
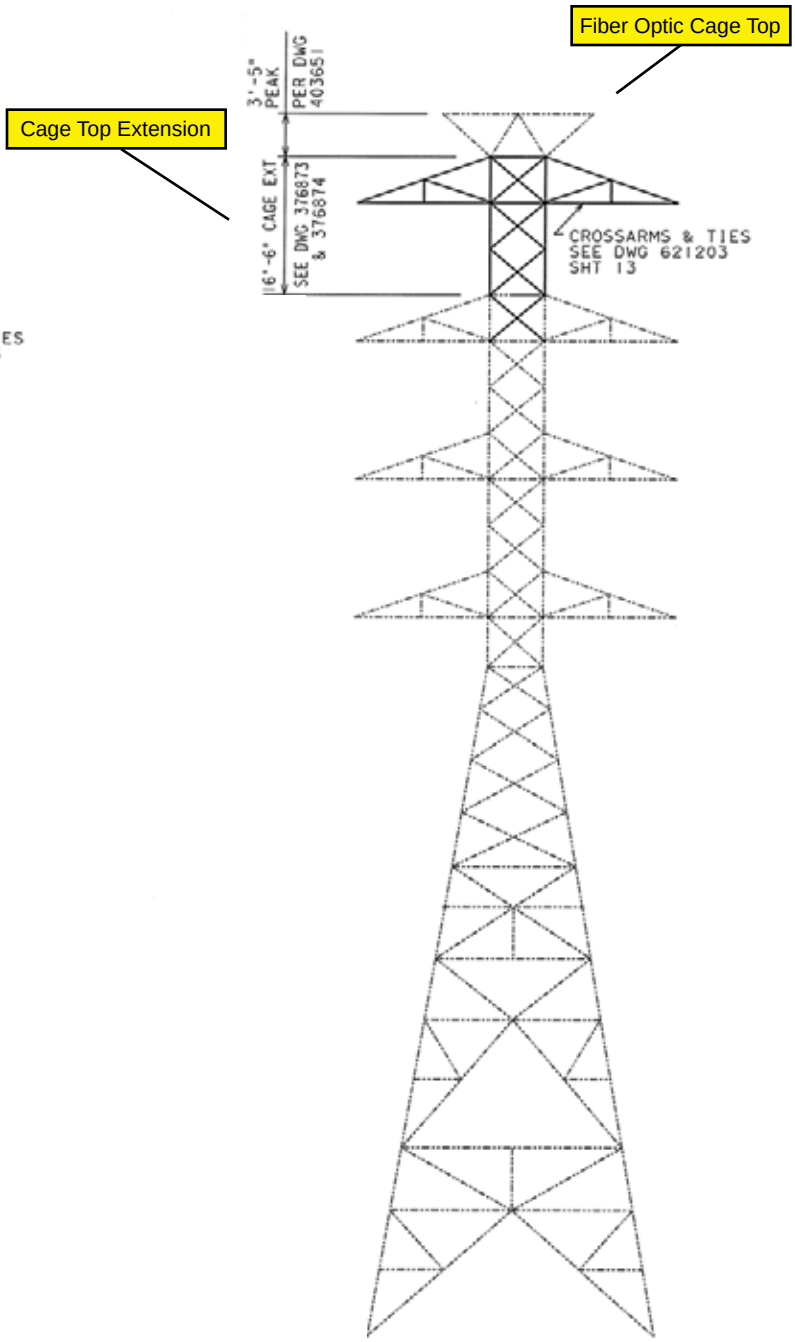


Figure Ap.4-4c

Microwave Reflector Location Options



Example Dead-End Structure



Example Lattice Tower

Source: PG&E, 2010.

Figure Ap.4-5

Typical Cage-Top and Fiber Optic Extensions

B Project Design Features

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B Project Design Features

The following project design features are incorporated into the California Valley Solar Ranch Project (CVSR). High Plains Ranch II, LLC (the Applicant) and Pacific Gas and Electric (PG&E) have committed to these design features to minimize or avoid environmental impacts if the CVSR Project is carried forward.

LAND USE AND VISUAL RESOURCES – CALIFORNIA VALLEY SOLAR RANCH SITE

CVSR LV-1. Preserve natural landscape and use landscaping to reduce visual intrusiveness. Specific design features intended to reduce visual intrusiveness including Preservation of adjacent lands for agricultural and conservation purposes, along the north side of Highway 58 (SR-58), back-dropped by the Temblor Range, Setback of 255 feet from SR-58 to nearest points on arrays, and 1,037 feet to substation structure; Landscaping, entrance treatments, fencing plan, and other features to provide an aesthetic treatment; and use of minimum necessary nighttime lighting for security purposes, designed to eliminate glare or spillover to areas outside of the project site. The applicant shall be responsible for operation and maintenance of San Luis Obispo County road frontage for the CVSR site, landscaping, fencing, illumination, and other amenities in a viable condition and on a continuing basis for the life of the CVSR or until specifically accepted for maintenance by a public agency.

On-site landscaping, in accordance with the approved Landscaping Plan, shall be installed or bonded for before final building inspection/establishment of the use. If bonded for, on-site landscaping shall be installed within 60 days after final building inspection. If installed or bonded for, the on-site landscaping shall thereafter be maintained in a viable condition until the project is decommissioned. If on-site landscaping is for screening, such landscape must be maintained to provide the required screening until the CVSR Project is decommissioned. All proposed landscaping shall be compatible with surrounding native vegetation and shall consist of using at least 80 percent native species.

CVSR LV-2. Maintain setback from public roads. Along SR-58, other than provided for in these Project Design Features, and the approved permit, no aboveground facilities other than approved roads, fencing, gates, utility poles, and signage shall be within 500 feet of the edge of the highway; except where setbacks on approved project plans are greater than 500 feet, the greater setback shall apply. This shall be shown on plans prior to issuance of construction permits and installed prior to final inspection.

CVSR LV-3. Provide off-site screening for residences. The Applicant shall work with the San Luis Obispo (SLO) County to develop a visual screening program that will fund the one-time planting of trees or shrubs, construction of screening fencing, or other mutually acceptable provisions that will screen views of the project from occupied residences (as of the date of SLO County approval of the project) that are within 1 mile of the boundary of the Solar Generation Facility site or within the area bounded by SR-58, Soda Lake Road, and Seven Mile Road, whichever is greater. The horizontal extent of screening shall be determined on a property-by-property basis, but to avoid the introduction of vertical elements in new locations, will be as close to the structure as practical (e.g., outer edge of defined front or back yards,

etc.). The height of screening shall be sufficient to obstruct the view of the Solar Generation Facility as seen from two corners of the residential structure or another agreed upon point on the residential property that is within an identifiable outdoor activity area (e.g., edge of landscaped area or permanent outbuilding).

Plants used in any vegetative screening shall be selected by the property owner from a SLO County-approved list. Initial planting shall be done by the Applicant with subsequent maintenance and care to be the responsibility of the property owner. If another screening method is selected, the Applicant shall provide initial installation, with subsequent maintenance to be the responsibility of the property owner. The program shall not apply to residences whose views of the Solar Generation Facility site are obstructed by topography or to residents who do not elect to participate in the program within sixty (60) days of an offer from the Applicant.

Prior to the commencement of construction, the Applicant shall submit the screening program for SLO County review and approval.

CVSR LV-4. Prepare and implement an exterior and signage lighting plan. The Applicant shall develop and implement an exterior lighting plan for both permanent and temporary facilities. The plan shall define the height, location, and intensity of all exterior lighting. All lighting fixtures shall be positioned "down and into" the development and shielded so that neither the lamp nor the related reflector interior surface is visible from surrounding properties and key viewing areas. All lighting poles, fixtures, and hoods shall be dark colored. As a condition of their use of the Temporary Construction Worker Accommodations Area (TCWAA), workers living in the TCWAA and installing or using any exterior lighting shall be required by TCWAA management to do so in accordance with the lighting plan's shielding and positioning principles. This shall apply to all lighting not otherwise installed and maintained by the Solar Generation Facility owner or contractor. When nighttime lighting is required for construction, temporary lighting shall be hooded to the extent consistent with safety. Lighting fixtures shall be directed away from the highway to avoid glare and, when near a residence, shall be pointed away from the residence. This requirement shall be specified in contracts with contractors and subcontractors that may require nighttime construction lighting. Operational exterior lighting shall be limited to the following areas, unless other exterior lighting is required by law or Code: Operations and Maintenance building and water treatment building. The plan shall focus on keeping the lumen/light intensity to the lowest possible level while still meeting minimum safety and security requirements. Unless determined necessary by SLO County for safety or security reasons, the entry sign shall not be lit (reflective coating is acceptable). These measures shall be shown on applicable plans prior to issuance of construction permits and permanent lighting shall be installed prior to final inspection. The County Environmental Monitor shall verify compliance with this measure.

CVSR LV-5. Establish public construction liaison. During construction, all ground disturbing activities, and until one year after construction is complete, the Applicant shall provide a toll-free general phone number and retain a local public liaison. The name and contact information of the public liaison shall be made available to all "potentially affected property owners," including all occupied properties within 3 miles around project boundaries and properties along approved truck haul routes. The toll-free access number and the identified local public liaison shall act as points of contact between property owners and construction crews. The local public liaison shall be available both in person and by phone, as necessary, for at least 30 days prior to the start of any construction-related activities and for up to one year following construction. During construction, the local public liaison shall respond to all construction-related questions and concerns within 72 hours. Post-construction responses shall be made within one week.

Monthly, for the duration of construction and for one year following the completion of construction, the Applicant shall generate a liaison summary of all comments received and how these issues were addressed. The compliance documentation shall also include the name and address of the person (if known) contacting the local public liaison and the date of contact. The compliance documentation shall be submitted to the SLO County Department of Planning and Building throughout the duration of construction and for one year following construction.

During construction, compliance will be verified by the SLO County Environmental Monitor.

CVSR LV-6. Provide advance notification of construction. Prior to and during construction, the Applicant shall give at least 30 days advance notice of the start of any construction-related activities to "potentially affected property owners." The notification shall include the toll-free general phone number and contact information for the local public liaison (see CVSR LV-5, Establish public construction liaison). Notification shall be provided by:

(1) Mailing notices to all "potentially affected property owners"; and

(2) Placing notices in local newspapers.

Compliance documentation shall be submitted to the SLO County Department of Planning and Building at least two weeks prior to the start of construction.

The Applicant shall provide the Department of Planning and Building with a map and list of all property owners to whom notices were sent prior to construction.

CVSR LV-7. Provide quarterly construction updates. Following publication/transmittal of the advance notification of construction (see CVSR LV-6, Provide advance notification of construction), the Applicant shall provide all "potentially affected property owners" with updates and changes to all of the information provided in the pre-construction notification. The updates shall be provided every quarter for the duration of all construction-related activities. The updates shall continue to provide the toll-free number and the name and phone number of the local public liaison to respond to all construction-related questions and concerns. The local public liaison shall continue to respond to all questions and complaints within a 72-hour period during construction and within one week for post-construction activities (see CVSR LV-5, Establish public construction liaison).

During construction, compliance will be verified by the SLO County Environmental Monitor.

CVSR LV-8. Establish CPNM (Carrizo Plain National Monument) construction liaison. The Applicant shall give at least 30 days advance notice of the start of any construction-related activities to the CPNM land manager and BLM Bakersfield Field Office. The notification shall include the identification of a designated liaison to act as the primary point of contact for the CPNM during all phases of construction. The construction liaison shall respond to all construction-related questions and concerns communicated by the CPNM within a 72-hour period during construction. As part of its compliance documentation for CVSR LV-5, the Applicant shall submit all questions and concerns expressed by the CPNM, including all actions taken to rectify and/or address these questions and concerns, to the County Department of Planning and Building at one-month intervals for the duration of construction.

CVSR LV-9. Repair Fencing. The Applicant shall repair existing perimeter fencing or install at a minimum) a 42- to 48-inch-high outer CVSR property perimeter wire-strand fence and b) install secure fencing, compatible with San Joaquin kit fox movement, around each of the solar arrays and substation,

or as otherwise required by San Luis Obispo County or as required to meet code requirements (e.g., electrical, building, etc.) as specified by the San Luis Obispo County Building Division.

CVSR LV-10. Install electric collection lines (34.5-kV) underground when within close proximity of SR-58. Lines for the electric gathering system (34.5-kV) that protrude above the arrays of trackers shall be installed underground when they are located within 3,000 feet south, or within 1,500 feet north, of SR-58. Exceptions to this undergrounding requirement apply to the following: poles serving between Arrays 6 and 7, where poles would be shielded from view by local topography (Figure 2-2); and for any 34.5-kV lines co-located onto the gen-tie line. Undergrounded lines shall be located as shown on Figure 2-2 and shall be sited so as to minimize impacts to sensitive burrowing wildlife species.

CVSR LV-11. Exterior colors/design. Except as otherwise specified in these measures, exterior colors of all permanent structures visible from SR-58 that are greater than eight feet in height shall be of a chroma and value of six or less as identified in the Munsell Book of Color. Color selection shall be from the following general color families: green, blue, and brown. The gen-tie transmission towers shall be of a light gray anodized/dull metal finish. Earth tone colors, or other colors acceptable to SLO County that do not contrast with the solar arrays, shall be used for the portions of inverters and transformers visible (taller than 6 feet) within 3,000 feet from SR-58. Design of the Operations and Maintenance building shall consider surrounding existing landforms (color, geometry) and the final building design shall be provided to SLO County for review and approval prior to construction permit issuance. The SLO County Environmental Monitor shall verify the use of these elements prior to final inspection.

LAND USE AND VISUAL RESOURCES – RECONDUCTORING

PG&E LV-1. Minimize reflectivity of conductor. For new sources of substantial light or glare avoidance, PG&E will replace the existing conductor with a non-specular conductor for minimizing the reflectivity of any new project facilities.

PG&E LV-2. Prepare and implement an exterior lighting plan. The Applicant shall develop and implement an exterior lighting plan. The plan shall define the height, location, and intensity of all exterior lighting. All lighting fixtures shall be positioned 'down and into' the development and shielded so that neither the lamp nor the related reflector interior surface is visible from surrounding properties and key viewing areas. All lighting poles, fixtures, and hoods shall be dark colored.

PG&E LV-3. Paint microwave reflector to reduce visibility. Fourteen days prior to ordering the microwave reflector, PG&E shall provide the County and its consultants a palate from which to select the color for the proposed microwave reflector. The microwave reflector shall be painted a neutral, subdued color to match the existing natural background and lessen its visual impact and glare as seen from public vantage points and improving cross-plain views from SR-58.

AGRICULTURE – CALIFORNIA VALLEY SOLAR RANCH SITE

CVSR AG-1. Mitigate the loss of farmland through permanent preservation of farmlands. Prior to the issuance of construction permit, the Applicant shall mitigate for the permanent loss of farmland on an acre-for-acre basis, and shall provide evidence to the SLO County Department of Planning and Building that an open space easement or other farmland conservation mechanism acceptable to the SLO County has been granted in perpetuity to SLO County or a qualifying entity approved by SLO County. The easement shall provide conservation acreage at a ratio of 1:1 for direct permanent loss of farmland based on final design and engineering.

A qualified entity, as determined acceptable by the SLO County Department of Planning and Building, in consultation with the SLO County Agriculture Department, must demonstrate that: (1) it has adopted the Land Trust Alliance's *Standards and Practices*, or comparable process, as determined by the SLO County; (2) it has substantial experience creating and stewarding agricultural conservation easements; (3) it has a stewardship endowment to help pay for its perpetual stewardship obligations; and (4) the endowment includes a provision for a percentage allocation to the easement holder of its administrative cost for the management of the easement.

Based on the current project description, and applying the above 1:1 ratio, the area conserved shall cover at least 1,500 acres, and shall be of a quality that is reasonably (as determined by the SLO County Department of Planning and Building, in consultation with the SLO County Agriculture Department) similar to that of the agricultural land within the Solar Generation Facility site that is lost due to the project. The area to be conserved shall be located within SLO County within reasonable proximity, as defined by SLO County, to the project area.

CVSR AG-2. Coordinate construction activities with agricultural landowners in the Gen-Tie Line corridor. Prior to commencing Gen-Tie Line construction/ground disturbing activities on property not owned by the Applicant, the Applicant shall coordinate with owners of such property to (1) schedule construction activities so as to minimize disruption to agricultural operations; and (2) ensure that any areas damaged or disturbed by construction are restored to conditions that closely approximate conditions existing prior to disturbance. Restoration may include activities such as soil preparation, regrading, and reseeding. Prior to commencing ground disturbing activities, the Applicant shall submit to SLO County documentation of its coordination efforts with affected property landowners regarding the continued use of farmland and/or Williamson Act lands during Gen-Tie Line construction.

Prior to final inspection or occupancy, whichever occurs first, the Applicant shall submit documentation to SLO County to verify that adequate restoration has been completed in accordance with CVSR BIO-115 (Develop a Habitat Restoration and Revegetation Plan).

During construction, compliance will be verified by the County Environmental Monitor.

AGRICULTURE – RECONDUCTORING

PG&E AG-1. Coordinate construction activities with agricultural landowners. Prior to commencement of transmission line construction/ground disturbing activities, PG&E shall coordinate with property owners of agricultural lands to (1) schedule construction activities so as to minimize disruption to agricultural operations; and (2) ensure that any areas damaged or disturbed by construction are restored to a condition that closely approximates conditions that existed prior to disturbance. This may include activities such as soil preparation, regrading, and reseeding. In areas containing permanent crops (i.e., grape vines, tree orchard, etc.) that must be removed and replaced to gain access to poles sites for construction purposes, PG&E will provide compensation to landowners for crop loss and other reasonable and associated costs as soon as practicable after completion of construction. Access across active crop areas will be negotiated with the owners in advance of any construction activities. Prior to commencement of ground disturbing activities, PG&E shall submit to the CPUC the dates when landowners are notified of start of construction.

PG&E AG-2. Permanent preservation of farmlands of an equivalent type. The Applicant shall mitigate for the permanent loss of state-designated farmland on an acre for acre basis, and shall provide evidence to the CPUC that an open space easement or other farmland conservation mechanism has been

granted in perpetuity to a qualifying entity approved by the CPUC. The easement shall provide conservation acreage at a ratio of 1:1 for direct permanent impacts.

AIR QUALITY – CALIFORNIA VALLEY SOLAR RANCH SITE

CVSR AIR-1. Minimize air emissions. Current plans for project implementation incorporate several features to minimize air emissions. The details for these measures will be developed during project review and final project design. They include:

- Use of on-site Portland cement concrete batch plants to manufacture the building and equipment foundations on-site reduces transport truck trips.
- The use of busses and/or vanpools to transport workers during construction phases.
- Dust control during construction by applying water as necessary, and during the life of the project by retaining grassland vegetation beneath arrays and along interior access rows.
- The incorporation of energy conservation features into the building design.

CVSR AIR-2. Reduce Construction Vehicle Emissions (NOx, ROG, and DPM). During all construction/ground disturbing activities and decommissioning, the Applicant shall implement the following methods to reduce construction vehicle emissions (NOx, ROG, and diesel particulate matter [DPM]) from construction equipment:

a. Maintain all construction equipment in proper tune according to manufacturer's specifications;

b. Fuel all off-road and portable diesel powered equipment with California Air Resources Board-certified (CARB) motor vehicle diesel fuel (non-taxed version suitable for use off-road);

c. Use diesel construction equipment meeting CARB's Tier 2 certified engines or cleaner off-road heavy-duty diesel engines (e.g., Tier 3 and Tier 4, where feasible), and comply with the State Off-Road Regulation (CCR Title 13, Article 4.8, Chapter 9, Section 2449);

d. Use on-road heavy-duty trucks that meet CARB's 2007 or cleaner certification standard for on-road heavy-duty diesel engines, and comply with the State On-Road Regulation;

e. All on and off-road diesel equipment shall not idle for more than 5 minutes, except as needed to perform a specified function (e.g., concrete mixing). Signs shall be posted in the designated queuing areas and or job sites to remind drivers and operators of the 5-minute idling limit;

f. Diesel idling within 1,000 feet of sensitive receptors is not permitted;

g. Staging and queuing areas shall not be located within 1,000 feet of sensitive receptors;

h. Electrify equipment when feasible (i.e., concrete batch plant);

i. Substitute gasoline-powered in place of diesel-powered equipment, where feasible; and

j. Use alternatively fueled construction equipment on-site where feasible, such as compressed natural gas (CNG), liquefied natural gas (LNG), propane or biodiesel.

Compliance will be verified by the SLO County Air Pollution Control District (APCD) in consultation with the SLO County Department of Planning and Building.

CVSR AIR-3. Develop a Construction Activity Management Plan (CAMP) and Reduce Fugitive Dust. Prior to issuance of permits and commencement of construction/ground disturbing activities, the

Applicant shall develop a Construction Activity Management Plan (CAMP) and submit it to the SLO County APCD for review and approval. This shall include verification of APCD's approval prior to construction permit issuance. The CAMP shall include, but not be limited to, the following elements:

a. A Dust Control Management Plan that encompasses all, but is not limited to, dust control measures defined in CVSR AIR-5;

b. Tabulation of on- and off-road construction equipment (age, horsepower, and miles and/or hours of operation);

c. To the extent feasible, schedule construction truck trips during non-peak hours to reduce peak hour emissions;

d. Limit the length of the construction work-day period, if necessary; and

e. Phase construction activities, if appropriate.

Prior to issuance of construction permits and during construction/ground disturbing activities, the Solar Generation Facility, Gen-Tie Line, and Aggregate Mine Project (Phase 1) (for equipment/excavation controlled by the Applicant and used at the mine during construction, should the mine be approved) shall implement the following measures to minimize nuisance impacts and to significantly reduce fugitive dust emissions:

a. The amount of disturbed area shall be reduced where possible;

b. Water trucks or sprinkler systems shall be used in quantities sufficient to prevent airborne dust from leaving the site. Watering frequency shall be increased whenever wind speeds exceed 15 mph. Reclaimed (non-potable) water shall be used whenever possible;

c. All dirt stockpile areas shall be sprayed daily for dust suppression as needed;

d. Permanent dust control measures identified in the approved project revegetation and landscape plans shall be implemented as soon as possible following completion of any soil disturbing activities;

e. Exposed ground areas that are planned to be reworked at dates more than one month after initial grading shall be sown with a fast germinating, non-invasive grass seed and watered until vegetation is established;

f. All disturbed soil areas not subject to revegetation shall be stabilized using approved chemical soil binders (identified in Section 4.3 of the APCD's *CEQA Air Quality Handbook*), jute netting, or other methods approved in advance by the APCD;

g. Paving for those roadways, driveways, sidewalks, etc., planned to be paved shall be completed as soon as possible. In addition, building pads shall be laid as soon as possible after grading unless seeding or soil binders are used;

h. Vehicle speed for all construction vehicles shall not exceed 15 mph on any unpaved (i.e., without asphalt) surface at the construction site;

i. All trucks hauling dirt, sand, soil, or other loose materials shall be covered or shall maintain at least 2 feet of freeboard (minimum vertical distance between top of load and top of trailer) in accordance with CVC Section 23114;

j. Wheel washers shall be installed where vehicles enter or exit unpaved roads from or onto streets, or trucks and equipment leaving the site shall be washed;

k. Streets shall be swept at the end of each day if visible soil material is carried onto adjacent public paved roads. Water sweepers with reclaimed water shall be used where feasible;

l. All of these fugitive dust project design features shall be shown on grading and building plans; and

m. The contractor or builder shall designate a person or persons to monitor the fugitive dust emissions and enhance the implementation of the measures as necessary to minimize dust complaints, reduce visible emissions below 20 percent opacity, and prevent transport of dust off-site. Their duty hours shall include holidays and weekend periods when work may not be in progress. The names and telephone numbers of such persons shall be provided to the APCD Compliance Division prior to the start of any grading, earthwork or demolition.

In addition, the Applicant shall consult with the SLO County Health Department to develop a Dust Management Plan that addresses management of dust to reduce the potential for exposure to Valley Fever. Prior to issuance of permits, the Applicant shall submit the Plan to the County Health Department for review and approval. The Plan shall include a program to evaluate the potential for exposure to Valley Fever from construction activities and identify appropriate dust management and safety procedures that shall be implemented, as needed, to minimize personnel and public exposure to potential Valley Fever–containing dust. Measures in the Plan, which shall be implemented as applicable, may include the following:

n. Provide HEP-filtered air-conditioned enclosed cabs on heavy equipment. Train workers on proper use of cabs, such as turning on air conditioning prior to using the equipment.

o. Provide communication methods, such as two-way radios, for use in enclosed cabs.

p. Provide National Institute for Occupational Safety and Health (NIOSH)-approved respirators for workers.

q. Require half-face respirators equipped with N-100 or P-100 filters to be used during digging; require employees to wear respirators when working near earth-moving machinery.

r. Cause employees to be medically evaluated, fit-tested, and properly trained on the use of the respirators, and implement a full respiratory protection program in accordance with the applicable California's Division of Occupational Safety and Health (Cal/OSHA) Respiratory Protection Standard (8 CCR 5144).

s. Provide separate, clean eating areas with hand-washing facilities.

t. Thoroughly clean equipment, vehicles, and other items before they are moved off-site to other work locations.

u. Train workers to recognize the symptoms of Valley Fever, and to promptly report suspected symptoms of work-related Valley Fever to a supervisor.

v. Work with a medical professional to develop a protocol to medically evaluate employees who develop symptoms of Valley Fever.

w. Work with a medical professional, in consultation with the County Health Department, to develop an educational handout for on-site workers and surrounding residents within three miles of the project site, and include the following information on Valley Fever: what are the potential sources/causes, what are the common symptoms, what are the options or remedies available should someone be experiencing these symptoms, and where testing for exposure is available. Prior to construction permit issuance, this handout shall have been created by the Applicant and reviewed by SLO County. No less than 30 days prior to any work commencing, this handout shall be mailed to all existing residences within three miles of the project boundaries.

Prior to the Notice to Proceed for decommissioning, the Applicant will follow the above process for all decommissioning work.

CVSR AIR-4. Provide Funding for Off-site Mitigation of Construction Equipment. Prior to construction permit issuance, the Applicant shall develop and implement, or fund, a program for off-site mitigation of construction equipment that offsets the amount of emissions exceeding APCD's Tier II thresholds per quarter for ROG and NOx (currently estimated at 12.34 tons), by reducing existing emission sources in the Carrizo Plain area and surrounding communities. The Applicant shall make all efforts to further reduce ROG/NOx emissions to below Tier II levels. The Applicant shall initiate this program such that the emission reduction project(s) are in place prior to commencing construction activities. The Applicant shall accomplish this either by developing and implementing a program of reductions (e.g., installing diesel engine emission control systems) or by providing mitigation funding of $16,400 per ton (over Tier II thresholds) plus a 15 percent administration fee to the APCD for emission-reducing projects identified by the APCD (e.g., through the Carl Moyer Program). The specific off-site mitigation strategies shall be primarily focused on NOx/ROG reductions. Specific strategies and actual funding levels shall be refined, based on final APCD-approved engineering and construction plans. The Applicant may develop supplemental emission offset activities acceptable to the APCD that may reduce the emissions calculation attributable to the Applicant. The Applicant shall provide SLO County with evidence of an APCD-approved strategy prior to construction permit issuance or evidence of complete funding prior to final inspection.

CVSR AIR-5. Prepare Operational Dust Control Plan. Prior to energization or final inspection for the SLO County construction permit, whichever occurs first, the Applicant shall develop and implement an Operational Dust Control Plan. The plan shall address and include, where appropriate, each of the control strategies identified in construction CVSR AIR-3 (Reduce fugitive dust). An APCD-approved plan shall be submitted in conjunction with the SLO County construction permit application.

Compliance will be verified by the SLO APCD, in consultation with the SLO County Department of Planning and Building.

CVSR AIR-6. Reduce Twisselman Aggregate Mine Project equipment emissions (NOx, ROG, and DPM). Prior to San Luis Obispo County approval to operate the mine, the Applicant or mine owner shall develop and implement a mining equipment emission control plan to reduce mine equipment emissions (NOx, ROG, and DPM). The plan shall address and include, where appropriate, each of the control strategies identified in CVSR AIR-2. The plan shall be submitted for review and approval by the San Luis Obispo County APCD. All applicable measures shall also be shown on the mine Reclamation Plan prior to County approval.

CVSR AIR-7. Operational Dust Control Plan for Twisselman Aggregate Mine. Prior to San Luis Obispo County approval to operate the mine, the Applicant or mine owner shall develop and implement an Operational Dust Control Plan for the aggregate mine. The plan shall describe the program for on-site use of dust suppressants (identified in Section 4.3 of the APCD's CEQA Air Quality Handbook) and soil stabilization. The plan shall address and include, where appropriate, each of the control strategies identified in CVSR AIR-3. The plan shall be submitted for review and approval by the San Luis Obispo County APCD prior to County approval to operate the mine. All applicable measures shall also be shown on the mine Reclamation Plan prior to County approval.

CVSR AIR-8. Provide Funding for Off-site Mitigation of Dust Control. Prior to construction permit issuance, the Applicant shall develop and implement or fund a program for off-site mitigation of fugitive dust from existing sources in the Carrizo Plain area and surrounding communities. The Applicant shall initiate this program such that the emission reduction project(s) are in place prior to commencing operation. Specific strategies and actual funding levels shall be refined, based on final APCD-approved

engineering and emission levels remaining after implementation of operational dust control plans. The Applicant shall provide SLO County with evidence of an APCD-approved strategy prior to construction permit issuance or evidence of complete funding prior to final inspection.

AIR QUALITY – RECONDUCTORING

PG&E AIR-1. Implement APCD standard measures for construction equipment (San Luis Obispo County) and best management practices to reduce construction tailpipe emissions (Kern County). In San Luis Obispo County, as appropriate and necessary, for construction equipment:

- Maintain all construction equipment in proper tune according to manufacturer's specifications.
- Fuel all off-road and portable diesel powered equipment with CARB certified motor vehicle diesel fuel (non-taxed version suitable for use off-road).
- Use diesel construction equipment meeting CARB's Tier 2 certified engines or cleaner off-road heavy-duty diesel engines, and comply with the State off-Road Regulation.
- Use on-road heavy-duty trucks that meet the CARB's 2007 or cleaner certification standard for on-road heavy-duty diesel engines, and comply with the State On-Road Regulation.
- Limit idling of all on and off-road diesel equipment to 5 minutes or less. Post signs in the designated queuing areas and or job sites to remind drivers and operators of the 5-minute idling limit.
- Prohibit diesel idling within 1,000 feet of sensitive receptors.
- Avoid staging and queuing areas within 1,000 feet of sensitive receptors.
- Electrify equipment when feasible.
- Substitute gasoline-powered in place of diesel-powered equipment, where feasible.

In Kern County, **i**f applicable and feasible, PG&E will implement the following measures to reduce already less-than-significant tailpipe emissions from diesel-powered construction equipment in Kern County. These measures include:

- Maximize the use of diesel construction equipment meeting CARB's 1996 or newer certification standard for off-road heavy-duty diesel engines.
- Use emission control devices at least as effective as the original factory-installed equipment.
- Locate stationary diesel-powered equipment and haul truck staging areas as far as practicable from sensitive receptors.
- Substitute gasoline-powered for diesel-powered equipment when feasible.

PG&E AIR-2. Minimize greenhouse gas emissions during construction: PG&E will incorporate the following measures into its construction plans to further reduce already less-than-significant greenhouse gas (GHG) emissions:

- Encourage construction workers to carpool by establishing carpooling to construction sites where feasible to do so.
- Encourage recycling of construction waste.

PG&E will also implement the following voluntary company-wide actions to further reduce GHG emissions.

- PG&E is an active member of the SF6 Emission Reduction partnership for Electrical Power Systems, a voluntary program between the USEPA and electric power companies that focuses on reducing emissions of SF6 from transmission and distribution operations. Since 1998, PG&E has reduced the SF6 leak rate by 89 percent and absolute SF6 emissions by 83 percent.
- PG&E supports the Natural Gas STAR, a program promoting the reduction of methane from natural gas pipeline operations. Since 1998, PG&E has avoided the release of thousands of tons of methane.
- In June 2007, PG&E launched the ClimateSmart program, a voluntary GHG emissions reduction program that allows its customers to balance out the GHG emissions produced by the energy they use, making their energy use "climate neutral." For ClimateSmart customers, PG&E calculates the amount needed to fund sufficient GHG emissions reduction projects in California to make their energy use "climate neutral." This is added to the customer's monthly energy bill and is tax deductible.
- PG&E is offsetting all of the GHG emissions associated with energy used in PG&E's buildings by participating in its ClimateSmart program. In 2007, this amounted to over 50,000 tons of CO2 reductions.
- PG&E will implement the appropriate CARB AB-32 Early Action Measures as they become effective.

In addition, the following measures will be implemented during construction to minimize GHG emissions.

- Park-and-ride facilities in the Project vicinity will be identified and construction workers will be encouraged to carpool to the job staging area to the extent feasible. The ability to develop an effective carpool program for the Proposed Project will depend upon the proximity of carpool facilities to the staging area, the geographical commute departure points of construction workers, and the extent to which carpooling will not adversely affect worker arrival time and the Project's construction schedule.
- Unnecessary construction vehicle idling time will be minimized. The ability to limit construction vehicle idling time is dependent upon the sequence of construction activities and when and where vehicles are needed or staged. Certain vehicles, such as large diesel powered vehicles, have extended warm-up times following start-up that limit their availability for use following startup. Where such diesel-powered vehicles are required for repetitive construction tasks, these vehicles may require more idling time. The Proposed Project will apply a "common sense" approach to vehicle use, that idling is reduced as far as possible below the maximum of 5 consecutive minutes required by California law; if a vehicle is not required for use immediately or continuously for construction activities, its engine will be shut off. Environmental monitors will enforce compliance on unnecessary idling vehicles and equipment during construction. Construction foremen will include briefings to crews on vehicle use as part of pre-construction conferences. Those briefings will include discussion of a "common sense" approach to vehicle use.
- Construction equipment will be maintained in good working order, in accordance with PG&E specifications. Low-emission construction equipment will be used where feasible to further minimize the minimal short-term increase in GHG emissions. With implementation of these measures, the entire construction effort for this project is forecasted to create 379 metric tons of CO2 which represents a small fraction of the emissions limit set by AB322020 (427 million metric tons CO2e).

PG&E AIR-3. Minimize fugitive dust. Prior to issuance of construction permits and during construction/ground disturbing activities, the proposed project shall implement the following measures to minimize nuisance impacts and to significantly reduce fugitive dust emissions:

a. Reduce the amount of the disturbed area where possible;

b. Use of water trucks or sprinkler systems in sufficient quantities to prevent airborne dust from leaving the site. Increased watering frequency would be required whenever wind speeds exceed 15 mph. Reclaimed (non-potable) water should be used whenever possible;

c. All dirt stockpile areas shall be sprayed daily as needed;

d. Permanent dust control measures identified in the approved project revegetation and landscape plans shall be implemented as soon as possible following completion of any soil disturbing activities;

e. Exposed ground areas that are planned to be reworked at dates greater than one month after initial grading shall be sown with a fast germinating, noninvasive grass seed and watered until vegetation is established;

f. All non-road disturbed soil areas not subject to revegetation shall be stabilized using approved chemical soil binders, jute netting, or other methods approved in advance by the APCD;

g. All roadways, driveways, sidewalks, etc. to be paved shall be completed as soon as possible. In addition, building pads shall be laid as soon as possible after grading unless seeding or soil binders are used;

h. Vehicle speed for all construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site;

i. Cover all trucks hauling dirt, sand, soil, or other loose materials or maintain at least two feet of freeboard (minimum vertical distance between top of load and top of trailer) in accordance with CVC Section 23114;

j. Implement manual street sweeping of ingress/egress points from unpaved roads onto paved streets;

k. Sweep streets at the end of each day if visible soil material is carried onto adjacent paved roads. Water sweepers with reclaimed water shall be used where feasible;

l. Present all of these fugitive dust design features on grading and building plans; and

m. The contractor or builder shall designate a person or persons to monitor the fugitive dust emissions and enhance the implementation of the measures as necessary to minimize dust complaints, reduce visible emissions below 20 percent opacity, and to prevent transport of dust off-site. The name and telephone number of such persons shall be provided to the APCD Compliance Division prior to the start of any grading, earthwork or demolition.

In addition, PG&E is currently researching San Luis Obispo County APCD and San Joaquin Valley APCD measures as they would apply to this linear project. Below are standard practices that would likely be incorporated into the project scope:

- During construction, PG&E will use water trucks or sprinkler systems to keep all areas of vehicle movement sufficiently damp to prevent dust from leaving the site. At a minimum, this will include wetting down such areas in the late morning and after work is completed for the day. Watering frequency will increase whenever the wind speed exceeds 15 miles per hour. Reclaimed water will be used whenever possible. However, reclaimed water will not be used in or around crops for human consumption. [This measure is interpreted as applying to areas such as graded areas and not intended for construction sites, and is not being interpreted here as applying to light duty access road use by PG&E vehicles accessing pole sites for one or two days, or to pull sites where vegetation is not being cleared.]

- Minimize amount of disturbed area and reduce on site vehicle speeds to 15 miles per hour or less on unpaved roads.
- Gravel pads or a suitable equivalent will be installed at all access points to prevent tracking of mud on to public roads. Specific measures to prevent mud tracking will be provided in the Storm Water Pollution Prevention Plan (SWPPP).

After clearing, grading, earth moving or excavation is completed, treat the disturbed area by watering, or revegetating, or by spreading soil binders until the area is paved or otherwise developed so that dust generation will not occur. [The only clearing and grading anticipated is the reestablishment of existing unpaved access roads. After construction, those unpaved access roads will be returned to their normal operations and maintenance use; therefore, no additional dust control measures are needed.] PG&E will designate a person or persons to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust off-site. Their duties will include holiday and weekend periods when work may be in progress. The name and telephone number of the monitor or monitors will be provided to the San Luis Obispo County APCD and San Joaquin Valley APCD prior to start of construction.

PG&E AIR-4. Reduce construction vehicle emissions (NOx, ROG, and DPM). During all construction/ground disturbing activities, PG&E shall implement the following methods to reduce vehicle emissions (NOx, ROG, and DPM) from construction equipment:

a. Maintain all construction equipment in proper tune according to manufacturer's specifications;

b. Fuel all off-road and portable diesel powered equipment with CARB certified motor vehicle diesel fuel (non-taxed version suitable for use off-road);

c. Use diesel construction equipment meeting CARB's Tier 2 certified engines or cleaner off-road heavy-duty diesel engines (e.g., Tier 3 and Tier 4, where feasible), and comply with the State Off-Road Regulation (CCR Title 13, Article 4.8, Chapter 9, Section 2449);

d. Use on-road heavy-duty diesel trucks that meet the CARB's 2007 or cleaner certification standard for on-road heavy-duty diesel engines, and comply with the State On-Road Regulation;

e. Construction or trucking companies with fleets that do not have engines in their fleet that meet the engine standards identified in the above two measures (e.g., captive or NOx exempt area fleets) may be eligible by providing alternative compliance;

f. All on- and off-road diesel equipment shall not idle for more than 5 minutes. Signs shall be posted in the designated queuing areas and/or job sites to remind drivers and operators of the 5-minute idling limit;

g. PG&E will apply a "common sense" approach to vehicle use; if a vehicle is not required for use immediately or continuously for construction activities, its engine will be shut off. Construction foremen will include briefings to crews on vehicle use as part of pre-construction conferences;

h. Staging and queuing areas within San Luis Obispo County shall not be located within 1,000 feet of sensitive receptors;

i. Electrify equipment when feasible (i.e., concrete batch plant); and

j. Use alternatively fueled construction equipment on-site where feasible, such as compressed natural gas (CNG), liquefied natural gas (LNG), propane, or biodiesel.

PG&E AIR-5. Construction Activity Management Plan. Prior to issuance of permits and commencement of construction/ground disturbing activities, PG&E shall develop a Construction Activity Management Plan (CAMP) and submit it to the San Luis Obispo County APCD for their review and approval. This shall include verification by the County of APCD's approval. The CAMP shall include, but not be limited to, the following elements:

a. A Dust Control Management Plan that encompasses all, but is not limited to, dust control measures that were listed above in the "dust control measures" section;

b. Schedule construction truck trips during non-peak hours to reduce peak hour emissions; and

c. Phase construction activities, if appropriate.

PG&E AIR-6. Payment of Impact Fees. To the extent determined by the San Luis Obispo APCD determines that PG&E is required to provide off-site mitigation through the offsets program, PG&E will pay its prorated share of the total fees imposed for the combined air pollution generated by construction of the California Valley Solar Ranch Project and PG&E's switching station and reconductoring projects in direct proportion to the air pollutants generated by construction of PG&E's project components.

PG&E AIR-7. Avoid sulfur hexafluoride emissions. PG&E shall ensure that project equipment, specifically the circuit breakers at switching stations, are incorporated into PG&E's system-wide SF6 emissions reduction program.

NOISE – CALIFORNIA VALLEY SOLAR RANCH SITE

CVSR NS-1. Limit noisy on-site construction activities. During ground disturbing activities, heavy equipment operation and noisy construction work at the project site shall be restricted to the following hours:

- October 1 through May 31: Monday through Friday 7:00 a.m. to 6:00 p.m.
- June 1 through September 30: Monday through Friday 5:00 a.m. to 9:00 p.m. All construction activities between 5:00 a.m. and 7:00 a.m. shall not result in noise exceeding 45 dBA at the perimeter property boundaries.
- Saturday and Sunday: 8:00 a.m. to 5:00 p.m.

Every first and third Sunday shall not include any noisy activities. Noisy construction refers to any on-site activity that would be likely to exceed the County's limits for daytime noise levels (maximum noise level of 70 dBA, maximum impulsive noise level of 65 dBA, and hourly noise level of 50 dBA Leq) at the project's property line. On-site 24-hour security/surveillance activities, however, are not limited to these hours. When construction will occur within 3,700 feet from the project's property line, the Applicant shall monitor continuous noise levels during construction at the project's property line and report monitoring results to the County Environmental Monitor. Should maximum, impulsive, or hourly noise level thresholds be exceeded, all noise-related work shall stop until adequate noise attenuation measures are installed to meet these thresholds. Any measure installed shall remain in good working order during the duration of the noise-making activity. The County Environmental Monitor shall review the Applicant's reports to verify compliance with these requirements.

During construction, compliance will be verified by the County Environmental Monitor.

CVSR NS-2. Shield primary construction staging area. Prior to using noisy stationary equipment during construction and decommissioning activities, the Applicant or its construction contractor shall install adequate temporary noise barriers around the primary construction staging area to reduce noise levels associated with the concrete batch plant, deliveries to this area, and construction equipment staging to meet SLO County thresholds (nighttime maximum noise level of 65 dBA; maximum impulsive noise level of 60 dBA, hourly noise level of 45 dBA Leq at the project's property line). This measure shall be implemented for primary construction staging areas located within 3,700 feet of the project's property line. The Applicant shall retain a qualified individual to monitor noise levels during construction at the closest residence to the primary construction staging areas and report monitoring results to the SLO County Environmental Monitor. Should maximum, impulsive, or hourly noise level thresholds be exceeded, all noise-related work shall stop until adequate noise attenuation measures are installed to meet these thresholds. Any measure installed shall remain in good working order during the duration of the noise-making activity.

During construction, compliance will be verified by the SLO County Environmental Monitor.

CVSR NS-3. Implement noise-reducing features and practices to reduce construction and operational noise. Prior to and during construction, operations, decommissioning, and ground disturbing activities, the Applicant shall employ and clearly specify in its contractors' specifications and operations manuals the following noise-suppression techniques to minimize the impact of temporary noise associated with construction, operations, and decommissioning activities:

a. Trucks and other engine-powered equipment shall include noise reduction features such as mufflers and engine shrouds that are no less effective than those originally installed by the manufacturer.

b. Trucks and other engine-powered equipment shall be operated in accordance with posted speed limits and limited engine idling requirements (see Air Quality project design features).

c. Truck engine exhaust ("jake") brake use shall be limited to emergencies.

d. Back-up beepers for all construction equipment and vehicles shall be broadband sound alarms or adjusted to the lowest noise levels possible, provided that OSHA and Cal/OSHA's safety requirements are not violated. These settings shall be retained for the life of the project. On vehicles where back-up beepers are not available, alternative safety measures such as escorts and spotters shall be employed.

e. Vehicle horns shall be used only when absolutely necessary, as specified in the contractors' specifications.

f. Radios and other "personal equipment" shall be kept at the lowest most reasonably effective volume.

g. Automobiles or light trucks used on-site for routine operational activities, including security patrols, shall generate noise levels not exceeding County stationary source standards of less than 70 dBA Lmax daytime and 65 dBA Lmax nighttime at the project's property line such as by utilizing electric vehicles and limiting vehicle speeds to 15 miles per hour or less (except in cases of emergency). Within 90 days of the start of operation, the Applicant shall demonstrate that these standards are met, and if they are not met, the Applicant shall develop alternate means of completing the operational activities that generate excessive noise.

During construction, the County Environmental Monitor shall work with an on-site resident engineer to verify adherence to these measures. If electric vehicles are utilized, the Applicant shall submit to the County Environmental Monitor, upon request, the purchase and maintenance records, including mileage records, for each electric vehicle utilized for the project.

CVSR NS-4. Limit panel washing activity hours. During operation, panel washing activities shall be limited to the hours of 10:00 a.m. to 5:00 p.m. when occurring within 1,100 feet of the Solar Generation Facility's property line. The County shall monitor noise levels at the project's property line. Should maximum, impulsive, or hourly noise level thresholds be exceeded, all noise-related work shall stop until adequate noise attenuation measures are installed to meet these thresholds (such as the use of non-noise generating applications (e.g., hand washing). Any measure installed shall remain in good working order during the duration of the noise-making activity.

During operation, should complaints be received, the County shall conduct noise monitoring to determine compliance, as needed.

CVSR NS-5. Limit traffic noise from operation of Twisselman Aggregate Mine. During mining operations, truck deliveries to and from the aggregate mine shall be restricted to Monday through Friday 7:00 a.m. to 7:00 p.m., or to dusk, whichever is earlier.

CVSR NS-6. Inverter Housing. Prior to final inspection, the County Environmental Monitor shall verify that all inverters are housed within metal enclosures to reduce noise, and are compliant with County Noise Ordinance and Element requirements, inverters will need to be at least 100 feet from the perimeter property boundaries to meet the 50 dBA threshold). Inverters shall be off and silent after dark.

CVSR NS-7. Provide advance notice of construction. Prior to and during construction, decommissioning and ground disturbing activities, the Applicant shall provide advance notice of construction for each phase of construction (Phases 1, 2 and 3) and decommissioning between two and four weeks prior to construction or decommissioning activities, respectively, to all land owners and residents located within 3,700 feet of the project phase boundary. The notices shall be mailed directly to land owners and residents as well as posted at the project site in areas accessible to the public. The announcement shall state where and when construction would occur; provide tips on reducing noise intrusion (e.g., closing windows facing the planned construction); and provide a point of contact for any noise complaints. The Applicant shall provide to the County Environmental Monitor within 48 hours of any complaints received, a report that documents the complaints and the strategy for resolution of any noise complaints. The County Environmental Monitor shall verify implementation of agreed upon strategy.

Prior to construction, compliance will be verified by the County Environmental Monitor on implementation of agreed upon noise attenuation strategy, as applicable.

NOISE – RECONDUCTORING

PG&E NS-1. Noise minimization with portable barriers. Compressors and other small stationary equipment will be shielded with portable barriers in proximity to residential areas.

PG&E NS-2. Noise minimization with "quiet" equipment. "Quiet" equipment (i.e., equipment that incorporates noise-control elements into the design—compressors have "quiet" models) will be used during construction whenever possible.

PG&E NS-3. Noise minimization through direction of exhaust. Equipment exhaust stacks and vents will be directed away from buildings.

PG&E NS-4. Noise minimization through truck traffic routing. Truck traffic will be routed away from noise-sensitive areas where feasible.

PG&E NS-5. Noise disruption minimization through residential notification. PG&E will coordinate with the County of San Luis Obispo to notify residents within both Kern and San Luis Obispo Counties that are located near the power lines of the timeframe for the construction activities.

GEOLOGY AND SOILS – CALIFORNIA VALLEY SOLAR RANCH SITE

CVSR GE-1. Reduce effects of groundshaking. Prior to issuance of construction permits, the design-level geotechnical investigations performed by the Applicant shall include site-specific seismic analyses to evaluate ground accelerations for design of project components. Based on these findings, project structure designs shall be modified/strengthened, as deemed appropriate by the project engineer, if the anticipated seismic forces are found to be greater than standard design load stresses on project structures. Study results and proposed design modifications shall be provided to the Department of Planning and Building for review before final project design and prior to construction permit issuance.

During construction, the County Environmental Monitor shall work with the County Building Inspector to verify that approved seismic measures are followed or incorporated.

CVSR GE-2. Conduct landslide survey and protect against slope instability. A landslide survey of any steep hillside areas shall be conducted in and adjacent to areas of planned construction and of installation of solar arrays. The survey will identify areas with the potential for unstable slopes, landslides, earth flows, debris flows, and seismically induced slope failure hazards. If the results of the landslide survey indicate the presence of slopes likely to fail and cause damage to these structures, appropriate support and protection measures shall be designed and implemented to minimize potential damage. These design measures may include, but are not limited to, retaining walls, re-engineered slopes, removal of potentially unstable materials, and avoidance of areas below highly unstable areas. Study results and proposed design modifications shall be provided to the Department of Planning and Building for review before final project design and prior to construction permit issuance. Prior to final inspection or occupancy, whichever occurs first. The County Building Division shall verify that all elements comply with approved plans and Uniform Building Code.

During construction, the County Environmental Monitor shall work with the County Building Inspector to verify that approved landslide protection measures are followed or incorporated.

CVSR GE-3. Avoid placement of project structures within active fault zones. Prior to final project design and construction permit issuance, the Applicant shall perform a fault evaluation study to confirm the location of mapped traces of active and potentially active fault strands of the San Andreas Fault Zone along the transmission line alignment. The study would identify mapped fault locations at the transmission line crossing and determine locations for structures that would avoid mapped fault traces. Final project design shall be planned so as to locate towers or other project structures as far as feasible outside the areas of mapped fault traces. Compliance with this measure shall be documented to San Luis Obispo County in a report submitted for review at least 60 days prior to the start of construction.

During construction, the County Environmental Monitor will verify inclusion of required elements on Gen-Tie Line and Caliente Switching Station design plans in consultation with PG&E and/or the CPUC. The building inspector will inspect for compliance with approved plans.

CVSR GE-4. Design of on-site sewage disposal system by professional engineer. Prior to construction permit issuance, subsurface exploration and percolation testing shall be performed in accordance with the County Department of Planning and Building requirements and under the supervision

of a professional engineer licensed in California. The design of the on-site sewage disposal system shall be prepared by the professional engineer in accordance with established County guidance. Approval of the siting and final design and compliance with this measure will include obtaining the required County building permits prior to the start of construction. During construction, compliance will be verified by the County Environmental Monitor, in consultation with the Building Division.

CVSR GE-5. Design of on-site brine management system by professional engineer. Prior to construction permit issuance, a professional engineer licensed in California shall design for County approval an on-site brine management system, if used. Approval of the siting and final design and compliance with this measure will include obtaining the required County building permits prior to the start of construction. The management system shall include means for preventing brine from being spread on unprotected ground surfaces or entering the groundwater, and from wildlife and birds entering the ponds. The design and operation of the brine management system shall satisfy all requirements of the Central Coast Regional Water Quality Control Board. Any brine removed from the ponds shall be hauled to an appropriately licensed facility for disposal. Prior to construction permit issuance, the Applicant shall provide a copy of an approved Waste Discharge permit from the Regional Water Quality Control Board (RWQCB).

During construction, compliance will be verified by the County Environmental Monitor, in consultation with the Building Division and RWQCB.

CVSR GE-6. Stockpiles at Twisselman Aggregate Mine positioned to minimize impacts on sensitive species and other resources. Prior to issuance of construction permits and thereafter for the life of the Aggregate Mine, to minimize environmental impacts, short-term stockpiling or long-term placement of fill shall comply with the following measures wherever possible or applicable:

1. Be located outside of any drainage ways;
2. Be located outside of any sensitive native vegetation areas (e.g., wetlands, oak woodlands, maritime chaparral, etc.). Acceptable areas for material placement may include: previous San Luis Obispo County-approved areas where development has received land use permits, areas previously surveyed and cleared by a qualified botanist/biologist;
3. Be located outside of any habitat containing rare or endangered plant or wildlife species;
4. Be located as far as practical from any blue line stream (as shown on USGS maps) or streams supporting riparian habitat, and no closer than 100 feet, if located on slopes less than 10 percent. If located on steeper slopes (10 percent to 20 percent), setback distance shall be increased to 500 feet. No material shall be placed on slopes greater than 20 percent.
5. Be located outside any area that could potentially contain cultural resources (historic or pre-historic).
6. Be located outside of any area identified by San Luis Obispo County as visually or biologically sensitive (e.g., County's "Sensitive Resource Areas" designation).
7. Be located outside of the 100-year floodplain.
8. If fill is to be left permanently, soil shall be compacted to comply with the fill standards of the County Grading Ordinance and/or Uniform Building Code.
9. Fill slopes shall not exceed a ratio of 3 feet horizontal to 1 foot vertical.
10. Have a Sediment and Erosion Control Plan prepared prior to work beginning, and best management practices (BMPs) identified in the Sediment and Erosion Control Plan on-site prior to commencing work. Temporary measures, such as covering the area or containing the area (e.g., use of straw bales

and silt fencing around stockpile), shall be applied before the rainy season begins (October 15) and be maintained in good working order during the entire rainy season (until April 15). Dust control measures shall be applied at all times.

11. Adequate measures shall be applied to all disturbed portions of the project site (including stockpiles) to control dust, such as daily watering or hydromulching until vegetation cover is well established.
12. Any fill or stockpiling that is to be left more than 30 days shall be hydroseeded immediately upon completion of the fill or stockpiling work.
13. All fill material must be "clean" and free of any potentially hazardous materials or hazardous waste.

Prior to any work beginning, San Luis Obispo County's Chief Building Officer or Planning Director shall be contacted for additional information and/or permit requirements.

CVSR GE-7. Protect stockpiles at Twisselman Aggregate Mine from wind erosion. The final mine reclamation plan, which shall be approved prior to issuance of construction permits, shall include provisions to protect the topsoil stockpiles from erosion, initially and long-term. The plan shall include provisions to periodically maintain the protective features (Visqueen, vegetation, soil stabilizers) to be kept in good working order. Compliance with this measure shall be documented to the Department of Planning and Building in the final, approved mine reclamation plan and submitted for review prior to issuance of construction permit for the CVSR.

Documentation of compliance during operation of the aggregate mine shall be submitted to the Department of Planning and Building as part of the annual SMARA mine inspection program.

CVSR GE-8. Protect disturbed soil from erosion during project construction. Prior to issuance of construction permits, the Applicant shall submit to the County Public Works for review and approval of a sedimentation and erosion control plan which identifies how disturbed surface soils will be stabilized to prevent wind and water erosion during construction and immediately after construction until the revegetation activities are begun. This shall include temporary measures to be installed during the rainy season. Wind erosion control measures that may be in the plan include, but are not limited to, use of mulch, soil stabilizers, and temporary revegetation (all compatible with project area sensitive species). The plan may also include standard provisions for dust control by water truck or periodic application of soil stabilizers during construction. This Plan shall also address measures to be used during the Operations phase.

During construction, the County Environmental Monitor shall work with County Public Works to verify that approved sedimentation and erosion control measures relating to wind and water erosion have been implemented or are being incorporated.

At the time of application for construction permits, the Applicant shall submit a drainage plan for review and approval by the County Public Works Department. The plan shall contain, at a minimum:

a. Limits of the 100 year flood inundation and any other flood hazard combining designation information.
b. Complete drainage calculations for County Public Works review and approval.
c. Retention / Detention of drainage in an on-site basin designed in accordance with county standards and approved by the County Public Works.

d. All runoff from impervious surfaces such as roofs, driveways, walks, patios, decks, shall be collected and detained on-site, or passed on through an effective erosion control devise or drainage system approved by the County Engineer.

e. Permanent erosion control devises shall be installed prior to or concurrently with on-site grading activities.

f. Grading, filling or site disturbance of existing soil and vegetation shall be limited to the minimum areas necessary.

g. Stockpiles and other disturbed soils shall be protected from rain and erosion by plastic sheets or other covering.

Storm Water Pollution Prevention Plan. Prior to issuance of construction permits, the Applicant shall provide the County evidence that a storm water pollution prevention plan has been prepared meeting RWQCB standards.

CVSR GE-9. Conduct geotechnical studies to assess problem soil characteristics. Prior to issuance of construction permits, the design-level geotechnical studies to be performed by the Applicant shall identify the presence, if any, of potentially detrimental soil chemicals, such as chlorides and sulfates. Appropriate design measures for protection of reinforcement, concrete, and metal-structural foundation components against corrosion shall be utilized, such as use of corrosion-resistant materials and coatings, increased thickness of project components exposed to potentially corrosive conditions, and use of passive and/or active cathodic protection systems. The geotechnical studies shall also identify areas with potentially expansive or collapsible soils and include appropriate design features, including excavation of potentially expansive or collapsible soils during construction and replacement with engineered backfill, ground-treatment processes, and redirection of surface water and drainage away from expansive foundation soils. Studies shall conform to industry standards of care and American Society for Testing and Materials standards for field and laboratory testing. Study results and proposed solutions shall be provided to the Department of Planning and Building for review and approval prior to construction permit issuance.

GEOLOGY AND SOILS – RECONDUCTORING

PG&E GE-1. Minimize construction on soft or loose soils. Where soft or loose soils are encountered during construction, appropriate measures will be implemented to avoid, accommodate, replace, or improve soft or loose soils encountered during construction. Such measures may include:

- Locating construction facilities and operations away from areas of soft and loose soil.
- Over-excavating soft or loose soils and replacing them with engineered backfill materials.
- Increasing the density and strength of soft or loose soils through mechanical vibration and/or compaction.

Treating soft or loose soils in place with binding or cementing agents. Construction activities in areas where soft or loose soils are encountered will be scheduled for the dry season to allow safe and reliable equipment access.

PG&E GE-2. Conduct design-level geotechnical investigations and apply the results to the design of project components. Prior to issuance of construction permits, the design-level geotechnical investigations performed by PG&E shall include site-specific seismic analyses in the vicinity of MP 8 and the Caliente Switching Station where new structures will be located to evaluate ground accelerations for

the design of project components. Based on these findings, project structure designs shall be modified/strengthened as deemed appropriate by the project engineer if the anticipated seismic forces are found to be greater than standard design load stresses on project structures. Study results and proposed design modifications shall be provided to the CPUC for review before final project design and prior to construction permit issuance.

PG&E GE-3. Implement support and protection measures to maintain slope stability. Based on the results of any geotechnical study performed as a part of the original Morro Bay–Midway 230-kV transmission line project, and in consultation with Kern County, appropriate support and protection measures shall be designed and implemented to maintain the stability of slopes adjacent to any re-graded access or spur roads, work areas, or replacement towers during and after the reconductoring work. Any tower site, work area, or road to be re-graded between MP 12 and MP 13 shall be evaluated with respect to potential landslides by means of air photo interpretation and geologic reconnaissance mapping. If towers would be replaced in an area of landslide potential, a California-registered Professional Geotechnical Engineer shall evaluate the potential for geotechnical hazards and unstable slopes on slopes with over 15 percent gradient. Design measures shall include, but are not limited to, retaining walls, Visqueen, removal of unstable materials, and avoidance of highly unstable areas. Appropriate construction methods and procedures, in accordance with State and federal health and safety codes, shall be followed to protect the safety of workers and the public during drilling and excavation operations. PG&E shall submit final engineering plans and the geotechnical report, if applicable, to CPUC and Kern County for review at least 30 days prior to construction.

PG&E GE-4. Avoid placement of project structures within active fault zones. Prior to final project design, PG&E shall perform a fault evaluation study where new structures will be located near the Caliente Switching Station to confirm the location of mapped traces of active and potentially active faults at the Caliente Switching Station. The study would identify mapped fault locations in the area and determine locations for switching station and support structures that would avoid mapped fault traces. Compliance with this measure shall be documented to CPUC in a report submitted for review at least 60 days prior to the start of construction.

WATER RESOURCES – CALIFORNIA VALLEY SOLAR RANCH SITE

CVSR WR-1. Develop a water supply contingency plan for construction. Prior to issuance of construction permits, the Applicant shall prepare a Contingency Plan to drill and construct a second supply well in the event daily yields of Well 2008-325 are inadequate or become inadequate to meet the project requirements. The plan shall identify the well site, proximity to private wells, estimated total depth, well screen depth, diameter, estimated yield and water quality, and time required to have the well drilled, constructed, developed and fully operational. The plan shall also specify when the second supply well shall be used, what conditions would trigger necessary use of the second supply well, the person responsible for determining when to utilize the second supply well, and how such use shall be reported. Additionally, the plan shall identify procedures to identify the presence of the Upper and Lower Aquifers and to use annular seals that prevent the hydraulic connection between these two aquifers of differing water quality.

During construction, the Applicant shall monitor drawdown and production conditions, and as warranted, install a second well that will be capable of producing daily yields sufficient to supplement Well 2008-325 in meeting construction water demand, as needed. The Applicant shall provide this information to the County Environmental Monitor to verify compliance.

CVSR WR-2. Prepare and Implement Groundwater Monitoring and Reporting Plan. Prior to issuance of construction permits, a Groundwater Monitoring and Reporting Plan shall be prepared by a County-approved geologist or hydrogeologist and submitted by the Applicant to the County for review and approval. The Plan shall provide detailed methodology for monitoring background and site groundwater levels, water quality, and flow.

Monitoring shall be performed during pre-construction, construction, and project operation with the intent to establish pre-construction and project-related groundwater level and water quality trends that can be quantitatively compared against observed and simulated trends near the project supply wells and near potentially impacted existing private wells. The monitoring wells shall include locations up-gradient, lateral, and down-gradient of all project supply wells and a minimum of three off-site down-gradient wells. Water quality monitoring shall include annual sampling and testing for Total Dissolved Solids, which include minerals, salts, and metals dissolved in water. Water quality samples shall be drawn from project supply wells, one up-gradient well, and a minimum of two down-gradient off-site wells.

The Plan shall include a schedule for submittal of both quarterly (construction only) and annual (construction and operation) monitoring data reports by the Applicant to San Luis Obispo County.

During the project construction period, quarterly water level monitoring data reports shall be submitted to the County Department of Planning and Building for review and approval. In addition, for at least the first 5 years of the project from the initiation of project construction, annual summary reports shall also be submitted to the County Department of Planning and Building for review and approval. At a minimum, these annual summary reports shall include:

a. Daily usage, monthly range, and monthly average of daily water usage in gallons per day;

b. Total water used on a monthly and annual basis in acre-feet;

c. Summary of all water level and water quality data; and

d. Identification of trends that indicate potential for off-site wells to experience deterioration of water level or water quality.

Based on the results of the quarterly and annual trend analyses during the first 5 years of the project from the initiation of project construction, the Applicant shall determine if the project pumping has resulted in a water level decline of 5 feet or more below the baseline trend at nearby private wells. If a drawdown of 5 feet or more occurs at off-site wells, the Applicant shall immediately reduce groundwater pumping until water levels stabilize or recover, sustaining drawdown of less than 5 feet. Alternatively, the Applicant shall provide compensation to the well owner, including reimbursement of increased energy costs, deepening the well (if appropriate/feasible) or pump setting, or development of a new well.

After the first 5 years of the project, the Applicant and San Luis Obispo County shall jointly evaluate the effectiveness of the Groundwater Monitoring and Reporting Plan and determine if monitoring frequencies, laboratory testing program, or procedures should be revised or eliminated.

During construction and project operations, San Luis Obispo County Department of Planning and Building will review submitted data monitoring reports for compliance. Following review and approval of the fifth annual summary report, the County shall determine whether groundwater wells surrounding the project site are affected by project activities in a way that requires additional mitigation and, if so, shall determine what measures are needed.

CVSR WR-3. Install pervious and/or high-roughness groundcover where applicable. Prior to the issuance of construction permits, the Applicant shall submit a drainage design and hydrologic and hydraulic analysis to the County of San Luis Obispo Department of Planning and Building and Public Works for review and approval. In the design plans, groundcover for the new substation shall be comprised of a pervious and/or high-roughness material (for example, gravel) to the maximum extent feasible, in order to ensure maximum percolation of rainfall after construction. Detention/retention basins shall be installed to reduce local increases in runoff, particularly on frequent runoff events (up to 10-year frequency). Downstream drainage discharge points shall be provided with erosion protection and designed such that flow hydraulics exiting the site mimics the natural condition as much as possible.

During construction, the County Environmental Monitor shall work with the County Public Works Department to verify that the approved Plan is followed or incorporated. The County Public Works Department shall verify compliance post-construction.

CVSR WR-4. Construction site dewatering management. If groundwater is unexpectedly encountered during project construction, dewatering activities shall be performed in compliance with applicable State and local regulatory requirements. These operations shall include, as applicable, the use of sediment traps and sediment basins in accordance with the California Stormwater Quality Association (CASQA) Handbook for Construction or other similar guidelines, as approved by the County. The Applicant shall notify the Central Coast Regional Water Quality Control Board and County at the onset of dewatering and submit a written description of all executed dewatering activities, including steps taken to return encountered groundwater to the subsurface, upon the completion of dewatering activities at the affected site(s).

During construction, compliance will be verified by the County Environmental Monitor.

CVSR WR-5. Design on-site drainage improvements to maximize groundwater recharge. Prior to approval of construction plans, the Applicant shall design on-site drainage improvements (and include on all applicable construction plans) to include the following components to maximize groundwater basin recharge:

a. Drainage from impervious surfaces (e.g., roads, driveways, buildings) shall be directed to a common drainage basin;

b. The project shall be designed with as few basins as possible for the entire development and maintain them free of tamarisk; and

c. Where feasible, mass grading and contouring shall be done in a way to direct surface runoff towards the above-referenced basins (and/or closed depressions).

During construction, the County Environmental Monitor shall work with the County Public Works Department to verify that the approved Plan is followed or incorporated. The County Public Works Department shall verify compliance post-construction.

CVSR WR-6. Develop master Drought Water Management and Water Conservation Education Programs. Prior to construction permit issuance, a master Drought Water Management Program shall be prepared by the Applicant and submitted to the County for approval. The plan shall provide guidelines on how all future water use will be managed during "severe" drought year(s).

During construction and operation, these measures would go into effect during periods of "severe" drought. Once it is determined that a "severe" drought condition exists, restricted (drought) water usage

measures shall remain in effect until it is shown satisfactorily to the County that the "severe" drought condition no longer exists. This plan shall include, but is not necessarily limited to:

a. The definition of a "severe" drought year (as defined by NOAA's Palmer Drought Severity method or other similarly recognized methodology);

b. Identification of general measures available to reduce water usage for future development (to be refined as needed for each use approved);

c. Identification of specific measures to be applied for landscape watering;

d. Determination of appropriate early triggers to determine when "severe" drought conditions exist and the process for initiating additional water conservation measures.

In addition to the Drought Water Management Program and prior to construction permit issuance, the Applicant shall develop, and submit to the County for approval, a master Water Conservation Education Program for all future operators/employees for use during drought periods. Such a program shall be developed by an appropriate expert for each on-site activity using water. Once the program is developed, the Applicant shall also include the means by which this information will be disseminated to any future operators.

For any year that a "severe drought" state has been recognized, the Applicant shall submit a letter to the County by November 1 of that year identifying what measures were implemented to conserve water and to provide water conservation education, as well as the effectiveness of such measures.

CVSR WR-7. Use low-water landscaping. Per Land Use Ordinance Title 22, Section 22.16.030, and prior to construction permit issuance, the Applicant shall demonstrate in its landscaping plan that all on-site landscaping will have low-water requirements. As applicable, at a minimum the following shall be used: (1) all irrigation shall employ low water use techniques (e.g., drip irrigation); and (2) landscaping will use low-water, native plants where feasible.

Prior to final inspection, compliance will be verified by the County Environmental Monitor.

CVSR WR-8. Demonstrate compliance with water quality permits. Prior to construction permit issuance, the Applicant shall submit satisfactory evidence to the San Luis Obispo County Department of Planning and Building that all of the agencies listed below had been contacted and whether or not the contacted agency required a permit associated with the project. Permits may include, but are not limited to, a Streambed Alteration Agreement from the California Department of Fish and Game (CDFG), a Clean Water Act Section 404 permit from the United States Army Corps of Engineers (USACE), a Clean Water Act Section 402 National Pollutant Discharge Elimination System General Permit for storm water discharges associated with construction activities, including a Storm Water Pollution Prevention Plan (SWPPP with BMPs for storm water management, and/or a Clean Water Act Section 401 certification from the Central Coast Regional Water Quality Control Board (RWQCB).

Where a permit is required, the Applicant shall provide a copy of all the conditions required by that agency to the County Department of Planning and Building. The County shall review these conditions for consistency with proposed plans and County conditions.

Additionally, after review and approval of all required water quality permits, the Applicant shall maintain and make available on-site at all times an approved copy of all required permits.

CVSR WR-9. Prepare and Implement a Road Drainage Plan. The Applicant shall submit a Road Drainage Plan to the San Luis Obispo County Department of Planning and Building prior to issuance of construction permits to ensure that water/flooding features relating to elevated roads are designed to avoid flooding. The Road Drainage Plan shall identify the precise location of all planned access and spur road construction activities, including improvements to existing roads. The Road Drainage Plan shall also identify the specific improvements/modifications that would be undertaken at each location or road segment, including the planned width of each completed segment, the engineered limits of cut and fill, the location of any drainage and/or sensitive habitat within 100 feet of either edge of the planned access or spur road, and the location and construction details of any new or modified stream crossings or drainage diversion structures. Should the road plan propose a "cut" or "fill" of more than 12 inches, or the movement of more than 50 cubic yards of material, the Road Drainage Plan shall be submitted in the form of a grading permit application to the San Luis Obispo County Engineering and Survey Services Division for review and approval.

Approval of the Road Drainage Plan is required prior to the initiation of any roadwork.

During construction, the County Environmental Monitor shall work with the County Public Works Department to verify that the approved Plan is followed or incorporated. The County Public Works Department shall verify compliance post-construction.

CVSR WR-10. Construct during the dry season. Prior to construction permit issuance, drainage control and erosion control Best Management Practices (BMPs) shall be shown on all applicable construction plans.

During construction, all grading activities shall occur during the dry season months, which are typically May through October. Alternatively, settling ponds, as required, shall be installed on the construction site with sufficient capacity to contain expected runoff during a rainfall event and located to be able to catch all runoff from the 'active' area. Appropriate BMPs in keeping with the State Water Board Construction General Permit, General Order No. 2010-0014-DWQ, shall be implemented to prevent excessive rilling in active areas of the project site. During construction, the Applicant shall determine when one of the aforementioned conditions is present, and shall be responsible for suspending construction activities within the affected area until the rainfall event has ceased and repairs to the rutting and/or rilling damage have been implemented. Approved drainage control and erosion control BMPs shall be in place prior to the typical wet season months (November 1). Compliance shall be verified by the County Environmental Monitor.

CVSR WR-11. Minimize sedimentation. Prior to issuance of construction permits, a Sedimentation and Erosion Control Plan shall be prepared by the Applicant and approved by the County, per SLO County Land Use Ordinance Section 22.52.090, and as a supplement to the project's required SWPPP, to minimize potential downstream sedimentation. This plan shall include measures to minimize the potential for project sediment to leave the project site and its components shall be incorporated into all applicable construction plans.

At a minimum, the plan shall include a measure to require during construction the placement of straw wattles (or comparably effective devices on the downslope sides of the proposed work area to direct flows into temporary sedimentation basins. This shall be checked and maintained regularly and after all larger storm events. All remedial work shall be done immediately after discovery of a breach so sedimentation control devices remain in good working order during the entire construction phase.

During construction, the County Environmental Monitor shall work with County Public Works to verify that approved sedimentation and erosion control measures relating to wind and water erosion have been implemented or are being incorporated.

CVSR WR-12. Minimize disturbance within stream channels. Prior to the issuance of construction permits, where the placement of project features would disturb streambeds, ephemeral washes, or other sensitive hydrologic resources, the placement of such infrastructure (including roads) shall be adjusted to the extent feasible on project design plans to avoid such impacts.

During construction, construction traffic routes shall be clearly marked with temporary markers such as easily visible flagging, as needed to minimize disturbance of streambeds, ephemeral washes, or other sensitive hydrologic resources. Where it is not feasible for access roads to avoid streambed crossings, such crossings shall be built at right angles to the streambeds. Streambed crossings or roads constructed parallel to streambeds may require review and approval of necessary permits from the U.S. Army Corps of Engineers (USACE), California Department of Fish and Game (CDFG), and State Water Resources Control Board (SWRCB)/Central Coast Regional Water Quality Control Board (RWQCB) (see CVSR WR-8).

During construction, the County Environmental Monitor shall work with County Public Works to verify that measures to minimize disturbance of streambeds, ephemeral washes, or other sensitive hydrologic resources have been implemented or are being incorporated.

CVSR WR-13. Accidental spill control and environmental training. Prior to any ground disturbing activities, the Construction Storm Water Pollution Prevention Plan (SWPPP shall be prepared in compliance with the Clean Water Act and CVSR WR-8 (Demonstrate compliance with water quality permits) and shall include procedures for quick and safe cleanup of accidental spills. The Construction SWPPP shall prescribe hazardous materials handling procedures for reducing the potential for a spill during construction, and shall include an emergency response program to ensure quick and safe cleanup of accidental spills. The SWPPP shall identify areas where refueling and vehicle maintenance activities and storage of hazardous materials, if any, would be permitted.

Additionally, prior to and during construction, an environmental training program shall be established to communicate environmental concerns and appropriate work practices, including spill prevention and response measures, and SWPPP measures, to all field personnel. A monitoring program shall be implemented to ensure that the plans are followed during all construction, operations, and maintenance activities. The Construction SWPPP shall be retained on-site to use prior to any storm events and/or other incidents that could impact water quality.

During construction, compliance will be verified by the County Environmental Monitor, in consultation with the local SWPPP authority at the time of construction (RWQCB or County Department of Planning and Building).

CVSR WR-14. No storage of fuels and hazardous materials near sensitive water resources. Prior to construction permit issuance, the Applicant shall identify the location of all fuels and hazardous materials storage areas on construction plans submitted to the County for approval. Storage of fuels and hazardous materials shall be prohibited within 200 feet of surface water features and private groundwater supply wells, and within 400 feet of community or municipal groundwater supply wells (if it is determined that such wells exist on or in close proximity to the project site).

During construction, the County Environmental Monitor shall work with the Environmental Health Division to verify that the approved Plan is followed or incorporated. The Environmental Health Division shall verify compliance post-construction.

CVSR WR-15. Maintain vehicles and equipment. During construction/ground disturbing activities and operation, all vehicles and equipment, including all hydraulic hoses, shall be maintained in good working order so that they are free of any and all leaks that could escape the vehicle or contact the ground, and to ensure that any leaks or spills during maintenance or storage can be easily and properly removed.

During construction, compliance shall be verified by the County Environmental Monitor.

CVSR WR-16. Groundwater Monitoring and Reporting Plan for Twisselman Aggregate Mine. Groundwater monitoring and reporting relevant to the aggregate mine component may be included in the Groundwater Monitoring and Reporting Plan to be prepared for the solar project component.

CVSR WR-17. Settling pond to contain runoff at Twisselman Aggregate Mine. Alternatively to constructing exclusively during the dry season months, a settling pond shall be installed on the construction site with sufficient capacity to contain expected runoff during a rainfall event and located be able to catch all runoff from the 'active' area.

CVSR WR-18. Adequate water to serve the CVSR Project. At the time of application for construction permits, the Applicant shall submit evidence that there is adequate water to serve the CVSR Project on the CVSR site.

CVSR WR-19. Reverse osmosis system meets RWQCB requirements. The reverse osmosis system for water and brine disposal shall be in accordance with the waste discharge requirements issued by the RWQCB. Evidence that the Applicant has obtained the appropriate permit(s) from the RWQCB shall be provided to San Luis Obispo County prior to construction permit issuance.

CVSR WR-20. Mine sedimentation control and drainage. The processing and staging operation shall be maintained within the area of previous disturbance, minimizing the new disruption of the ground surface. The natural drainage from eastern (upstream) land shall be maintained in its current condition and enhanced by replacing the current access road fill with a culvert to eliminate the existing blockage of low runoff flows in this drainage near the mine site entrance. The mining plan requires the excavation of material in a series of relatively flat pads of progressively lower elevation, which will over time reduce the extent of the existing steep cut slopes. The final mine configuration shall have maximum cut slopes of 3:1 and most of the mined area shall have a more gradual slope (10:1). Two sedimentation basins shall be constructed to intercept and detain runoff from all disturbed areas, and to minimize the discharge of sediment to downstream areas.

CVSR WR-21. Reclamation for Mine Phases 1 and 2. Proposed reclamation slopes would be finish graded to the proposed contours. Where graded slopes meet the adjacent natural slopes, contours would be rounded to produce a natural appearance. Previously stockpiled topsoil would be placed on the reclamation slopes. Prior to placing the topsoil layer, the graded slope would be scarified to a depth of 4 to 6 inches. The topsoil layer would be 4 to 6 inches thick and would be track-walked or wheel-rolled to produce a firm surface. The reclamation slopes would be seeded with the specified seed mix at the specific application rate shown on the Revegetation/Erosion Control Plan. Erosion control measures would be installed as shown on the Revegetation/Reclamation Plan.

CVSR WR-22. Reclamation for Mine Phase 3. All mine processing equipment would be removed from the site. Material in the unsuitable material stockpile would be placed in mine area and sedimentation basins, which would also be covered with previously stockpiled topsoil. The area of the sedimentation basins would be restored to the original grades. A layer of topsoil would be placed over the basin areas, the areas would be seeded, and erosion control measures would be installed.

WATER RESOURCES – RECONDUCTORING

PG&E WR-1. Storm Water Pollution Prevention Plan. Following project approval, PG&E would prepare and implement a SWPPP to minimize construction impacts on surface and groundwater quality. Implementation of the SWPPP would help stabilize graded areas and waterways and reduce erosion and sedimentation. The plan would designate BMPs that would be adhered to during construction activities. Erosion and sediment control measures, such as straw wattles, water bars, covers, silt fences, and sensitive area access restrictions (e.g., flagging) would be installed before the onset of winter rains or any anticipated storm events. Mulching, seeding, or other suitable stabilization measures would be used to protect exposed areas during construction activities, as necessary. During construction, measures would be in place to ensure that contaminants are not discharged from the construction sites.

PG&E WR-2. Erosion Control and Sediment Transport Plan. PG&E will prepare an Erosion Control and Sediment Transport Plan as an element of the SWPPP describing BMPs, to be used during construction. The plan would address construction in or near sensitive areas. BMPs, where applicable

would be designed based on specific criteria from recognized BMP design guidance manuals. Erosion-minimizing efforts may include measures such as:

- Avoiding excessive disturbance of steep slopes
- Defining ingress and egress within the project area
- Implementing a dust control program during construction
- Restricting access to sensitive areas
- Using vehicle mats in wet areas
- Revegetating disturbed areas where applicable following construction
- Proper containment of stockpiled soils (including construction of berms in areas near water bodies, wetlands, or drainage channels)

Erosion control measures identified in the Plan would be installed in an area before clearing begins during the wet season in that area and before the onset of winter rains or any anticipated storm events. Temporary measures such as silt fences or wattles, intended to minimize sediment transport from temporarily disturbed areas, would remain in place until disturbed areas have stabilized.

The Plan would be submitted to the CPUC for review at least 30 days prior to the commencement of construction. The Plan would be revised and updated as needed and re-submitted to the CPUC if construction activities evolve to the point that the existing approved Plan does not adequately address the project.

PG&E WR-3. Pervious and/or high-roughness groundcover at the Caliente Switching Station. In design plans, groundcover for the new switching station shall be comprised of a pervious and/or high-roughness material (e.g., gravel) to the maximum extent feasible to ensure maximum percolation of rainfall after construction. Detention/retention basins shall be installed to reduce local increases in runoff, particularly on frequent runoff events (up to 10-year frequency). Downstream drainage discharge points shall be provided with erosion protection and designed such that flow hydraulics exiting the site mimics the natural condition as much as possible.

BIOLOGICAL RESOURCES – CALIFORNIA VALLEY SOLAR RANCH SITE

CVSR BIO-1. Pre-Construction biological surveys. Pre-construction biological clearance surveys will be performed at all activity areas to minimize impacts on special-status plants or wildlife species.

CVSR BIO-2. Minimized vegetation removal/permanent loss and revegetation plan. Every effort will be made to minimize vegetation removal and permanent loss at activity sites. If necessary, native vegetation will be flagged for protection. A Project revegetation plan has been prepared for areas of native habitat temporarily affected during construction.

CVSR BIO-3. Avoidance of wetlands and streams during construction. Construction crews will avoid affecting wetlands, streambeds, and banks of any streams to the extent feasible.

CVSR BIO-4. Use of Best Management Practices. Construction and Operations crews will be directed to use BMPs where applicable, such as for prevention of soil erosion and sedimentation of streams and introduction and spread of invasive plant species. These measures will be identified prior to construction and incorporated into the construction and maintenance operations.

CVSR BIO-5. Biological monitoring during construction. Biological monitors will be assigned to the Project. The monitors will be responsible for ensuring that impacts to special-status species, native vegetation, wildlife habitat, or unique resources will be avoided to the fullest extent possible. Where appropriate, monitors will flag the boundaries of areas where activities need to be restricted to protect native plants and wildlife, or special-status species. These restricted areas will be monitored to ensure their protection during construction.

CVSR BIO-6. Implement a Worker Environmental Education Program. Prior to issuance of a construction permit a Worker Environmental Education Program (WEEP) shall be submitted for County approval. Prior to any site disturbance or other construction-related activities on site (i.e., invasive, non-biological surveying; mobilization; fencing; grading; or construction), the approved WEEP shall be implemented by Applicant. The County Environmental Monitor shall verify implementation and proper employee training. The WEEP shall be implemented throughout the duration of project construction. The WEEP, shall include, at a minimum, the following items:

a. Training materials and briefings shall include but not be limited to: a discussion of the Federal and State Endangered Species Acts, Bald and Golden Eagle Protection Act, and the Migratory Bird Treaty Act; the consequences of non-compliance with these acts; identification and values of plant and wildlife species and significant natural plant community habitats; hazardous substance spill prevention and containment measures; a contact person and phone number in the event of the discovery of dead or injured wildlife; and a review of mitigation requirements.

b. A discussion of measures to be implemented for avoidance of the sensitive resources discussed above and the identification of an on-site contact in the event of the discovery of sensitive species on the site. This will include a discussion on microtrash and its potential harmful effects on California Condors.

c. Protocols to be followed when road kill is encountered in the work area or along access roads to minimize potential for additional mortality of scavengers, including listed species such as the California Condor and the identification of an on-site representative to whom the road kill will be reported. Road kill shall be reported to the appropriate local animal control agency within 24 hours.

d. Maps showing the known locations of special-status wildlife, populations of rare plants and sensitive vegetative communities, seasonal depressions and known water bodies, wetland habitat, exclusion areas, and other construction limitations (e.g., limited operating periods, etc.). These features shall be included on the project plans and specifications drawings.

e. Literature and photographs or illustrations of potentially occurring special-status plant and/or wildlife species will be provided to all project contractors and heavy equipment operators.

f. The Applicant shall provide to the County of San Luis Obispo evidence that all on-site construction and security personnel have completed the WEEP prior to the start of site mobilization. A special hardhat sticker or wallet size card shall be issued to all personnel completing the training which shall be carried with the trained personnel at all times while on the project site. All new personnel shall receive this training and may not work in the field without participating in the WEEP. A log of all personnel who have completed the WEEP training shall be kept on-site.

g. A weather protected bulletin board or binder shall be centrally placed or kept on-site (e.g., in the break room, construction foreman's vehicle, construction trailer, etc.) for the duration of construction. This board or binder will provide key provisions of regulations or project conditions as they relate to biological resources or as they apply to grading activities. This information shall be easily accessible for personnel in all active work areas.

h. Develop a standalone version of the WEEP, that covers all previously discussed items above, and that can be used as a reference for maintenance personnel during project operations.

CVSR BIO-7. Raptor surveys, nesting status determination. SunPower will conduct Project-wide raptor surveys and remove trees, if necessary, outside of the nesting season (1 February – 31 August). If a tree or pole containing a raptor nest must be removed during the nesting season, SunPower will confirm that the nest is vacant prior to its removal or maintain a buffer adequate to avoidance disturbance of the nest while it contains eggs or young.

CVSR BIO-8. Raptor-safe transmission and sub-transmission towers/poles. All transmission and sub-transmission towers and poles will be designed to be raptor-safe in accordance with the Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006 (Avian Power Line Interaction Committee [APLIC] 2006).

CVSR BIO-9. Trap surveys for San Joaquin antelope squirrel. Supplemental trap surveys for San Joaquin antelope squirrel will be conducted on the main Project site in spring 2010 at six locations, focused on approximately 330 acres of suitable habitat. Each 30-acre trap grid will be surveyed for two survey periods of 5 consecutive days to minimize bias due to effects of season, elevation, and temperature. Grids will be surveyed in random order, and no single grid will be surveyed during consecutive survey periods.

CVSR BIO-10. Minimized light intrusion outside project area. New light sources will be minimized, and lighting will be designed (e.g., using downcast lights) to limit the lighted area to the minimum necessary.

CVSR BIO-11. Rare plant surveys and focused habitat assessments for special-status wildlife species. Supplemental rare plant surveys based on CDFG survey guidelines will be conducted in spring 2010 on the main Project site to provide updated data on potential rare plant occurrences since 2009-2010 has been a wet year. Surveys will be conducted during up to three periods to capture the different flowering periods of special-status plants that have a potential to occur along the alignment. The exact timing of the surveys will depend on the amount and timing of precipitation events during the winter and spring of 2010. Global positioning system coordinates will be recorded for all target special-status plants identified along the Project route. On the reconductoring component, surveys will be conducted for rare plants, and focused habitat assessments for a variety of special-status wildlife species and sensitive habitats will be conducted, in 2010.

CVSR BIO-12. Wet-season surveys for federally listed brachiopods. Because 2009-2010 rainfall has resulted in ponding on the site, reconnaissance-level, wet-season surveys for federally listed branchiopods following federal protocols will be conducted during spring 2010 in all suitable water bodies within the CVSR Project site.

CVSR BIO-13. Pronghorn antelope-friendly fencing plan. SunPower will implement a pronghorn-friendly fencing plan that 1) identifies and maintains likely and feasible movement pathways, 2) removes non-essential interior fencing, 3) involves retaining and constructing fencing to deter pronghorn antelope from entering the site of the arrays, and 4) incorporates fencing modifications designed to enable movement by pronghorn antelope through the Project site. A Project fencing plan has been prepared.

CVSR BIO-14. Vehicle and equipment parking in previously disturbed areas. Vehicles and equipment shall be parked on pavement, existing roads, and previously disturbed areas to the extent practicable.

CVSR BIO-15. 15 mph vehicle speed limit within Right-of-Way and on unpaved roads. Vehicles will not exceed a speed limit of 15 mph in the ROWs or on unpaved roads within sensitive land-cover types.

CVSR BIO-16. Vehicle refueling areas that avoid ephemeral drainages and wetlands. No vehicles or equipment shall be refueled within 100 feet of an ephemeral drainage or wetland unless a bermed and lined refueling area is constructed. Any vehicles driven and/or operated within or adjacent to drainages or wetlands shall be checked and maintained daily to prevent leaks of materials.

CVSR BIO-17. Proper waste disposal. All trash, food items, and human-generated debris shall be properly contained and/or removed from the site.

CVSR BIO-18. Avoidance or minimization of clearing and blading for new roads. The development of new access and ROW roads for reconductoring activities will be minimized, and clearing vegetation and blading for temporary vehicle access will be avoided to the extent practicable.

CVSR BIO-19. Maintenance of hydrologic flow to seasonal wetlands. Development on the main Project site will maintain existing hydrologic patterns with respect to runoff supporting seasonal wetlands.

CVSR BIO-20. Habitat Management Plan. The Applicant will prepare and implement a Habitat Management Plan for the main Project site that will describe the management for sensitive biological resources that will occur on the site.

CVSR BIO-21. Dust suppression. Dust suppression will occur during all construction and reconductoring activities as needed.

CVSR BIO-22. Firearms not allowed. No firearms will be allowed on the project site, unless otherwise approved for security personnel.

CVSR BIO-23. Pets not allowed. To prevent harassment or mortality of special-status animals or destruction of their habitats by dogs or cats, no pets should be permitted on project sites.

CVSR BIO-24. Proper food-related trash disposal and daily removal from site. Wildlife feeding not allowed. All food-related trash items including wrappers, cans, bottles, and food scraps, will be disposed of and removed from the site each day. Food items may attract coyotes and domestic dogs consequently exposing special status animals to increased risk of predation. No deliberate feeding of wildlife will be allowed.

CVSR BIO-25. Local, state, and federally-compliant chemical, fuel, lubricant, and biocide use. Rodent control by way of zinc phosphide only. Use of chemicals, fuels, lubricants, or biocides will comply with all federal, state, and local regulations. This is necessary to minimize the possibility of contamination of habitat or primary or secondary poisoning of badgers and other predators utilizing adjacent habitats, and the depletion of American badger prey. All uses of such compounds should observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and other state and federal legislation, as well as additional project-related restrictions deemed necessary by the USFWS and CDFG. If rodent control must be conducted the use should be restricted to interiors of building and zinc phosphide should be used because of lower risk of poisoning San Joaquin kit fox and American badgers.

CVSR BIO-26. Appointment of and access to a representative to report inadvertent kills or injuries to special-status animal species. A representative shall be appointed as the contact for any employee or contractor who inadvertently kills or injures a special-status species, or finds a dead, injured, or entrapped individual. The representative will be identified during the employee education program. The representative's name and telephone number will be provided to the USFWS, CDFG, and County.

CVSR BIO-27. Reporting protocol for contractors or employees that accidentally kill or injure, or find dead, injured or entrapped, special-status animals. Any contractor or employee that inadvertently kills or injures a special-status animal, or finds one either dead, injured, or entrapped, will report the incident to the representative immediately. The representative will contact the USFWS, CDFG, and County by telephone by the end of the day, or at the beginning of the next working day if the agency office is closed. In addition, formal notification will be provided in writing within three working days of the incident or finding. Notification will include the date, time, location, and circumstances of the incident. Any threatened or endangered species found dead or injured will be turned over immediately to CDFG for care, analysis, or disposition.

CVSR BIO-28. Restriction on grading and construction activities after dusk and related monitoring requirement. During the site disturbance and/or construction phase, grading and construction activities after dusk will be prohibited unless coordinated through the County. If such activity is necessary, one or more on-site monitors shall be required to ensure special-status species active at night are avoided.

CVSR BIO-29. Avoidance of previously identified high sensitivity areas. Avoid areas of relatively high sensitivity, including:

- Atriplex scrub habitat, Interior Coast Range scrub and Wildflower Field, Retired dry-farmed field, (all north of SR-58);
- Alkali sink habitat (south of SR-58);
- Lower elevation areas that contribute drainage to off-site vernal pools (Northern Claypan Vernal Pool habitat); and
- Dry drainages.

CVSR BIO-30. Retain Project site land use character. Retain land within the SunPower parcels for continued agricultural and conservation purposes.

CVSR BIO-31. Minimize Project impacts to existing grasslands and San Joaquin kit fox prey habitat. Design array foundations and supporting structures to preserve most of existing grassland ground cover and habitat for prey species of the San Joaquin kit fox.

CVSR BIO-32. San Joaquin kit fox-friendly fencing design. Fencing program includes fences designed to allow passage by San Joaquin kit fox and their prey species.

CVSR BIO-33. Re-vegetation plan. Re-vegetation plan incorporates California annual grassland species on areas of temporary disturbance.

CVSR BIO-34. Wildflower Fields complex preservation and management. The Applicant will preserve and manage Wildflower Fields that remain within the BSA outside the solar arrays, especially the area that exists in the southwestern corner of the site within the Alkaline Seasonal Wetlands –

Wildflower Field complex. Thus, approximately 108 acres of Wildflower Fields community will be preserved and managed in preservation areas within the BSA.

CVSR BIO-35. Pre-construction protocol-level surveys for annual and perennial special-status plant species. Noting occurrences of Camissonia for potential Kern primrose sphinx moth habitat. Before any ground disturbance has occurred, and under suitable environmental conditions, protocol-level surveys for the annual and perennial special-status plant species will be conducted by a qualified botanist within the impact areas on the main Project site and the reconductoring component. Such surveys are scheduled to be conducted in the spring of 2010 by ICF in the reconductoring component and by H. T. Harvey & Associates on the main Project site. Standards for conducting protocol-level surveys for special-status plants indicate that surveys must be accomplished in a floristic manner, generally requiring numerous visits by a qualified botanist during the growing season and blooming period for the species. This approach is required to identify all species and be reasonably certain the presence of an ephemeral, rare annual plant population may be detected. These surveys must be accomplished during a year in which rainfall totals are at least 80% of average and in which the temporal distribution of rainfall is not highly abnormal (e.g., with the vast majority of rainfall occurring very early or late in the season) to be reasonably certain of the presence/absence of rare plant species, unless surveys of reference populations document that precipitation conditions would not have adversely affected the detectability of the species. Based on precipitation levels as of early February 2010, plant surveys in 2010 would be conducted under suitable conditions for detecting special-status plants on the Project site, especially when combined with the negative results of surveys during the drier year of 2009. Any populations of special-status found during surveys will be fully described, mapped, and a CNPS Field Survey Form or written equivalent shall be prepared. During these field surveys, any occurrences of Camissonia will also be noted to provide information on the locations of potential habitat for the Kern primrose sphinx moth. If none of the special-status plant species (including federal, State, and CNPS-listed plants) are located within the Project site after completion of protocol-level field surveys conducted during a year of suitable rainfall conditions (as described above), then no further measures are necessary.

CVSR BIO-36. Determination of potential significance for CNPS-listed plant species occurrences within or directly adjacent to the proposed work area. If any of the CNPS-listed plant species are found within or directly adjacent to the proposed work area, a species-specific determination of potential significance will be conducted for each plant species by a qualified plant ecologist. If Project activities will result in the loss of (a) suitable habitat for less than 5% of the known individual plants of the species documented as occurring within 50 miles of the impact location, if known, or (b) less than 5% of the known populations of the species if the total number of individuals is unknown, then impacts will be deemed less than significant and no further measures will be required. This impact would be considered less than significant because regional populations will remain abundant following project implementation and the project will not substantially reduce the number or range of these species. If project activities will result in loss of habitat for more than 5% of the known populations or individuals of these species regionally documented as occurring within 50 miles of the impact location, the Applicant shall implement the measures below. It is likely that if found, impacts to small populations of List 4 species would be considered less-than-significant. These plant species are widely distributed, with many known, extant populations occurring in many counties. In other cases, the species are considered to be more rare but the amount of suitable habitat present on-site is limited, meaning that any potentially present populations are likely to be small in size and therefore impacts to these would likely also be less-than-significant. However, impacts to populations of more restricted, rare, or declining species are likely to be considered significant unless mitigated. Finally, for those species that have a potential to occur on-site as a large population due to the abundance of potentially suitable habitat on-site, impacts to a large population of so-called "watch-list" (i.e., CNPS List 3 and 4) species may be considered significant unless mitigated. Special-status plants located under solar arrays will be considered impacted, and while attempts will be

made to protect and maintain their presence under the arrays, compensatory mitigation would still be provided. Due to the regional rarity of the three species that are listed under the Federal and/or California Endangered Species Acts, if any of these species are found to be present, any adverse effects on these species will be considered potentially significant and the following measures will be implemented.

CVSR BIO-37. Special-status plant species avoidance measures and construction monitoring. Potentially significant impacts to special-status plants shall be avoided to the extent feasible. In consultation with a plant ecologist, the project shall to the extent feasible be redesigned, constructed, and operated to reasonably avoid direct and indirect impacts to special-status plant populations. Populations of special-status plant species located within temporary construction areas shall be fenced or flagged for avoidance prior to construction, and a biological monitor shall be present to ensure compliance with off-limits areas. If complete avoidance of direct impacts to special-status plants is feasible, then no compensatory mitigation (CVSR BIO-39) will be required.

CVSR BIO-38. Buffer zones to minimize indirect impacts to special-status plant species. Indirect impacts to special-status plant species that will not be directly impacted will be minimized by the creation of a buffer zone around areas of known occurrence, both during and after construction. The buffer zone will be of sufficient size to eliminate potential disturbance to the plants from human activity and other potential sources of disturbance that may negatively affect the population. The size of the buffer will depend upon the proposed use of the immediately adjacent lands, and will include consideration of the plants' ecological requirements (i.e., sunlight, moisture, shade tolerance, and edaphic physical and chemical characteristics) that are identified by a plant ecologist based upon the growth requirements of the species. When necessary, temporary fences will be constructed between populations and Project activities.

CVSR BIO-39. On-site mitigation and management plan for special-status plant and animal species, and County Habitat Mitigation and Monitoring Plan. To compensate for permanent impacts to special-status species, habitat (which may include preservation areas within the BSA or mitigation lands outside of the main Project site) that are not already public land shall be preserved and managed in perpetuity at a 1:1 mitigation ratio (one acre preserved for each acre impacted). Impacts could include direct impacts resulting from loss of habitat or indirect impacts if a significant population or portion thereof is unable to be avoided. While the plants would be monitored to determine their response to indirect impacts such as shading and other land use changes as part of the invasive species management program (CVSR BIO-41) and on-site habitat management plan (CVSR BIO-20), shading impacts are assumed great enough to require compensatory mitigation as described below. The preserved habitat for a significantly impacted plant species shall be of equal or greater habitat quality to the impacted areas in terms of soil features, extent of disturbance, vegetation structure, and dominant species composition, and will contain verified extant populations of the special-status plants impacted. The permanent protection and management of mitigation lands shall be ensured through an appropriate mechanism, such as a conservation easement or fee title purchase. A conservation easement could be held by CDFG or an approved land management entity and shall be recorded within a time frame agreed upon by CDFG. A Habitat Mitigation and Monitoring Plan will be developed, submitted to the County of San Luis Obispo for approval, and implemented for the mitigation lands. That plan will include, at a minimum, the following information:

- A summary of habitat impacts and the proposed mitigation
- A description of the location and boundaries of the mitigation site and description of existing site conditions

- A description of measures to be undertaken to enhance (e.g., through focused management) the mitigation site for special-status species
- A description of management and maintenance measures (e.g., managed grazing, fencing maintenance, etc.)
- A description of habitat and species monitoring measures on the mitigation site, including specific, objective final and performance criteria, monitoring methods, data analysis, reporting requirements, monitoring schedule, etc.
- A contingency plan for mitigation elements that do not meet performance or final success criteria within 5 years; this plan will include specific triggers for remediation if performance criteria are not being met and a description of the process by which remediation of problems with the mitigation site (e.g., presence of noxious weeds) will occur.

Significant temporary impacts to special-status plants will be mitigated at a ratio of 0.5:1 (mitigation lands: impacted lands), using the approach described above. If under appropriate rainfall conditions, the species impacted does not appear in the impacted area within 2 years following revegetation, mitigation shall be increased to 1:1 (mitigation lands: impacted lands).

CVSR BIO-40. Worker Environmental Education Program for biological resources. A Worker Environmental Education Program will be presented to construction crews by a qualified biologist(s) provided by the Applicant. This program will consist of a brief "tailgate" training session for all personnel who work on aspects of the Project that occur in or near natural habitats on the main Project site and the reconductoring component. Printed training materials and briefings shall include a discussion of special-status species, including special-status plants, for which avoidance and minimization measures are required; a contact person in the event of the discovery of sensitive species on the site; and a review of avoidance and minimization requirements. Training sessions shall be conducted by a qualified biologist. Maps showing the location of special-status plants and/or wildlife or other construction limitations will be provided to the environmental monitors and construction crews prior to construction activities. As part of the environmental training, contractors and heavy equipment operators shall be provided with literature and photographs or illustrations of potentially occurring special-status plant and/or wildlife species so they will able to identify and avoid harming them during construction.

CVSR BIO-41. Invasive Species Control Plan to supplement the on-site habitat management plan. An Invasive Species Control Plan for the CVSR Project will be developed prior to construction and approved by the County of San Luis Obispo. The comprehensive Invasive Species Control Plan is intended to prevent the introduction or spread of nonnative invasive plant species. This Plan will address the entire Project area, and may be integrated with another habitat management plan (e.g., a plan for management of on-site conservation lands). The Invasive Species Control Plan will describe BMPs to avoid the unintentional introduction of invasive species to the site; describe monitoring measures to ensure that any invasions are detected before they become substantial; describe species-specific control measures that will be implemented if invasions occur; and describe the process by which the Plan will be implemented (e.g., the entity responsible for implementing it, funding mechanisms, and reporting procedures). The Plan will be developed to work in concert with the on-site habitat management plan (CVSR BIO-20), as in many cases, intense infestations may be avoided through responsible range management, including the appropriate stocking of susceptible rangelands.

CVSR BIO-42. Presumed presence and avoidance versus protocol survey options for Kern primrose sphinx moth and Camissonia. The Applicant may either assume presence of the Kern primrose sphinx moth in sandy washes containing Camissonia or conduct focused surveys for the species. There is no USFWS-approved protocol for conducting surveys for this species. Based on the methods in

Jump et al. (2006) and information from the USFWS's 5-year status review of the species, focused surveys would be performed during the flight season for the species, which is during late January to late February (possibly to late March during cooler years) on the main portion of the Project site and March through early April in the foothill portions of the reconductoring site. Surveys would be conducted in all sandy washes or other areas where populations of Camissonia are located within the Project's impact areas. A qualified entomologist will survey for sphinx moths in these areas during the day, and when the temperature exceeds 60º Fahrenheit, and identify such moths to species. If no sphinx moths are detected, then the species will be presumed absent and no further measures are necessary. If presence is assumed, or if surveys detect the Kern primrose sphinx moth, the measures in CVSR-BIO-43 and CVSR-BIO-44 will be implemented in occupied or presumed occupied areas.

COMPLETE - Focused Kern Primrose Spinx Moth surveys were conducted between January and April 2011. No adult or larvae were detected (H.T. Harvey & Associates 2011).

CVSR BIO-43. Kern primrose sphinx moth and Camissonia avoidance measure from CVSR BIO-42. To the extent feasible, individual Camissonia plants, and particularly concentrations of these plants, will be avoided. In the reconductoring component, temporary staging, access, tension, and pull sites, as well as replacement tower sites, should be sited to avoid impacts to Camissonia. On the main Project site, both temporary and permanent impacts to these plants will be avoided to the extent feasible (e.g., by routing access areas around Camissonia).

CVSR BIO-44. Kern primrose sphinx moth and Camissonia avoidance measure from CVSR BIO-42. If complete avoidance of Camissonia plants cannot be achieved, compensatory mitigation for impacts to areas supporting this species' primary host plant will be implemented. Areas occupied by Camissonia and impacted by the Project will be mitigated at a 2:1 ratio (on an individual plant basis) for temporary impacts (i.e., 1:1 mitigation by revegetation in place and 1:1 mitigation outside the impact areas) and a 3:1 ratio for permanent impacts. The mitigation ratios will be determined on the basis of the abundance of individual plants. The mitigation areas must provide habitat with Camissonia, must be of equal or greater habitat quality compared to the impacted habitat, and must be located within the range of the Kern primrose sphinx moth. These mitigation lands must be preserved in perpetuity, and must be managed in accordance with a Habitat Mitigation and Monitoring Plan that includes, at a minimum, the information described above for CVSR BIO-35 (with particular focus on enhancement and management for the Kern primrose sphinx moth and its habitat).

CVSR BIO-45. Addition of Kern primrose sphinx moth to Worker Environmental Education Program. The Worker Environmental Education Program (CVSR-BIO-6) shall include the Kern primrose sphinx moth as well.

CVSR BIO-46. Avoidance and minimization measures in this document are superseded by the 2007 PG&E San Joaquin Valley Operation & Maintenance Habitat Conservation Plan. For all areas of the Proposed Project covered by the 2007 PG&E San Joaquin Valley Operation & Maintenance Habitat Conservation Plan, all avoidance and minimization measures stipulated in that document shall be fully implemented and shall supersede any analogous measures recommended herein.

CVSR BIO-47. Creation of 50-foot exclusion zones around suitable habitat for the blunt-nosed leopard lizard. To the extent feasible, areas providing suitable habitat for the blunt-nosed leopard lizard will not be impacted, even temporarily, by reconductoring activities. A qualified biologist will stake and flag an exclusion zone of 50 feet around any potentially occupied habitat. If complete avoidance of such habitat is feasible, then no additional measures need to be implemented. If avoidance of such habitat is

not feasible, then impacts to suitable habitat will be minimized, and the measures in CVSR-BIO-48, CVSR-BIO-49, and CVSR-BIO-50 will be implemented.

CVSR BIO-48. Blunt-nosed leopard lizard avoidance measure from CVSR-BIO-47. Within 30 days prior to reconductoring activities, a qualified biologist will walk the worksite looking for burrows that may provide refuge for the blunt-nosed leopard lizard. If appropriately sized burrows are located on the Project site, additional protocol surveys would be necessary to determine presence/absence of the species. Protocol surveys involve systematic searches for active blunt-nosed leopard lizard burrows in all habitat at the worksite and within 30 feet of it. Biologists will conduct burrow searches by systematically walking 30- to 100-foot-wide transects throughout the area. Transect width will be adjusted based on vegetation height and topography. If protocol surveys are conducted and no blunt-nosed leopard lizards are detected, no further measures are necessary. If protocol surveys are not conducted, or if such surveys identify blunt-nosed leopard lizards, the habitat will be considered occupied and the following measures will be implemented.

CVSR BIO-49. Blunt-nosed leopard lizard avoidance measure from CVSR-BIO-47. A qualified biologist will conduct preconstruction surveys immediately prior to (i.e., the morning of the commencement of) reconductoring activities performed in potential blunt-nosed leopard lizard habitat. If any leopard lizards are detected, they will be monitored to ensure that they are not impacted by reconductoring activities. If such activities must occur in occupied areas, the lizards will be moved out of harm's way by the qualified biologist (with USFWS and CDFG authorization).

CVSR BIO-50. Blunt-nosed leopard lizard avoidance measure from CVSR-BIO-47. If, in the opinion of the qualified biologist, barrier fencing will help to prevent impacts to blunt-nosed leopard lizards without causing undue impact to this species' habitat, such fencing will be constructed around the worksite to prevent entry by lizards. The area where fencing will be constructed will be inspected prior to installation; then, 36-inch tall silt fencing will be installed around the work area, and buried to a depth of 6 inches. No monofilament plastic will be used for erosion control in the vicinity of this species. Barrier fencing will be removed upon completion of work.

CVSR BIO-51. Construction monitoring for the blunt-nosed leopard lizard. For construction activities proposed to occur within habitats potentially occupied by blunt-nosed leopard lizard, the Applicant shall hire a qualified biologist to monitor for the presence of this species, which could be harmed during construction. The monitor shall be responsible for ensuring that impacts to blunt-nosed leopard lizards will be avoided. The biological monitor shall have the authority to stop the work of the construction crews if the monitor believes the work may injure or kill blunt-nosed leopard lizard. If a blunt-nosed leopard lizard is observed during construction activities, work shall only be allowed to resume when the lizard has departed the work area of its own volition or when the biologist has moved the lizard out of harm's way (with authorization from the USFWS and CDFG).

CVSR BIO-52. Mitigation ratio and stipulations for the blunt-nosed leopard lizard. No permanent impacts to blunt-nosed leopard lizard habitat are anticipated. However, if suitable habitat for this species is temporarily impacted, such impacts will be mitigated at a 1.1:1 ratio. In situ revegetation of the habitat that is temporarily impacted will account for 1:1 mitigation, while 0.1:1 mitigation (i.e., 0.1 acres mitigation for each acre temporarily impacted) will occur off-site through the preservation and management of habitat for this species. Off-site mitigation may occur at an established conservation bank approved for blunt-nosed leopard lizard, or a conservation easement may be established for preservation of habitat of equal or greater quality, compared to the impacted habitat, at another location. On-site revegetation of temporarily impacted blunt-nosed leopard lizard habitat will be implemented based on a mitigation plan prepared by a qualified restoration ecologist.

CVSR BIO-53. Addition of blunt-nosed leopard lizard to Worker Environmental Education Program. The Worker Environmental Education Program described in CVSR-BIO-6 above shall include the blunt-nosed leopard lizard as well.

CVSR BIO-54. Preconstruction surveys for the coast horned lizard and San Joaquin coachwhip. A qualified biologist will conduct preconstruction surveys immediately prior to (i.e., the morning of the commencement of) construction or reconductoring activities to detect and relocate any coast horned lizards or San Joaquin coachwhips within the area of disturbance. If any individuals are detected, they will be relocated by the qualified biologist to a safe location within nearby suitable habitat.

CVSR BIO-55. Construction monitoring for the coast horned lizard and San Joaquin coachwhip. A qualified biologist will monitor construction activities for the presence of the coast horned lizard and San Joaquin coachwhip. The monitor shall be responsible for ensuring that impacts to individuals of these species are avoided to the extent feasible. If any individuals are detected, they will be relocated by the qualified biologist to a safe location within nearby suitable habitat.

CVSR BIO-56. Addition of coast horned lizard and San Joaquin coachwhip to Worker Environmental Education Program. The Worker Environmental Education Program described in CVSR-BIO-6 above shall include the coast horned lizard and San Joaquin coachwhip as well.

CVSR BIO-57. Complete avoidance of wetlands providing suitable breeding habitat for the western spadefoot. To the extent feasible, seasonal wetlands providing suitable breeding habitat for the western spadefoot will not be impacted, even temporarily, by reconductoring activities. If complete avoidance of such habitat is feasible, then no additional measures need to be implemented. If avoidance of such habitat is not feasible, then impacts to suitable habitat will be minimized, and the measures in CVSR-BIO-58 and CVSR-BIO-59 will be implemented.

CVSR BIO-58. Western spadefoot impact minimization measures from CVSR-BIO-57. If western spadefoot breeding habitat cannot be avoided, work within this habitat shall be conducted outside the breeding season of adult western spadefoot and the subsequent developmental period of larvae. Therefore, any work within seasonal wetlands providing potential habitat for this species should be conducted only when such wetlands are completely dry, and only during the period 1 April – 31 January.

CVSR BIO-59. Western spadefoot impact minimization measures from CVSR-BIO-57. If breeding habitat of this species is temporarily impacted, the habitat will be restored to its original conditions immediately following the completion of impacts. Revegetation will occur in accordance with a revegetation plan prepared by a qualified restoration ecologist.

CVSR BIO-60. Addition of coast horned lizard and San Joaquin coachwhip to Worker Environmental Education Program. The Worker Environmental Education Program described in CVSR-BIO-6 above shall include the coast horned lizard and San Joaquin coachwhip as well.

CVSR BIO-61. Complete avoidance of suitable habitat for silvery legless lizard. To the extent feasible, impacts to areas providing high-quality habitat for legless lizards (i.e., friable soils with some moisture) will be avoided or minimized during reconductoring activities. If complete avoidance of suitable habitat for this species is feasible, then no additional measures need to be implemented. If avoidance of such habitat is not feasible, then impacts to suitable habitat will be minimized, and the measures in CVSR-BIO-62, CVSR-BIO-63, and CVSR-BIO-64 will be implemented.

CVSR BIO-62. Preconstruction surveys, silvery legless lizard relocation from CVSR-BIO-61. A qualified biologist will conduct preconstruction surveys immediately prior to (i.e., the morning of the commencement of) construction or reconductoring activities to detect and relocate any legless lizards within the area of disturbance. If any individuals are detected, they will be relocated by the qualified biologist to a safe location providing suitable habitat outside the Project's impact area.

CVSR BIO-63. Construction monitoring, silvery legless lizard relocation from CVSR-BIO-61. A qualified biologist will monitor construction activities for the presence of this species. The monitor shall be responsible for ensuring that impacts to individuals of these species are avoided to the extent feasible. If any individuals are detected, they will be relocated by the qualified biologist to a safe location providing suitable habitat outside the Project's impact area.

CVSR BIO-64. Revegetation of silvery legless lizard habitat from CVSR-BIO-61. If suitable habitat of this species is temporarily impacted, the habitat will be revegetated to its original conditions immediately following the completion of impacts. Revegetation will occur in accordance with a revegetation plan prepared by a qualified restoration ecologist.

CVSR BIO-65. Addition of silvery legless lizard to Worker Environmental Education Program. The Worker Environmental Education Program described in CVSR-BIO-6 above shall include the silvery legless lizard as well.

CVSR BIO-66. Fuels, fluids, and hazardous materials/waste will be properly handled and stored. All fuels, fluids, and components with hazardous materials/wastes will be handled in accordance with applicable regulations. All such materials will be kept in segregated storage with secondary containment as necessary. Records of storage and inspection will be maintained and will provide for proper off-site disposal. Hazardous materials will be stored in a neat, orderly manner in their appropriate containers in an enclosed and secured location such as portable outdoor hazardous materials storage cabinets equipped with secondary containment to prevent contact with rainwater. The portable hazardous materials storage cabinets may be moved with each block of development, as deemed necessary.

CVSR BIO-67. Daily waste removal from Project site. Project personnel shall collect all litter, small artificial items, and food waste from the Project area on a daily basis.

CVSR BIO-68. Project personnel will be responsible for removal of dead animals from site to avoid attracting scavenger species. Project personnel will monitor all areas within 1/4-mi around the solar arrays on a regular basis (i.e., several times per week) for any dead animals, including wild animals or grazing animals such as cattle, goats, or sheep that are being used for vegetation management on the site. Any animals found dead will be removed immediately to avoid attracting condors to the vicinity of the arrays.

CVSR BIO-69. Avoidance of construction during local bird species nesting seasons. In order to avoid disturbance to nesting birds, construction activities shall be avoided during the breeding season (1 February to 31 August), to the extent practicable, in areas where special-status species have a high probability of nesting.

CVSR BIO-70. Pre-construction surveys for Golden Eagles, raptors, non-raptors if construction during nesting season is not feasible. If seasonal avoidance of nesting birds is not feasible and construction and removal activities are scheduled to occur during the breeding season, a qualified ornithologist shall conduct pre-construction surveys for nesting birds. Surveys shall be conducted in areas within 1/4-mi (for Golden Eagles), 250 feet (for other raptors and tricolored blackbird colonies), or 50

feet (for other non-raptors) of any new (i.e., not currently ongoing) construction or reconductoring activity. If breeding birds with active nests are found within their respective distances from a proposed activity that could result in disturbance of the nesting birds, a biological monitor shall establish a buffer around the nest. The width of this buffer (generally equaling the survey distances listed above) will be determined by the qualified biologist. No new activities will be allowed within the buffer until the young have fledged from the nest or the nest fails for reasons unrelated to the Project.

CVSR BIO-71. Pre-construction surveys for California Burrowing Owls. Pre-construction surveys for Burrowing Owls will be completed in construction areas in conformance with the California Burrowing Owl Consortium's 1995 protocol, which is recommended by the CDFG. Because owls are known to occupy the site and are likely to occur within the reconductoring component, these surveys will be conducted no more than 15 days prior to the start of construction to minimize the probability of movement of owls into a given construction area. Project construction will be phased, and thus these surveys will focus on areas where construction activities are close to commencement, and include areas within 250 feet of such construction. These surveys will determine whether Burrowing Owls are occupying an area where Project construction activities are proposed. If no Burrowing Owls or occupied burrows are observed in or within 250 feet of the construction area, no further measures are required.

CVSR BIO-72. Protocol for avoidance of occupied Burrowing Owl burrows by season. If owls are located on or within 250 feet of an area where construction is scheduled to commence, a qualified biologist will determine the best course of action based on the location of the owl burrow relative to the construction area and the season. For Burrowing Owls present during the non-breeding season (generally 1 September to 31 January), a 150-ft buffer zone will be maintained around the occupied burrow(s), if practicable. If such a buffer is not practicable, then a buffer adequate to avoid injury or mortality of owls will be maintained if, in the biologist's opinion, the benefits of allowing the owls to remain near the construction activity outweigh the risks to individual owls. If there is any danger that owls will be injured or killed because of construction activity, the birds will be evicted as described for CVSR-BIO-73, below. During the breeding season (generally 1 February to 31 August), a 250-ft buffer, within which no new activity will be permissible, will be maintained between Project activities and occupied burrows. Owls present on site after 1 February will be assumed to be nesting unless evidence indicates otherwise. This protected buffer area will remain in effect until 31 August, or based upon monitoring evidence, until the young owls are foraging independently or the nest is no longer active.

CVSR BIO-73. Protocol for eviction and relocation of Burrowing Owls during non-breeding season. If construction will directly impact occupied burrows, or if in the opinion of the qualified biologist eviction of owls immediately outside the construction area is necessary to avoid the risk of injury or mortality, eviction of owls should occur outside the nesting season to prevent injury or mortality of individual owls. No Burrowing Owls will be evicted from burrows during the nesting season (1 February through 31 August) unless evidence indicates that nesting is not actively occurring (e.g., because the owls have not yet begun nesting early in the season, or because young have already fledged late in the season). Relocation of owls during the non-breeding season will be performed by a qualified biologist using one-way doors, which should be installed in all burrows within the impact area and left in place for at least two nights. These one-way doors will then be removed and the burrows backfilled immediately prior to the initiation of grading. To avoid the potential for owls evicted from a burrow to occupy other burrows within the impact area, one-way doors will be placed in all potentially suitable burrows within the impact area when eviction occurs.

CVSR BIO-74. Estimated on-site population and associated mitigation for Burrowing Owls at the CVSR site. Surveys conducted in 2009 identified four nests on the main Project site, all south of SR-58. Although only one of the nests was located within one of the proposed solar arrays, two other nests were

located very close to the edges of proposed arrays, and all four pairs likely foraged within proposed arrays. Although Burrowing Owls are expected to remain on the site following construction of the arrays, using the ample conservation areas outside the arrays, it is possible that up to four pairs of owls could be displaced (possibly to less desirable areas) as a result of construction or presence of the arrays. Therefore, compensatory mitigation for such impacts will be provided in the form of habitat preservation and management for up to four pairs of Burrowing Owls in conservation areas on the main Project site but outside the solar arrays and all areas that are periodically impacted by O&M activities. The mitigation lands will be of equal or greater habitat quality compared to the impacted habitat. In accordance with California Burrowing Owl Consortium (1995) guidelines, an area of 6.5 acres per pair, or 26 acres for four pairs of owls, will be preserved and managed for this species. This mitigation may occur on lands used simultaneously as mitigation for impacts to other species, such as special-status plants, San Joaquin kit fox, or GKR.

CVSR BIO-75. Avoidance of Le Conte's thrasher habitat, in general. In order to minimize disturbance to Le Conte's thrashers and fragmentation of Le Conte's thrasher habitat, reconductoring activities shall avoid impacts to saltbush scrub habitats to the extent possible.

CVSR BIO-76. Avoidance of Le Conte's thrasher habitat, during breeding season. In order to avoid disturbance to nesting Le Conte's thrashers, construction activities in and within 100 feet of potential nesting habitat for this species shall be avoided during the breeding season (15 March to 31 August), to the extent practicable.

CVSR BIO-77. Pre-construction surveys for Le Conte's thrasher and establishment of 100-foot nest buffers. If avoidance of breeding-season activities in or within 100 feet of suitable thrasher habitat is not feasible, a qualified ornithologist shall conduct pre-construction surveys for nesting Le Conte's thrashers. Surveys shall be conducted in areas within 100 feet of tower sites, laydown/staging areas, substation sites, and access road/spur road locations. If breeding Le Conte's thrashers with active nests are found, a biological monitor shall establish a 100-foot buffer around the nest, and no reconductoring activities will be allowed within the buffer until the young have fledged from the nest or the nest fails.

CVSR BIO-78. Mitigation ratios for Le Conte's thrasher habitat. Though permanent impacts to Le Conte's thrasher habitat are not anticipated, temporary habitat impacts could adversely affect this species, since it could take considerable time for habitat revegetation efforts to replace suitable habitat for Le Conte's thrashers. Therefore, if suitable habitat for this species is temporarily impacted, such impacts will be mitigated at a 3:1 ratio. In situ revegetation of the habitat that is temporarily impacted will account for 1:1 mitigation, while 2:1 mitigation (i.e., 2 acres mitigation for each acre temporarily impacted) will occur off-site through the preservation and management of habitat for this species. Such mitigation habitat will be of equal or greater habitat quality compared to the impacted habitat. On-site revegetation of temporarily impacted Le Conte's thrasher habitat will be implemented based on a mitigation plan prepared by a qualified restoration ecologist.

CVSR BIO-79. Mitigation ratios for San Joaquin kit fox habitat. Habitat subject to permanent alteration or project-related disturbance has been minimized through Project design. Permanent loss of habitat to facilities, solar array construction, within the 100-foot array buffer, and project-related disturbance will be mitigated in the form of providing habitat preservation, enhancement, and management in perpetuity at a ratio of 5:1 for all impacted acreage; the final mitigation ratio will be determined by the County, in consultation with the USFWS and CDFG, based on an analysis of the quality (i.e., biological functions and values) of the mitigation land (a lower ratio is appropriate for higher quality mitigation land). If monitoring does not detect continued kit fox use of the site following

completion of construction, then the total mitigation requirement will be increased by 1:1 for the acreage of the solar array footprint.

CVSR BIO-80. Established vehicle speed limit for construction activities. Speed limit signs, imposing a speed limit of 20 miles per hour, will be installed on the project site prior to initiation of site disturbance and/or construction. To minimize disturbance of areas outside of the construction zone, all project-related vehicle traffic should be restricted to established roads, construction areas, and other designated areas. These areas will be included in preconstruction surveys and to the extent possible, should be established in locations disturbed by previous activities to prevent further impacts. Off-road traffic outside of designated project areas will be prohibited.

CVSR BIO-81. Restriction on grading and construction activities after dusk and related monitoring requirement. During the site construction phase, grading and construction activities after dusk will be prohibited unless coordinated through the County. If such activity is necessary, one or more on-site monitors shall be required to ensure San Joaquin kit fox and other special-status species active at night are avoided.

CVSR BIO-82. Worker environmental training program focused on the San Joaquin kit fox. Prior to initiation of site disturbance and/or construction, all personnel associated with the project will attend a worker education program, conducted by a qualified biologist, to avoid or reduce impacts on sensitive biological resources (i.e., San Joaquin kit fox). At a minimum, as the program relates to the kit fox, the training will include kit fox natural history, all measures specified by the County, as well as any related biological report(s) prepared for the project. The Applicant will notify the County prior to this meeting. A San Joaquin kit fox fact sheet will also be developed prior to the training, and will be distributed at the training program to all contractors, employers and other personnel involved with the construction of the project. Completion of the training program will be documented for personnel associated with the project.

CVSR BIO-83. Daily coverage of any excavation and morning inspection to avoid entrapment of San Joaquin kit foxes. All excavation, steep-walled holes, or trenches in excess of two feet in depth will be covered at the close of each working day by plywood or similar materials, or provided with one or more escape ramps constructed of dirt fill or wooden planks. Excavations will also be inspected for entrapped San Joaquin kit fox each morning prior to onset of field activities and immediately prior to covering with plywood at the end of each working day. Before such holes or trenches are filled, they shall be thoroughly inspected for entrapped kit fox. Any San Joaquin kit fox discovered will be allowed to escape before field activities resume, or removed from the trench or hole by a qualified biologist and allowed to escape unimpeded.

CVSR BIO-84. Thorough inspection, for San Joaquin kit fox, of piping before it is used in any way. San Joaquin kit fox are attracted to den-like structures such as pipes and may enter stored pipe and may be trapped or injured. All construction pipes, culverts, or similar structures with a diameter of 4-in or greater that are stored at a construction site for one or more overnight periods will be thoroughly inspected for San Joaquin kit fox before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a San Joaquin kit fox is discovered inside a pipe, that section of pipe should not be moved until the USFWS and/or CDFG has been consulted. If necessary, and under the direct supervision of the biologist, the pipe may be moved once to remove it from the path of construction activity, and left alone until the San Joaquin kit fox has escaped.

CVSR BIO-85. Avoidance and impact minimization for the San Joaquin kit fox. Disturbance to all San Joaquin kit fox dens will be avoided to the maximum extent possible. Protection provided by San Joaquin kit fox dens for use as shelter, escape, cover, and reproduction is vital to the survival of San

Joaquin kit foxes. For kit foxes, the ecological value of potential, known, and natal/pupping dens differs, and therefore each den type requires the appropriate level of protection. Limited destruction of San Joaquin kit fox dens may be allowed, if avoidance is not a reasonable alternative, provided the following procedures are observed.

- Potential Dens: If a take authorization/permit has been obtained from the USFWS and CDFG, den destruction may proceed without monitoring unless other restrictions were issued with the take authorization/permit. If no take authorization/permit has been issued, then potential dens should be monitored as if they were known dens. If any den was considered to be a potential den but is later determined during monitoring or destruction to be currently or previously used by San Joaquin kit fox (e.g., if San Joaquin kit fox sign is found inside), then destruction shall cease and the USFWS shall be notified immediately.
- Known Dens: Known dens occurring within the footprint of the activity must be monitored for three days with tracking medium or an infrared beam camera to determine the current use. If no San Joaquin kit fox activity is observed during this period, the den should be destroyed immediately to preclude subsequent use. If San Joaquin kit fox activity is observed at the den during this period, the den should be monitored for at least five consecutive days from the time of the observation to allow any resident animal to move to another den during its normal activity. Use of the den can be discouraged during this period by partially plugging its entrance(s) with soil in such a manner that any resident animal can escape easily. Only when the den is determined to be unoccupied may the den be excavated under the direction of a qualified biologist. If the animal is still present after five or more consecutive days of plugging and monitoring, the den may have to be excavated when, in the judgment of a qualified biologist, it is temporarily vacant, for example during the animal's normal foraging activities. The USFWS and CDFG encourage hand excavation, but realize that soil conditions may necessitate the use of excavating equipment. However, extreme caution must be exercised under these circumstances.
- Destruction of the den should be accomplished by careful excavation until it is certain that no San Joaquin kit fox are present. The den should be fully excavated, filled with dirt, and compacted to ensure that kit foxes cannot reenter or use the den during the construction period. If at any point during excavation a San Joaquin kit fox is discovered inside the den, the excavation activity will cease immediately and monitoring of the den as described above will be resumed. Destruction of the den may be completed when, in the judgment of a qualified biologist, the animal has escaped from the partially destroyed den.
- Natal/pupping Dens: Natal or pupping dens that are occupied will not be destroyed until the pups and adults have vacated and then only after consultation with the USFWS and CDFG. Project activities at these den sites will be postponed if deemed necessary to avoid disturbance.

CVSR BIO-86. Creation of construction exclusion zones for the San Joaquin kit fox. Construction and other project activities should be prohibited or greatly restricted within these exclusion zones, to the extent practicable. The configuration of exclusion zones around San Joaquin kit fox dens should have a radius measured outward from the entrance or cluster of entrances. The following radii are minimums, and if they cannot be followed, the USFWS, CDFG, and County must be contacted:

- Potential den – 50 feet
- Known den – 100 feet
- Natal/pupping den – USFWS must be contacted
- Atypical den – 50 feet (occupied and unoccupied)

Known den: To ensure protection, the exclusion zone should be demarcated by exclusion fencing that encircles each den at the appropriate distance and does not prevent access to the den by San Joaquin kit fox. Exclusion zone fencing should be maintained until all construction-related or operational disturbances have been terminated. At that time, all fencing will be removed to avoid attracting subsequent attention to the dens. Potential and Atypical dens: Placement of 4 to 5 flagged stakes 50 feet from the den entrance(s) will suffice to identify the den location; fencing will not be required, but the exclusion zone must be observed. Only essential vehicle and foot traffic on existing roads within the exclusion zone should be permitted. Otherwise, all construction, vehicle operation, material storage, or any other type of surface-disturbing activity should be prohibited within the exclusion zones.

CVSR BIO-87. Installation of escape dens for San Joaquin kit foxes to facilitate movement. Escape dens shall be installed in areas between the arrays identified as "less permeable" to facilitate movement of individuals through these areas. The number and placement of these temporary shelters will be determined during consultation with USFWS and CDFG. Depending on local terrain and array layout, typically one escape den is installed every ¼ mile along existing maintenance roads. Escape den entrances should measure 8 inches across with rebar installed to restrict the opening to 6 inches to prevent use by badgers or coyotes. The 8-inch diameter PVC pipe should be at least 25-feet long, placed flat on the ground surface, and covered with soil for thermal protection.

CVSR BIO-88. Revegetation will follow the Project Revegetation Plan. Upon completion of the project, all areas subject to temporary ground disturbances, including storage and staging areas, temporary roads, pipeline corridors, etc. will be recontoured if necessary, and revegetated to pre-project conditions, according to the Project Revegetation Plan. An area subject to "temporary" disturbance means any area that is disturbed during the project, but that after project completion will not be subject to further disturbance and has the potential to be revegetated.

CVSR BIO-89. Mitigation ratios for permanently-impacted GKR habitat. Habitat subject to permanent alteration or project-related disturbance has been minimized through project design. Permanent loss of habitat to facilities, solar array construction, and project-related disturbance will be mitigated in the form of providing habitat preservation, enhancement, and management in perpetuity at a ratio of not less than 2:1 and not greater than 3:1 for all impacted acreage; the final mitigation ratio will be determined by the County, in consultation with the USFWS and CDFG, based on an analysis of the quality (i.e., biological functions and values) of the mitigation land (a lower ratio is appropriate for higher quality mitigation land). If monitoring does not detect continued GKR occupation of the site following completion of construction, then the total requirement will be increased by 1:1 for the acreage of the solar array footprint.

CVSR BIO-90. Prohibition of off-road traffic. To minimize disturbance of areas outside of the construction zone, all project-related vehicle traffic should be restricted to established roads, construction areas, and other designated areas. These areas will be included in preconstruction surveys and, to the extent possible, should be established in locations disturbed by previous activities to prevent further impacts. Off-road traffic outside of designated project areas will be prohibited. Occupied burrow precincts in areas adjacent to construction zones should be flagged or fenced and construction and other project activities should be prohibited or greatly restricted within these exclusion zones. Only essential vehicle and foot traffic on existing roads within the exclusion zone will be permitted. Otherwise, all construction, vehicle operation, material storage, or any other type of surface-disturbing activity will be prohibited within the exclusion zones.

CVSR BIO-91. Worker environmental training program focused on the GKR. Prior to initiation of site disturbance and/or construction, all personnel associated with the project will attend a worker education program, conducted by a qualified biologist, to avoid or reduce impacts on sensitive biological resources (i.e., GKR). At a minimum, as the program relates to the GKR, the training will include GKR natural history, all measures specified by the County, as well as any related biological report(s) prepared for the project. The Applicant will notify the County prior to this meeting. A GKR fact sheet shall will also be developed prior to the training, and will be distributed at the training program to all contractors, employers and other personnel involved with the construction of the project. Completion of the training program will be documented for personnel associated with the project.

CVSR BIO-92. Avoidance of GKR burrow precincts. Occupied GKR precincts will be avoided wherever possible during construction particularly during placement of ground screws or helical piles, trenching, and operation of heavy equipment or vehicles. Where active precincts cannot be avoided, live traps will be used to capture GKR(s) from the impacted burrow precinct. If the disturbance is temporary (< 1 day) trapped GKR may be held under suitable conditions, during the period of disturbance, and then released at the same location at which they were trapped. For instances where the disturbance is longer term or permanent, GKR will be trapped and relocated to either unoccupied burrow precincts, located as near as possible in areas that will not be disturbed or transferred to a receptor site, which may require the use of artificially created burrow precincts within managed mitigation lands.

CVSR BIO-93. Daily coverage of any excavation and morning inspection to avoid entrapment of GKR. All excavation, steep-walled holes, or trenches in excess of 6 inches in depth shall will be covered at the close of each working day by plywood or similar materials, or provided with one or more escape ramps constructed of earth dirt fill or wooden planks. Trenches will also be inspected for entrapped GKR each morning prior to onset of field activities and immediately prior to covering with plywood at the end of each working day. Before such holes or trenches are filled, they will be thoroughly inspected for entrapped GKR. Any GKR discovered will be allowed to escape before field activities resume, or removed from the trench or hole by a qualified biologist and held under suitable conditions until it can be released at nightfall.

CVSR BIO-94. Manage livestock grazing by way of the Project Grazing Plan to benefit GKR. Managed livestock grazing will be used to maintain low-height grassland vegetation on the site for the benefit of GKR. Managed livestock grazing will be conducted in accordance with the Project Grazing Plan. Upon completion of the project, all areas subject to temporary ground disturbances, including storage and staging areas, temporary roads, pipeline corridors, etc. will be recontoured if necessary, and revegetated to promote revegetation of the area to pre-project conditions, according to the Project Revegetation Plan. An area subject to "temporary" disturbance means any area that is disturbed during the project, but that after project completion will not be subject to further disturbance and has the potential to be revegetated.

CVSR BIO-95. Creation of exclusion zones for San Joaquin antelope squirrel during construction. Habitat occupied by San Joaquin antelope squirrel will be avoided during the construction of the facilities and the arrays. Areas adjacent to construction zones will be flagged or fenced and construction and other project activities will be prohibited or greatly restricted within these exclusion zones. Only essential vehicle and foot traffic on existing roads within the exclusion zone will be permitted. Otherwise, all construction, vehicle operation, material storage, or any other type of surface-disturbing activity will be prohibited within the exclusion zones.

CVSR BIO-96. Prohibition of off-road traffic. To minimize disturbance of areas outside of the construction zone, all project-related vehicle traffic will be restricted to established roads, construction

areas, and other designated areas. These areas will be included in preconstruction surveys and, to the extent possible, should be established in locations disturbed by previous activities to prevent further impacts. Off-road traffic outside of designated project areas will be prohibited.

CVSR BIO-97. Worker environmental training program focused on the San Joaquin antelope squirrel. Prior to initiation of site disturbance and/or construction, all personnel associated with the project will attend a worker education program, conducted by a qualified biologist, to avoid or reduce impacts on sensitive biological resources (i.e., San Joaquin antelope squirrel). At a minimum, as the program relates to the San Joaquin antelope squirrels, the training will include San Joaquin antelope squirrel natural history, all measures specified by the County, as well as any related biological report(s) prepared for the project. The Applicant will notify the County prior to this meeting. A San Joaquin antelope squirrel fact sheet will also be developed prior to the training, and will be distributed at the training program to all contractors, employers and other personnel involved with the construction of the project. Completion of the training program will be documented for personnel associated with the project.

CVSR BIO-98. Daily coverage of any excavation and morning inspection to avoid entrapment of San Joaquin antelope squirrel. To prevent entrapment of San Joaquin antelope squirrels, all excavation, steep-walled holes, or trenches in excess of 12 inches in depth shall will be covered when not in use by plywood or similar materials, or provided with one or more escape ramps constructed of earth dirt fill or wooden planks. Trenches will also be inspected for entrapped San Joaquin antelope squirrels prior to onset of field activities and immediately prior to covering with plywood. Before such holes or trenches are filled, they will be thoroughly inspected for entrapped San Joaquin antelope squirrels. Any San Joaquin antelope squirrels discovered all be allowed to escape before field activities resume, or removed from the trench or hole by a qualified biologist and released at a safe nearby location.

CVSR BIO-99. Mitigation ratios for permanently-impacted San Joaquin antelope squirrel habitat. Upon completion of the project, all areas subject to temporary ground disturbances, including storage and staging areas, temporary roads, pipeline corridors, etc. will be recontoured if necessary, and revegetated to promote revegetation of the area to pre-project conditions, according to the Project revegetation plan. An area subject to "temporary" disturbance means any area that is disturbed during the project, but that after project completion will not be subject to further disturbance and has the potential to be revegetated, including targeting and planting revegetation areas that would support saltbush scrub communities that San Joaquin antelope squirrels utilize.

CVSR BIO-100. Prohibition of off-road traffic to avoid impacts to San Joaquin antelope squirrel and other burrowing animals. Habitat subject to permanent alteration or project-related disturbance should be minimized. To minimize disturbance of areas outside of the construction zone, all project-related vehicle traffic should be restricted to established roads, construction areas, and other designated areas. These areas will be included in preconstruction surveys and, to the extent possible, should be established in locations disturbed by previous activities to prevent further impacts. Off-road traffic outside of designated project areas will be prohibited. Occupied burrows in areas adjacent to construction zones should be flagged or fenced and construction and other project activities should be prohibited or greatly restricted within these exclusion zones. Otherwise, all construction, vehicle operation, material storage, or any other type of surface-disturbing activity should be prohibited within the exclusion zones.

CVSR BIO-101. Worker environmental training program focused on the Tipton kangaroo rat. Prior to initiation of site disturbance and/or construction, all personnel associated with the project will attend a worker education program, conducted by a qualified biologist, to avoid or reduce impacts on sensitive biological resources (i.e., Tipton kangaroo rats). At a minimum, as the program relates to the Tipton kangaroo rat, the training will include Tipton kangaroo rat natural history, all measures specified

by the County, as well as any related biological report(s) prepared for the project. The Applicant will notify the County prior to this meeting. A Tipton kangaroo rat fact sheet shall will also be developed prior to the training, and will be distributed at the training program to all contractors, employers and other personnel involved with the construction of the project. Completion of the training program will be documented for personnel associated with the project.

CVSR BIO-102. Daily coverage of any excavation and morning inspection to avoid entrapment of Tipton kangaroo rat. To prevent entrapment of Tipton kangaroo rats, all excavation, steep-walled holes, or trenches in excess of 6 inches in depth will be covered at the close of each working day by plywood or similar materials, or provided with one or more escape ramps constructed of earth dirt fill or wooden planks. Trenches will also be inspected for entrapped Tipton kangaroo rats each morning prior to onset of field activities and immediately prior to covering with plywood at the end of each working day. Before such holes or trenches are filled, they will be thoroughly inspected for entrapped Tipton kangaroo rats. Any Tipton kangaroo rats discovered will be allowed to escape before field activities resume, or removed from the trench or hole by a qualified biologist and held under suitable conditions until it can be released at nightfall.

CVSR BIO-103. Mitigation ratios for permanently-impacted Tipton kangaroo rat habitat. Upon completion of the project, all areas subject to temporary ground disturbances, including storage and staging areas, temporary roads, pipeline corridors, etc. will be recontoured if necessary, and revegetated to promote revegetation of the area to pre-project conditions, according to the Project Revegetation Plan. An area subject to "temporary" disturbance means any area that is disturbed during the project, but that after project completion will not be subject to further disturbance and has the potential to be revegetated.

CVSR BIO-104. Mitigation ratios for permanently-impacted sensitive species habitat. Habitat subject to permanent alteration or project-related disturbance has been minimized through project design. Permanent loss of habitat to facilities, solar array construction, and project-related disturbance will be mitigated in the form of providing habitat preservation, enhancement, and management in perpetuity at a ratio of 1:1 for all impacted acreage. This may occur on lands used simultaneously to mitigate impacts to other species, such as special-status plants, San Joaquin kit fox, or GKR.

CVSR BIO-105. 15 miles per hour vehicle speed limit and off-road traffic prohibition. Speed limit signs imposing a speed limit of 15 miles per hour will be installed on the project site prior to initiation of site disturbance and/or construction. To minimize disturbance of areas outside of the construction zone, all project-related vehicle traffic should be restricted to established roads, construction areas, and other designated areas. These areas will be included in preconstruction surveys and, to the extent possible, should be established in locations disturbed by previous activities to prevent further impacts. Off-road traffic outside of designated project areas will be prohibited.

CVSR BIO-106. Worker environmental training program focused on the American badger. Prior to initiation of site disturbance and/or construction, all personnel associated with the project will attend a worker education program, conducted by a qualified biologist, to avoid or reduce impacts on sensitive biological resources (i.e., American badger). At a minimum, as the program relates to the badger, the training will include American badger natural history, all measures specified by the County, as well as any related biological report(s) prepared for the project. The Applicant will notify the County prior to this meeting. An American badger fact sheet will also be developed prior to the training, and will be distributed at the training program to all contractors, employers and other personnel involved with the construction of the project. Completion of the training program will be documented for personnel associated with the project.

CVSR BIO-107. Daily coverage of any excavation and morning inspection to avoid entrapment of American badgers. To prevent entrapment of American badger, all excavation, steep-walled holes, or trenches in excess of two feet in depth will be covered at the close of each working day by plywood or similar materials, or provided with one or more escape ramps constructed of dirt fill or wooden planks. Trenches will also be inspected for entrapped badger each morning prior to onset of field activities and immediately prior to covering with plywood at the end of each working day. Before such holes or trenches are filled, they shall be thoroughly inspected for entrapped American badger. Any badger discovered will be allowed to escape before field activities resume, or removed from the trench or hole by a qualified biologist and allowed to escape unimpeded.

CVSR BIO-108. Den avoidance measures for the American badger. Disturbance to all American badger dens will be avoided to the maximum extent possible. Protection provided by badger dens for use as shelter, escape, cover, and reproduction is vital to the survival of badgers. Dens determined to be occupied between March 1 and June 30 will be avoided to protect adults and nursing young. If a potentially active den is found in a construction area a burrow probe will be used to determine the presence of badgers. Alternatively, den openings may be monitored with tracking medium or an infrared beam camera for three consecutive nights to determine the current use. Inactive dens will be blocked or excavated to prevent use during construction. If an active den is found it should be flagged with a buffer of 50 feet where construction activities and other project activities should be prohibited or greatly restricted. Only essential vehicle and foot traffic on existing roads within the exclusion zone should be permitted. Otherwise, all construction, vehicle operation, material storage, or any other type of surface-disturbing activity should be prohibited within the exclusion zones.

CVSR BIO-109. Maternity season bat surveys and relocation of colonies if avoidance is not possible. A survey for roosting bats should be conducted during the maternity season (1 March to 31 July) prior to any removal of structures or trees, particularly trees 12 inches in diameter at 4.5 feet above grade with loose bark or other cavities. Trees and structures must be surveyed by a qualified bat biologist (i.e., a biologist holding a CDFG collection permit and a Memorandum of Understanding with CDFG allowing the biologist to handle bats). If no active roosts are found, then no further action is required. If active maternity roosts are absent, but a hibernaculum (i.e., a non-maternity roost) is present, then CVSR-BIO-110 is not necessary, but CVSR-BIO-111 and CVSR BIO-112 are required. If active maternity roosts or hibernacula are found, the structure or tree occupied by the roost should be avoided (i.e., not removed) by the Proposed Project, if feasible. If avoidance of the maternity roost is not feasible, the bat biologist should survey (using radio telemetry or other means) for nearby alternative maternity colony sites. If the bat biologist determines that there are alternative roost sites used by the maternity colony, then it will not be necessary to provide mitigation roosting habitat (i.e., CVSR BIO-110 would not apply though CVSR-BIO-111 and CVSR-BIO-112 would still apply). However, if there are no alternative roost sites used by the maternity colony, CVSR-BIO-110 is required.

CVSR BIO-110. Furnishing of a substitute bat roosting habitat on or near the Project site. If a maternity roost will be impacted by the Proposed Project, and no alternative maternity roosts are in use near the site, substitute roosting habitat for the maternity colony shall be provided on, or in close proximity to, the Proposed Project site no less than three months prior to the eviction of the colony. By making the roosting habitat available prior to eviction (CVSR BIO-112, below), the colony will have a better chance of finding and using the roost. Alternative roost sites must be of comparable size and proximal in location to the impacted colony. The CDFG should also be notified of any hibernacula or active nurseries within the construction zone.

CVSR BIO-111. Pre-construction bat survey. A qualified bat biologist will conduct a pre-activity (e.g., vegetation removal, grading) survey for roosting bats within 15 days prior to any grading of rocky

outcrops or removal of trees (particularly trees 12 inches in diameter at 4.5 feet above grade with loose bark or other cavities) whether the colony surveys (CVSR BIO-109) detected bats or not. Bats can change roosts and, particularly if a colony roost is located under CVSR BIO-109 and excluded under CVSR-BIO-112, may find alternate habitat in other potential roosting habitat on the site. Activities that would result in disturbance to active roosts will not proceed prior to completing the surveys. If no active roosts are found, then no further action is required. If a maternity roost that was not identified previously is detected, a qualified bat biologist would determine the extent of construction-free protective zones around active nurseries since some special-status species are known to abandon young when disturbed.

CVSR BIO-112. Eviction of non-breeding bat hibernacula within grading footprint. If non-breeding bat hibernacula are found in trees scheduled to be removed or in crevices in rock outcrops within the grading footprint, the individuals should be safely evicted, under the direction of a qualified bat biologist, by opening the roosting area to allow airflow through the cavity or other means determined appropriate by the bat biologist (e.g., installation of one-way doors). In situations requiring one-way doors, a minimum of one week should pass after doors are installed and temperatures should be sufficiently warm for bats to exit the roost because bats do not typically leave their roost daily during winter months in southern coastal California. This action should allow all bats to leave during the course of one week. Roosts that need to be removed in situations where the use of one-way doors is not necessary in the judgment of the qualified bat biologist shall first be disturbed by various means at the direction of the bat biologist at dusk to allow bats to escape during the darker hours, and the roost tree shall be removed or the grading shall occur the next day (i.e., there shall be no less or more than one night between initial disturbance and the grading or tree removal). These actions should allow bats to leave during nighttime hours, thus increasing their chance of finding new roosts with a minimum of potential predation during daylight. If an active maternity roost is located on the Project site, and alternative roosting habitat is available, the demolition of the roost site must commence before maternity colonies form (i.e., prior to 1 March) or after young are flying (i.e., after 31 July) using the exclusion techniques described above.

CVSR BIO-113. Implement a Worker Environmental Education Program. Prior to any project activities on the site (i.e., surveying, mobilization, fencing, grading, or construction), a Worker Environmental Education Program shall be implemented by a County qualified biologist(s) and be subject to County approval. The Worker Environmental Education Program shall be put into action prior to the beginning of any site related activities and implemented throughout the duration of project construction. The Worker Environmental Education Program shall include, at a minimum, the following items:

1. Training materials and briefings shall include but not be limited to: a discussion of the Federal and State Endangered Species Acts, Bald and Golden Eagle Protection Act, and the Migratory Bird Treaty Act; the consequences of non-compliance with these acts; identification and values of plant and wildlife species and significant natural plant community habitats; hazardous substance spill prevention and containment measures; a contact person and phone number in the event of the discovery of dead or injured wildlife; and a review of mitigation requirements.
2. A discussion of measures to be implemented for avoidance of the sensitive resources discussed above and the identification of an on-site contact on in the event of the discovery of sensitive species on the site. This will include a discussion on microtrash and its potential harmful effects on California Condors.
3. Protocols to be followed when road kill is encountered in the work area or along access roads to minimize potential for additional mortality of scavengers, including listed species such as the California Condor and the identification of an on-site representative to whom the road kill will be reported. Road kill shall be reported to the appropriate local animal control agency within 24 hours.

4. Maps showing the known locations of special-status wildlife, populations of rare plants and sensitive vegetative communities, seasonal depressions and known waterbodies, wetland habitat, exclusion areas, and other construction limitations (e.g. limited operating periods, etc.). These features shall be included on the projects plans and specifications drawings.
5. Literature and photographs or illustrations of potentially occurring special-status plant and/or wildlife species will be provided to all project contractors and heavy equipment operators.
6. The Applicant shall provide to the County of San Luis Obispo evidence that all on-site construction and security personnel have completed the Worker Environmental Education Program prior to the start of site mobilization. A special hardhat sticker or wallet size card shall be issued to all personnel completing the training which shall be carried with the trained personnel at all times while on the project site. All new personnel shall receive this training and may work in the field for no more than 5 days without participating in the Program. A log of all personnel who have completed the Program training shall be kept on-site.
7. A weather protected bulletin board or binder shall be centrally placed or kept on-site (e.g., in the break room, construction foreman's vehicle, construction trailer, etc.) for the duration of the construction. This board or binder will provide key provisions of regulations or project conditions as they relate to biological resources or as they apply to grading activities. This information shall be easily accessible for personnel in all active work areas.
8. Develop a standalone version of the Program, that covers all previously discussed items above, and that can be used as a reference for maintenance personnel during project operations.

Milestones: Worker Environmental Education Program will be prepared prior to the issuance of a grading permit or site mobilization whichever occurs first. The Program will be approved by the County in consultation with the CDFG and USFWS, and implemented for the duration of construction activities.

Monitoring: An environmental monitor will be retained during construction of the project and will be directly involved with the implementation and enforcement of the Worker Environmental Education Program. A log of all personnel who have completed Program shall be kept on-site.

CVSR BIO-114. Implementation of Best Management Practices (BMPs). BMPs will be implemented as standard operating procedures during all ground disturbance and construction-related activities to avoid or minimize project impacts on biological resources. These BMPs will include but are not limited to the following:

a. Compliance with BMPs will be documented and provided to the County in a written report on an annual basis. The report shall include a summary of the construction activities completed, a review of the sensitive plants and wildlife encountered, a list of compliance actions and any remedial actions taken to correct the actions, and the status of ongoing mitigation efforts.
b. Prior to ground disturbance of any kind the project work areas shall be clearly delineated by stakes, flags, or other clearly identifiable system.
c. Vehicles and equipment shall be parked on pavement, existing roads, and previously disturbed areas to the extent practicable.
d. Speed limit signs, imposing a speed limit of 15 miles per hour, will be installed throughout the project site prior to initiation of site disturbance and/or construction. To minimize disturbance of areas outside of the construction zone, all project-related vehicle traffic shall be restricted to established roads, construction areas, and other designated areas. These areas will be included in preconstruction

surveys and to the extent possible, should be established in locations disturbed by previous activities to prevent further impacts. Off-road traffic outside of designated project areas will be prohibited.

e. No vehicles or equipment shall be refueled within 100 feet of an ephemeral drainage or wetland unless a bermed and lined refueling area is constructed. Spill kits shall be maintained on-site in sufficient quantity to accommodate at least three complete vehicle tank failures of 50 gallons each. Any vehicles driven and/or operated within or adjacent to drainages or wetlands shall be checked and maintained daily to prevent leaks of materials.

f. All general trash, food-related trash items (e.g., wrappers, cans, bottles, food scraps, cigarettes, etc.) and other human-generated debris scheduled to be removed weekly will be stored in animal-proof containers and/or removed from the site each day. No deliberate feeding of wildlife will be allowed.

g. Development on the Solar Generation Facility site will maintain existing hydrologic patterns with respect to runoff supporting seasonal wetlands, vernal pools, and ephemeral drainages.

h. All pipes and culverts with a diameter of greater than 4 inches shall be capped or taped closed. Prior to capping or taping, the pipe/culvert shall be inspected for the presence of wildlife. If encountered, the wildlife shall be allowed to escape unimpeded.

i. No firearms will be allowed on the project site, unless otherwise approved for security personnel.

j. To prevent harassment or mortality of listed, special-status species and common wildlife, or destruction of their habitats, no domesticated animals of any kind shall be permitted in any project area with the exception of those described in the approved grazing plan. Dogs associated with grazing shall not be authorized.

k. Use of chemicals, fuels, lubricants, or biocides will be in compliance with all local, state, and federal regulations. All uses of such compounds shall observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and other state and federal legislation, as well as additional project-related restrictions deemed necessary by the USFWS and CDFG. If rodent control must be conducted, the use shall be restricted to interiors of building and zinc phosphide shall be used because of lower risk of poisoning San Joaquin kit fox and American badgers.

l. Any contractor or employee that inadvertently kills or injures a special-status animal, or finds one either dead, injured, or entrapped, will immediately report the incident to the on-site representative identified in the WEEP. The representative will contact the USFWS, CDFG, and County by telephone by the end of the day, or at the beginning of the next working day if the agency office is closed. In addition, formal notification shall be provided in writing within three working days of the incident or finding. Notification will include the date, time, location and circumstances of the incident. Any threatened or endangered species found dead or injured will be turned over immediately to CDFG for care, analysis, or disposition.

m. During the site disturbance and/or construction phase, grading and construction activities shall be restricted to the following hours:

   i. October 1 through May 31 – Monday through Friday, 7:00 a.m. to 6:00 p.m.

   ii. June 1 through September 30 – Monday through Friday, 5:00 a.m. to 9:00 p.m. All construction activities between 5:00 a.m. and 7:00 a.m. shall not result in noise exceeding 45 dBA at the perimeter property boundaries.

   iii. Saturday and Sunday, 8:00 a.m. to 5:00 p.m.

n. Avoidance and minimization of vegetation removal within active construction areas. This will include flagging of sensitive vegetative communities or plants.

o. Avoidance and minimization of construction activities resulting in impacts to wetlands, streambeds, and banks of any ephemeral drainage.

p. All excavation, steep-walled holes or trenches in excess of 6 inches in depth will be covered at the close of each working day by plywood or similar materials, or provided with one or more escape ramps constructed of earth dirt fill or wooden planks. Trenches will also be inspected for entrapped wildlife each morning prior to the onset of construction activities and immediately prior to covering with plywood at the end of each working day. Before such holes or trenches are filled, they will be thoroughly inspected for entrapped wildlife. Any wildlife discovered will be allowed to escape before construction activities are allowed to resume, or removed from the trench or hole by a County-approved biologist holding the appropriate permits (if required).

q. Project personnel will monitor all areas within 1/4 mile around the solar arrays on a regular basis (i.e., several times per week) for any dead animals, including wild animals or grazing animals such as cattle, goats, or sheep that are being used for vegetation management on the site. Any animals found dead will be removed immediately to avoid attracting condors to the vicinity of the arrays.

r. New light sources will be minimized, and lighting will be designed (e.g., using downcast lights) to limit the lighted area to the minimum necessary.

s. Avoid areas of relatively high biological sensitivity, including:

   i. Atriplex scrub habitat, Interior Coast Range scrub and Wildflower Field, Retired dry-farmed field, (all north of SR-58);

   ii. Alkali sink habitat (south of SR-58); and

   iii. Lower elevation areas that contribute drainage to off-site vernal pools (Northern Claypan Vernal Pool habitat).

During construction, compliance will be verified by the County Environmental Monitor. The Applicant shall submit a written report to the County on an annual basis for review.

CVSR BIO-115. Develop a Habitat Restoration and Revegetation Plan. The Applicant shall restore disturbed areas to pre-construction conditions or better. Prior to the issuance of a construction permit and removal of any vegetation and/or wetland habitat, the Applicant shall retain a County-approved biologist(s), knowledgeable in the area(s) of annual grassland and wetland habitat restoration, to prepare a Habitat Restoration and Revegetation Plan (HRRP). This biologist would also be responsible for monitoring the implementation of the plan as well as the progress on achieving the established success criteria. The HRRP shall be submitted for County approval prior to the issuance of a construction permit.

The purpose of the HRRP will be to explicitly identify the process by which all disturbed areas shall be restored to pre-construction conditions. The plan will address restoration and revegetation related to disturbance from construction. It will also address restoration and revegetation required after decommissioning of the project, should this be required. The plan shall include, at a minimum, the following items:

a. **Soil restoration plan.** A soil baseline study shall be conducted before ground-disturbing activities at the project site. The County may determine that the geotechnical survey conducted for the EA would satisfy this requirement.

   For areas where top soil removal will occur, the Plan shall include locations and details for top soil salvage and storage and shall identify areas within the construction footprint where topsoil:

i. Is present;

ii. Supports native vegetation; and

iii. Can be salvaged and stockpiled for replacement onto the site during revegetation activities.

Top soil on the project site shall be characterized based on (1) depth to impervious layer; (2) soil nutrient levels and chemistry; (3) soil texture and organic matter; and (4) water-holding capacity and permeability.

Areas of the project dominated by soils with a high sand component generally have little or no soil development (i.e., seed banks, microorganisms, or nutrient storage) and would contribute little to the revegetation effort. These sandy soils will not be salvaged for revegetation. Topsoil that is wholly dominated by invasive non-native species, such as Russian thistle or other noxious plant species, shall not be used in revegetation because the non-native seed bank would outweigh any benefit for revegetation the soil may have. Areas characterized as California annual grassland or wetland habitat will require topsoil salvage.

Where top soil or soil disturbance occurs on the project site, the soil restoration plan shall require, at a minimum:

iv. Between 3 and 12 inches of topsoil shall be salvaged from where it must be temporarily removed.

v. Topsoil shall not be mixed or stored with spoil material. The length of time topsoil is stored shall not exceed two years.

vi. For disturbed areas where topsoil was removed, redistribution shall begin immediately after re-grading, weather permitting, and depths shall vary between 3 and 12 inches depending on the depth of topsoil stripped.

vii. Redistribution of stockpiled topsoil shall be completed prior to final inspection.

viii. Replaced topsoil shall be left in a roughened condition to discourage erosion. Additional erosion control and soil stabilization may be required on steeper slopes, on topsoil susceptible to wind erosion, etc.

ix. If compaction, rutting, or crushing occurs prior to seeding, the replaced topsoil shall be worked with a harrow, disc, spring, tooth, chisel plow, or similar implement. Fertilization shall not be utilized unless recommended by a County-approved restoration ecologist and approved by the California Department of Fish and Game (CDFG).

x. Where electrical cables are buried, trenching shall occur in the proposed aisles between panel rows, and trenched areas shall be refilled as cables are buried, and topsoil shall be replaced.

xi. After closure and decommissioning: (1) All structures and facilities shall be removed to a depth of 3 feet; (2) The areas where structures and facilities are removed shall be restored and contoured to match site conditions, as appropriate; and (3) as appropriate, highly-disturbed soils shall be supplemented with certified weed-free mulch.

b. **Figures depicting areas proposed for temporary disturbance**. The HRRP shall include detailed figures indicating the locations and vegetation types of areas proposed for temporary disturbance. These figures shall be updated, as necessary, to reflect current site conditions should they change.

c. **Proposed species for restoration/revegetation.** The species palate proposed for restoration/revegetation shall include a combination of native and non-native, non-invasive, (based on current species composition in the restoration/revegetation areas) annual and perennial grasses and annual herbaceous species known to occur in the area. Due to the large non-native annual grass component currently present within most of project area (including wetland habitats), the intent of the Plan is to introduce as many native species as possible, recognizing that the colonization of the site by non-native annual grasses is likely.

d. **Seed source and collection guidelines**. If possible, seeds from stock within the Carrizo Plain, or from within a 25-mile radius will be collected to maintain local genetic integrity. If seed collection from these areas is not possible then the collection area can be expanded to include suitable habitats within San Luis Obispo or western Kern County. Seeds must be obtained from a local seed supplier familiar with native species. Seed will be limited to the species and quantity specified in the seed mix palette prepared for the project. As possible, all seed will originate from the project region, within +/– 1,000 feet elevation of the project site. The seed supplier chosen will provide a list of three references with the bid proposal. The references will include year, contact names, and telephone numbers. Seeds will be tested for percent purity, percent germination, number of pure live seeds per pound, and weed seed content. Seed testing will be the responsibility of the seed supplier.

e. **Planting methodology**. A description of the preferred methods proposed for seeding shall be provided (e.g., hydroseeding, drill seeding, broadcast seeding, etc.). Additionally, a discussion on

timing of seeding, type of irrigation system proposed, potential need of irrigation, type and duration of irrigation, and erosion controls proposed for revegetation activities shall be included.

f. **Weed Control Plan**. A comprehensive Weed Control Plan will be developed for the project. The Weed Control Plan will serve to prevent the type conversion of natural habitats to those dominated by invasive species known to occur in the area, such as Russian thistle

g. **Monitoring program**. Areas subject to restoration/revegetation shall be monitored to assess conditions and to make recommendations for successful habitat establishment. Monitoring will be performed by a County-approved biologist(s), knowledgeable in the area of annual grassland habitat restoration. Monitoring should include, at a minimum, the following:

   i. **Qualitative monitoring**. Qualitative monitoring surveys will be performed monthly in all restored/revegetated areas for the first year following planting in any phase of the project. Qualitative monitoring will be on a quarterly schedule thereafter, until final completion approval of each restoration/revegetation area. Qualitative surveys will assess native plant species performance, including growth and survival, germination success, reproduction, plant fitness and health as well as pest or invasive plant problems. A County-approved wildlife biologist will assist in monitoring surveys and will actively search for mammal and other wildlife use. Monitoring at this stage will indicate need for remediation or maintenance work well in advance of final success/failure determination. The monitoring reports will describe site progress and conditions and list all observations pertinent to eventual success, and make recommendations as appropriate regarding remedial work, maintenance, etc.

   ii. **Quantitative monitoring.** Quantitative monitoring will occur annually for years one to five, or until the success criteria are met. Within each revegetation area the biologist will collect data in a representative series of one square meter quadrats, as specified in the monitoring plan, to estimate cover and density of each plant species within the revegetated areas. Data will be used to measure native species growth performance, to estimate native and nonnative species coverage, seed mix germination, native species recruitment and reproduction, and species diversity. Additionally, within wetland habitat restoration areas, the biologist shall conduct sampling events to document the presence of hydric soil characteristics/indicators (if present). Based on these results, the biologist will make recommendations for maintenance or remedial work on the site and for adjustments to the approved seed mix.

h. **Success criteria**. Criteria for successful restoration/revegetation of temporarily disturbed areas shall be as follows:

   i. **California annual grassland habitat.** Restored annual grassland habitat shall exhibit 75% vegetative cover to account for natural processes such as burrowing animals including giant kangaroo rat, San Joaquin kit fox, and other species that preclude or limit the establishment of vegetation. This percentage shall include no more than a 10% non-native component, with the exception of red-stemmed filaree and intentionally/or naturally seeded non-native grasses that occurred in the area prior to site disturbance.

   ii. **Wetland habitat.** Restored wetland habitat shall demonstrate 75% vegetative cover over a 5- to 10-year period. This percentage shall include no more than a 10% non-native component, with the exception of red-stemmed filaree and intentionally/or naturally seeded non-native grasses that occurred in the area prior to site disturbance. The restored habitat shall exhibit the same functional values (retains the same ecological function) and display the same hydric soil characteristics/indicators (i.e., redoximorphic features, buried organic matter, organic streaking, reduced soil conditions, gleyed or low-chroma soils, or sulfidic odor) or show a trend toward meeting these conditions, as found prior to disturbance.

iii. **Reporting**. Reporting will include progress reports summarizing site status and recommended remedial measures that will be submitted by the biologist to the County quarterly until successfully reestablished, with the exception of the site visits immediately preceding the development of each annual status report (see below). Each progress report will list estimated species coverage and diversity, species health and overall vigor, the establishment of volunteer native species, topographical/soils conditions, problem weed species, the use of the site by wildlife species, significant drought stress, and any recommended remedial measures deemed necessary to ensure compliance with specified performance criteria.

One annual site status report that summarizes site conditions will be forwarded by the biologist to the County, the U.S. Fish and Wildlife Service (USFWS) and the CDFG at the end of each year following implementation of this plan. Each annual report will list species coverage and diversity measured during yearly quantitative surveys, compliance/noncompliance with required performance standards, species health and overall vigor, the establishment of volunteer native species, hydrological and topographical conditions, the use of the site by wildlife species, and the presence of invasive weed species. In the event of substantial non-compliance with the required performance criteria, the reports will include remedial measures deemed necessary to optimize the potential for future compliance with specified performance criteria, or adaptive management recommendations to address each of the performance criteria. Each annual report will include, at the minimum:

i. The name, title, and company of all persons involved in restoration monitoring and report preparation.

ii. Maps or aerials showing restoration areas, transect locations, and photo documentation locations.

iii. An explanation of the methods used to perform the work, including the number of acres treated for removal of non-native plants.

iv. An assessment of the treatment success.

j. **Final Closure Plan (Decommissioning)**. The HRRP shall also include a Final Closure Plan, which shall address the final infrastructure removal, restoration, and revegetation activities upon closure and decommissioning of the project. The primary intent of the Closure Plan will be to restore the project site back to its previous natural/grazing land condition, which shall include the removal of project elements as further described in the above subsection (a)(xi) of this measure. At such time, the County shall re-evaluate retention of the water tank and well for area wide fire protection, and if appropriate, and the County shall work with the applicant and Cal Fire to determine if the water tank shall remain. The Final Closure Plan shall include a cost estimate, adjusted for inflation, reflecting the costs of restoration, revegetation, and monitoring for the duration of time expected to fully restore impacted soil and vegetation communities impacted by the project. At least one year prior to planned closure and decommissioning, the Applicant shall submit to the County an updated Final Closure Plan for review to determine if revisions are needed. The Applicant shall incorporate all required revisions and re-submit the Final Closure Plan to the County 90 days prior to the start of ground-disturbing activities associated with closure and decommissioning activities.

CVSR BIO-116. Compensate for permanent impacts to vegetative communities. To compensate for permanent impacts to on-site vegetative communities, habitat (which may include preservation areas within portions of the project site not impacted by construction or mitigation lands outside of the main project site) that contains the same quality of vegetative communities impacted by the project and that is not already public land under resource protection shall be preserved and managed in perpetuity at a 1:1 mitigation ratio (one acre preserved for each acre impacted). These lands shall be located within the Carrizo Plain. An open space easement shall be recorded on all property associated with the mitigation

lands as to protect the existing plant and wildlife resources in perpetuity. An open space easement could be held by the CDFG or an approved land management entity and shall be recorded immediately upon the dedication or acquisition of the land. Preserved or acquired mitigation lands will be monitored and maintained per the requirements set forth in the Habitat Mitigation and Monitoring Plan prepared for the project, discussed under CVSR BIO-136. Evidence of this open space easement shall be provided to the County prior to final inspection. If any agricultural use is allowed (e.g., managed grazing) a qualified range scientist must determine it is compatible with the vegetative communities being preserved. No dryland grain activities shall be allowed.

Provided that the lands acquired or protected for the compensation of permanent impacts to giant kangaroo rat, San Joaquin kit fox or San Joaquin antelope squirrel, and listed or rare plants (discussed below) contain the same/or better habitat as the impacted vegetative communities, the 1:1 ratio would be achieved through the acquisition of lands for those species (CVSR BIO-135) and no further acquisition would be required for permanent impacts.

Habitat shall be preserved through the use of permanent open space easements or by the acquisition of fee title with the placement of an open space easement on such acquired lands. Mitigation lands cannot be located on land that is currently publicly held for resource protection. Mitigation lands may include (depending on the habitat requirements of a particular species):

a. Areas outside the project boundary, but within the Carrizo Plain;

b. Preservation areas within portions of the project site that are at least 100 feet from solar facilities and are either (1) not permanently impacted by construction and operation of the project, or (2) are temporarily disturbed and then restored according to the requirements in CVSR BIO-115 (Develop a Habitat Restoration and Revegetation Plan); and

c. Degraded areas (e.g., areas that have been actively dry-farmed) that are restored to high quality habitat through the implementation of a County-approved restoration plan.

Criteria for appropriate mitigation land are species-specific; however, the following factors must be considered in assessing the quality of potential mitigation habitat: (1) current land use; (2) location (e.g., habitat corridor, part of a large block of existing habitat, adjacency to source populations, proximity to solar facilities or other potential sources of disturbance); (3) vegetation composition and structure; (4) slope; (5) soil composition and drainage; and (6) level of occupancy or use by relevant species.

The Applicant shall either donate open space easements or provide funds for the acquisition of open space easements to a "qualified easement holder" (defined below). The California Department of Fish and Game (CDFG) is a qualified easement holder. To qualify as a "qualified easement holder" a private land trust must have:

i. Substantial experience managing open space easements that are created to meet mitigation requirements for impacts to special-status species;

ii. Adopted the Land Trust Alliance's Standards and Practices; and

iii. A stewardship endowment fund to pay for its perpetual stewardship obligations.

The County shall determine whether a proposed easement holder meets these requirements.

The Applicant shall also be responsible for providing to the qualified easement holder fees sufficient to cover: (1) administrative costs incurred in the creation of the easement (appraisal, documenting baseline conditions, etc.), and (2) funds in the form of a non-wasting endowment to cover the cost of monitoring

and enforcing the terms of the easement in perpetuity. The amount of these administrative and stewardship fees shall be determined by the easement holder in consultation with the County. Open space easement(s) shall also be subject to the following:

iv. The locations of acceptable open space easement(s) shall be developed with approval of CDFG and USFWS.

v. The primary purpose of the open space easement(s) shall be conservation of impacted species and habitats; the said easement(s) shall also allow livestock grazing when and where it is deemed beneficial for the habitat needs of impacted species.

vi. Be held in perpetuity by a qualified easement holder (defined above).

vii. Be subject to a legally binding agreement that shall: (1) be recorded with the County Recorder(s); and (2) name the CDFG or another organization to which the easement(s) will be conveyed if the original holder is dissolved.

viii. Be subject to the management requirements outlined in CVSR BIO-136 (Prepare a Habitat Mitigation and Monitoring Plan).

Documentation of recorded open space easement(s) shall be submitted to and approved by the County prior to the issuance of the construction permit. Verification of having met habitat mitigation requirements shall be reviewed and approved by the County prior to final inspection.

CVSR BIO-117. Prepare and implement a Weed Control Plan. Prior to the issuance of a construction permit or any ground disturbance, the Applicant shall retain a County-approved restoration ecologist or biologist to prepare a comprehensive adaptive Weed Control Plan (WCP) to be administered during the construction and operation of the project for the purpose of invasive weed abatement. The WCP shall be submitted to the County of San Luis Obispo for review and approval and shall be updated and utilized for eradication and monitoring after construction. The WCP shall include, but not be limited to, the following:

a. Conduct a pre-construction survey for weeds in all areas proposed for ground-disturbing activity, including, but not limited to, solar panel footing preparation and construction areas, assembly yards, access roads, and areas subject to grading for new or improved access roads. Weed populations that are rated high or moderate for negative ecological impact in the California Invasive Plant Inventory Database (Cal-IPC 2006) shall be mapped and described according to density and area covered. Areas identified to have weed infestations shall be treated prior to ground disturbance according to control methods detailed below and Best Management Practices for invasive weed populations.

b. Weed control treatments shall include, as appropriate, all legally permitted herbicide approved for application, and manual and mechanical methods of weed removal. The application of herbicides shall be in compliance with all state and federal laws and regulations under the prescription of a Pest Control Advisor (PCA), where concurrence has been provided by the County of San Luis Obispo, and implemented by a Licensed Qualified Applicator. Herbicides shall not be applied during or within 72 hours of a scheduled rain event. Where manual and/or mechanical methods of weed removal are used, disposal of the plant debris will take place at an appropriate off-site location. The timing of the weed control treatment shall be determined for each plant species with the goal of controlling populations before they start producing seeds. Consultation with a County-approved wildlife biologist or botanist shall be required prior to weed control treatments with the intent of avoiding any adverse impacts to plants and wildlife in the area.

For the preconstruction and construction of the project, measures to control the introduction and spread of noxious weeds in the project work area shall be taken as follows:

c. Surveying for new invasive weed populations and the monitoring of identified and treated populations shall be required at all sites impacted by construction (array structures, staging areas, etc.), including access roads disturbed during the project, from the time that ground disturbance begins. Surveying and monitoring for weed infestations shall occur annually. Treatment of all identified weed populations shall occur at a minimum of once annually. When no new seedlings or re-sprouts are observed at treated sites for three consecutive, normal rainfall years, the weed population can be considered eradicated and weed control efforts may cease for that impact site. Weed control efforts shall be timed annually to reduce noxious weed seed production, by conducting activities when flowering has just started, but before seeds have been produced. All plant debris shall be disposed of at an approved location. Weed control efforts shall commence in early spring (February), as indicated annually by a County-approved restoration ecologist or biologist.

d. During project preconstruction and construction, all seeds and straw materials shall be weed-free rice straw, and all gravel and fill material shall be certified weed free. The list of noxious weeds to avoid is available at the County Agriculture Commissioner's Office. Any deviation from this will first need approval by the County of San Luis Obispo. All plant materials used during restoration shall be native, certified weed-free, and approved by the County of San Luis Obispo, except as otherwise noted in these project design features.

e. During project preconstruction and construction, vehicles and all equipment shall be washed (including wheels, undercarriages, and bumpers) before and after entering the project area. Vehicles shall be cleaned at existing construction yards or legally operating car washes. The Applicant shall document that all vehicles have been washed prior to commencing project work. In addition, tools such as chainsaws, hand clippers, pruners, etc. shall be washed before and after entering all Project work areas. All washing shall take place where rinse water is collected and disposed of in either a sanitary sewer or landfill, unless otherwise approved by the County of San Luis Obispo. A written daily log shall be kept for all vehicle/equipment/tool washing that states the date, time, location, type of equipment washed, methods used, and staff present. The log shall include the signature of a responsible staff member. Logs shall be available to the County of San Luis Obispo for inspection at any time and shall be submitted to the County of San Luis Obispo on a monthly basis.

f. During project operation and maintenance activities, clear and dispose of weeds in assembly yards, array footprints, access roads, staging areas, and any other disturbance areas in an approved method.

The above measures shall be implemented by the Applicant as specified in the WCP. The County environmental monitor shall ensure compliance with construction measures.

CVSR BIO-118. Develop Grazing Plan. Managed livestock grazing has been proposed for the Solar Generation Facility site. Prior to the issuance of a construction permit, the Applicant shall retain a County-approved restoration ecologist or biologist to prepare a Grazing Plan to be administered during the construction and operation of the project. The Grazing Plan shall be submitted to the County of San Luis Obispo for review and approval. The Grazing Plan shall include, but not be limited to, the following:

a. Timing and duration of grazing depending on seasonal conditions (i.e., rainfall, temperature).

b. Discussion of the pros and cons of grazing sheep or goats vs. cattle.

c. Detailed measures to ensure the persistence of and prevent the extirpation of annual grassland species, including listed and rare plant species.

d. Detailed maps of any additional interior fencing required for on-site grazing and a detailed plan for ensuring that any interior fencing does not have additional impacts on wildlife movement.

e. Analysis of the effects of sheep or goat grazing on soil compaction or trampling on vegetation or the spread of invasive weed seed through hooves, scat or fur of livestock.

f. Development of a monitoring plan that will facilitate the examination of the effects of grazing on surrounding wildlife and plant and wildlife biodiversity.

g. Development of a plan for adaptive strategies to ensure that grazing is managed to benefit native wildlife and vegetation.

h. Submittal of an annual report to the County on the effectiveness of the plan.

The Grazing Plan will be an adaptive management tool. Grazing management strategies will be evaluated over time. Modifications to the strategies used or to the techniques used to accomplish each strategy will be implemented based on results, experience, and the latest research. Alterations to the plan must be reviewed and approved by the County in consultation with CDFG before being implemented.

Prior to acquisition or implementation, should the land be proposed for limited grazing to complement reestablishment of sensitive biological resources, the County shall evaluate to determine to what extent, if any, the two can jointly qualify for protection of agricultural and sensitive biological lands.

CVSR BIO-119. Implement protective evaporation pond or solar evaporator water disposal design, monitoring and management plan. The Applicant shall design and implement an Evaporation Pond or Solar Evaporator Water Disposal Design and Monitoring and Management Plan (Evaporation Pond or Solar Evaporator Plan) that shall be submitted to the County for approval prior to construction permit issuance. The plan shall include, at the minimum, the following:

a. Discussion of the objectives of the Evaporation Pond or Solar Evaporator Plan.

b. Description of project design features such as side slope specifications, freeboard and depth requirements, covering (i.e., including the use of nets), and fencing to reduce access by wildlife.

c. Details on the placement of the evaporation pond as to reduce the potential of collision or electrocution of wildlife near the Gen-Tie and feeder lines.

d. Description of proposed avian, pond, water quality monitoring, and management actions, such as bird deterrence/hazing and water level management, including triggers for implementing those management actions and developing and implementing adaptive management strategies.

e. Detailed reporting requirements.

Prior to the issuance of a construction permit, the County must approve the Evaporation Pond or Solar Evaporator Plan, which will be done in consultation with the CDFG. No less than 30 days prior to operation of the evaporation ponds, the project owner shall retain a County-approved biologist to inspect the protective structure for adequacy to effectively exclude wildlife from the evaporation pond(s).

Implementation of the approved design shall be verified by the County prior to final inspection.

Protective Measures for Evaporation Pond. To reduce potential impacts to wildlife, the perimeter of the pond, if used, shall be surrounded by a barrier fence designed to keep wildlife species out. The fence shall be tall enough (6 feet) to keep out large mammals and fine enough at the bottom, and buried at least 2 feet, to keep out amphibians, reptiles, birds, and small and medium sized mammals. If determined appropriate by the County and/or CDFG, the project Applicant shall cover the evaporation ponds with

1.5-inch mesh netting designed to exclude birds and other wildlife from drinking or landing on the water of the ponds. The netted ponds, if required, shall be monitored on a regular basis for the life of the project to verify that the netting remains intact, is fulfilling its function in excluding birds and other wildlife from the ponds, and does not pose an entanglement threat to birds and other wildlife.

If required, the netting shall have visual deterrents attached at regular intervals to alert birds to the presence of netting. Without such deterrents, birds may only see the water surface and not the netting until they are close enough to become entangled. Visual deterrents on netting may be in the form of flashing or flagging. The netting, if required, shall be supported sufficiently (rigid frame or piers) so that the net does not sag into the water, making water and/or aquatic invertebrates available to birds. Submerged netting is known to provide a deposition site for invertebrate egg/pupae deposition, which would increase the avian exposure risk to elements like selenium, levels of which are magnified through the food chain ("biomagnification").

Monitoring. The monitoring shall at a minimum include the following:

a. A County-approved biologist with experience in evaporation pond monitoring for avian impacts shall regularly survey the ponds at least once per month starting with the first month of operation of the evaporation ponds. The purpose of the surveys shall be to confirm that measures continue to be effective in excluding birds and other wildlife from the ponds. If nets are used, the surveys would determine if the nets pose an entrapment hazard to birds or wildlife, and would be used to develop and implement appropriate adaptive management strategies in consultation with CDFG and the USFWS. Operations staff at the project site shall also photograph, document, and report finding any dead birds at the evaporation ponds to the biologist within one day of discovering the carcass. The biologist shall report any bird or other wildlife deaths or entanglements within two days of discovering the carcass to the County, CDFG, and USFWS.

b. If shorebirds (e.g., Black-necked Stilt, American Avocet, Plover, Killdeer) are present at or near the evaporation ponds during the nesting season (February 1 through July), the biologist shall conduct focused nest searches weekly for the duration of shorebird presence during the nesting season. If nesting is detected, which means the birds are feeding in the evaporation pond, eggs shall be collected and an egg selenium and morphological (evaluation for teratogenic effects) analysis conducted by an appropriately permitted, County-approved biologist. Egg collection procedures and study design shall be developed in advance with the CDFG and USFWS Contaminants Division.

c. If dead or entangled birds are detected, the biologist shall take immediate action to correct the source of mortality or entanglement, as possible. The biologist shall make efforts to contact and consult the CDFG and USFWS prior to taking remedial action, but the inability to reach these parties shall not delay taking action that would, in the judgment of the biologist, prevent further mortality of birds or other wildlife at the evaporation ponds.

d. Designated biologist shall test levels of potential toxins in evaporation ponds. High levels of boron or other potential toxins shall be reported to the CDFG.

e. If after 12 consecutive monthly site visits no bird or wildlife deaths, deformities, or entanglements or high levels of toxins are detected by or reported to the designated biologist, monitoring can be reduced to quarterly visits, at least one of which shall coincide with the nesting season.

f. If after 12 consecutive quarterly site visits no bird or wildlife deaths, deformities, or entanglements or high levels of toxins are detected by or reported to the designated biologist, the site visits can be reduced to annual visits during the peak nesting season (March through May).

g. The biologist shall review construction of enclosures, as well as submit annual monitoring reports to the County, the CDFG, and USFWS describing the dates, durations, and results of site visits conducted at the evaporation ponds. The annual reports shall fully describe any bird or wildlife death,

deformities, nesting events, or entanglements detected during the site visits or noted at any other time, and shall describe actions taken to remedy these problems. Results of any egg analysis (morphological and chemical) shall also be included. The report shall be submitted to the County, the CDFG, and the USFWS no later than December 30th of every year for the life of the project.

h. Remedial actions shall be taken as soon as possible (as determined by the County, the CDFG, and the USFWS), and no later than the beginning of the following nesting season.

CVSR BIO-120. Implement biological construction monitoring. Prior to the commencement of ground disturbance or site mobilization activities the Applicant shall retain a County-approved biologist(s) with demonstrated expertise with listed and/or special-status plants, terrestrial mammals and reptiles to monitor, on a daily basis, during all construction activities. The County-approved biologist(s) shall be present at all times during ground-disturbing activities immediately adjacent to, or within, habitat that supports populations of listed or special-status species identified in Section 3.8 of the Final EA. Any listed or special-status plants shall be flagged for avoidance. Any special-status terrestrial species found within a project impact area shall be relocated by the authorized biologist and relocated to suitable habitat outside the impact area. If the installation of exclusion fencing is deemed necessary by the authorized biologist, the authorized biologist shall direct the installation of the fence. Clearance surveys for special-status species shall be conducted by the authorized biologist prior to the initiation of construction each day.

If, during construction, the biological monitor observes a dead or injured listed or special-status wildlife species on the construction site, a written report shall be sent to the County of San Luis Obispo, the CDFG and/or USFWS within five calendar days. The report will include the date, time of the finding or incident (if known), and location of the carcass and circumstances of its death (if known). The biological monitor shall, immediately upon finding the remains, coordinate with the on-site construction foreman to discuss the events that caused the mortality, if known, and implement measures to prevent future incidents. Details of these measures shall be included with the report. If possible, species remains shall be collected and frozen as soon as possible, and the CDFG and/or USFWS shall be contacted regarding ultimate disposal of the remains.

During construction, compliance will be verified by the County Environmental Monitor.

CVSR BIO-121. Conduct pre-construction surveys for nesting and breeding birds and implementation of avoidance measures. Prior to on-site any site disturbance (i.e., mobilization, staging, grading or construction), the Applicant shall retain a County-approved biologist to conduct pre-construction surveys for nesting birds within the recognized breeding season in all areas within 500 feet of solar arrays, staging areas, substation sites, and access road locations. Surveys for raptors shall be conducted for all areas from February 1 to August 15. The required survey dates may be modified based on local conditions, as determined by the County-approved biologist, with the approval of the County of San Luis Obispo, in consultation with the USFWS and/or CDFG. Measures intended to exclude nesting birds shall not be implemented without prior approval by the County in consultation with the USFWS and/or CDFG and shall not exceed County noise standards.

If breeding birds with active nests are found prior to or during construction, a biological monitor shall establish a 300-foot buffer around the nest for ground-based construction activities and no activities will be allowed within the buffer(s) until the young have fledged from the nest or the nest fails.

If nesting Bald or Golden Eagles are identified, a 0.5-mile no-activity buffer will be implemented. Should condors be found roosting within 0.5 miles of the construction area, no construction activity shall occur between 1 hour before sunset to 1 hour after sunrise, or until the condors leave the area. Should condors

be found nesting within 1.5 miles of the construction area, no construction activity will occur until further authorization from the USFWS. All California Condor sightings in the project area will be reported directly to the USFWS by the County-approved biologist.

The prescribed buffers may be adjusted to reflect existing conditions including ambient noise, topography, and disturbance with the approval of the County of San Luis Obispo, the CDFG, and the USFWS, as appropriate. The biological monitor(s) shall conduct regular monitoring of the nest to determine success/failure and to ensure that project activities are not conducted within the buffer(s) until the nesting cycle is complete or the nest fails. The biological monitor(s) shall be responsible for documenting the results of the surveys and ongoing monitoring and will provide a copy of the monitoring reports for impact areas to the respective agencies.

If for any reason a bird nest must be removed during the nesting season, the Applicant shall provide written documentation providing concurrence from the USFWS and CDFG authorizing the nest relocation. Additionally, the Applicant shall provide a written report documenting the relocation efforts. The report shall include what actions were taken to avoid moving the nest, the location of the nest, what species is being relocated, the number and condition of the eggs taken from the nest, the location of where the eggs are incubated, the survival rate, the location of the nests where the chicks are relocated, and whether the birds were accepted by the adopted parent.

Surveys shall be conducted to include all structural components of the solar arrays and related structures as well as all construction equipment. If birds are found to be nesting in facility structures, buffers as described above shall be implemented. If birds are found to be nesting in construction equipment, that equipment shall not be used until the young have fledged the nest or, if no young are present, until after the breeding season has passed.

If trees or existing poles/towers are to be removed as part of project-related construction activities, they will be done so outside of the nesting season to avoid additional impacts to nesting raptors. If removal of a tree or existing pole/tower with a nest cannot be avoided during the nesting season, the biological monitor must confirm that the nest is vacant prior to its removal. If nests are found within these structures and contain eggs or young, the biological monitor shall allow no activities within a 300-foot buffer for nesting birds and/or a 500-foot buffer for raptors (excluding Golden Eagle and condors, see above) until the young have fledged the nest.

During construction, compliance will be verified by the County Environmental Monitor, including conducting routine checks of nests during the known breeding season and, if young are present, monitoring until the young have fledged.

CVSR BIO-122. Conduct pre-construction surveys for State and Federally Threatened, Endangered, Proposed, Petitioned, and Candidate plants and implementation of avoidance measures. Prior to initial ground disturbance for any areas not disturbed prior to Spring 2012 and for undisturbed areas in subsequent construction years, the Applicant shall conduct pre-construction surveys for State and federally listed Threatened and Endangered, Proposed, Petitioned, and Candidate plants in all areas subject to ground-disturbing activity, including, but not limited to, solar panel footing preparation and construction areas, assembly yards, and areas subject to grading for new access roads. The surveys shall be conducted during the appropriate blooming period(s) by a County-approved plant ecologist/biologist according to protocols established by the USFWS, CDFG, and California Native Plant Society (CNPS). All listed plant species found shall be marked and avoided. Any populations of special-status plants found during surveys will be fully described, mapped, and a CNPS Field Survey Form or written equivalent shall be prepared.

These surveys must be accomplished within 24 months of construction and during a year in which rainfall totals are at least 80% of average and in which the temporal distribution of rainfall is not highly abnormal (e.g., with the vast majority of rainfall occurring very early or late in the season) to be reasonably certain of the presence/absence of rare plant species, unless surveys of reference populations document that precipitation conditions would not have adversely affected the ability to detect the species. This condition may be waived with the approval of the County after consultation with the CDFG and USFWS. If a listed plant species cannot be avoided, consultation with the USFWS and CDFG will occur.

Prior to site grading or vegetation removal, any populations of listed plant species identified during the surveys within the project limits and beyond, shall be protected and a buffer zone placed around each population. The buffer zone shall be established around these areas and shall be of sufficient size to eliminate potential disturbance to the plants from human activity and any other potential sources of disturbance including human trampling, erosion, and dust. The size of the buffer depends upon the proposed use of the immediately adjacent lands, and includes consideration of the plant's ecological requirements (e.g., sunlight, moisture, shade tolerance, physical and chemical characteristics of soils) that are identified by a County-approved plant ecologist and/or botanist. The buffer for herbaceous and shrub species shall be, at minimum, 50 feet from the perimeter of the population or the individual. A smaller buffer may be established, provided there are adequate measures in place to avoid the take of the species, with the approval of the USFWS, CDFG, and County of San Luis Obispo.

Where impacts to listed plants are determined to be unavoidable, the USFWS and/or CDFG shall be consulted for authorization. Additional project design features to protect or restore listed plant species or their habitat, including but not limited to a salvage plan including seed collection and replanting, may be required by the USFWS or CDFG before impacts are authorized, whichever is appropriate.

During construction, compliance will be verified by the County Environmental Monitor that would include documenting when yearly survey events occur, reviewing the resulting data and updating the WEEP if impacts to species not previously addressed are anticipated, as well as ensuring any protective fencing installed is kept in good working order.

CVSR BIO-123. Compensate for impacts to State and Federally Threatened, Endangered, Proposed, Petitioned, and Candidate plants. To compensate for permanent impacts to State and Federally Threatened, Endangered, Proposed, Petitioned and Candidate plants, habitat (which may include preservation areas within the undisturbed areas of the project footprint, mitigation lands outside of the main Project site or a combination of both) that is not already public land under resource protection shall be preserved and managed in perpetuity at a 1:1 mitigation ratio (one acre preserved for each acre impacted). Compensation for temporary impacts shall include land acquisition and/or preservation at a 0.5:1 ratio. The preserved habitat for a significantly impacted plant species shall be of equal or greater habitat quality to the impacted areas in terms of soil features, extent of disturbance, vegetation structure, and will contain verified extant populations, of the same size or greater, of the State or Federally listed plants that are impacted.

Habitat shall be preserved through the use of permanent open space easements. Mitigation lands cannot be located on land that is currently held publicly for resource protection. Mitigation lands may include (depending on the habitat requirements of particular species):

a. Areas outside the project boundary, but within the Carrizo Plain;

b. Preservation areas within portions of the project site that are at least 100 feet from solar facilities and are either (1) not permanently impacted by construction and operation of the project, or (2) temporarily disturbed and then restored according to the requirements in CVSR BIO-115; and

c. Degraded areas (e.g., areas that have been actively dry-farmed) that are restored to high quality habitat through the implementation of a County-approved restoration plan.

Criteria for appropriate mitigation land are species-specific; the following factors must be considered in assessing the quality of potential mitigation habitat: (1) current land use; (2) location (e.g., habitat corridor, part of a large block of existing habitat, adjacency to source populations, proximity to solar facilities or other potential sources of disturbance); (3) vegetation composition and structure; (4) slope; (5) soil composition and drainage; and (6) level of occupancy or use by relevant species.

The Applicant shall either provide open space easements or provide funds for the acquisition of such easements to a "qualified easement holder" (defined below). The California Department of Fish and Game (CDFG) is a qualified easement holder. To qualify as a "qualified easement holder" a private land trust must have:

a. Substantial experience managing open space easements that are created to meet mitigation requirements for impacts to special-status species;

b. Adopted the Land Trust Alliance's Standards and Practices; and

c. A stewardship endowment fund to pay for its perpetual stewardship obligations.

The County shall determine whether a proposed easement holder meets these requirements.

The Applicant shall also be responsible for donating to the open space easement holder fees sufficient to cover: (1) administrative costs incurred in the creation of the conservation easement (appraisal, documenting baseline conditions, etc.), and (2) funds in the form of a non-wasting endowment to cover the cost of monitoring and enforcing the terms of the conservation easement in perpetuity. The amount of these administrative and stewardship fees shall be determined by the open space easement holder in consultation with the County.

Open space easement(s) shall also be subject to the following conditions:

a. The locations of acceptable easement(s) shall be developed with approval of the CDFG and USFWS.

b. The primary purpose of the easement(s) shall be conservation of impacted species and habitats, but the conservation easement(s) shall also allow livestock grazing when and where it is deemed beneficial for the habitat needs of impacted species.

Open space easement(s) shall:

a. Be held in perpetuity by a qualified easement holder (defined above).

b. Be subject to a legally binding agreement that shall: (1) be recorded with the County Recorder(s); and (2) name the CDFG or another organization to which the easement(s) will be conveyed if the original holder is dissolved.

c. Be subject to the management requirements outlined in CVSR BIO-136 (Prepare a Habitat Mitigation and Monitoring Plan).

If lands acquired or protected for the compensation of permanent impacts to giant kangaroo rat, San Joaquin kit fox or San Joaquin antelope squirrel (CVSR BIO-135), and/or vegetative communities (CVSR BIO-116) contain similar sized populations of the impacted listed plant species, no further mitigation would be required.

Prior to construction permit issuance, the Applicant shall obtain County approval of the location of mitigation lands, the holder of open space easements, and the restrictions contained in the easement(s) created for the permanent protection of these lands. Documentation of recorded easement(s) shall be submitted to and approved by the County prior to construction permit issuance. Verification of having met habitat mitigation requirements shall be reviewed and approved prior to final inspection. If this milestone is not met, construction shall not commence.

CVSR BIO-124. Complete protocol-level surveys for listed branchiopods. Protocol surveys for the Federally Endangered longhorn fairy shrimp and the Federally Threatened vernal pool fairy shrimp shall be conducted each year of construction in areas subject to project disturbance where previous surveys have not been conducted or where rainfall results in the formation of pools persist for a minimum of seven days and that overlay soils associated with vernal pool complexes. Surveys can be suspended upon written authorization from the USFWS/CDFG and the County. The Applicant shall retain a County-approved biologist holding the required 10(a)(1)(A) recovery permit from the USFWS to conduct surveys within all potentially likely and known vernal pool habitat. Surveys shall follow the guidelines set forth by the USFWS in the Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a)(1)(A) of the Endangered Species Act for Listed Vernal Pool Branchiopods.

Surveys will be conducted during the wet and dry seasons of the year for the duration of construction activities. The results of these surveys shall be provided to the County Environmental Monitor within 90 days of completion.

CVSR BIO-125. Avoid seasonal depressions and known water bodies. All known seasonal depressions and water bodies that have and have not been verified to be occupied by listed branchiopods (e.g., fairy shrimp) shall be shown on all applicable construction plans and submitted for County approval prior to construction permit issuance. The Applicant shall avoid all these seasonal depressions and known water bodies that occur within the project site to minimize impacts to listed fairy shrimp. Where feasible, a 400-foot buffer shall be placed around all seasonal depressions and known water bodies to prevent equipment from entering these areas. This buffer shall be shown on all applicable construction plans (with a highly visible method easily identifiable by construction workers in the field). On-site delineation of this buffer shall be in place prior to the commencement of construction activities. The method used for delineation shall be kept in good working order for the duration of the construction period, and removed prior to final County inspection.

If a 400-foot buffer is not feasible or avoidance of known populations of listed branchiopods is not possible, consultation with the USFWS regarding the potential impacts to the species will be necessary.

CVSR BIO-126. Compensate for impacts to vernal pool or longhorn fairy shrimp or their habitat. If project impacts will result in impacts to occupied habitat for, or result in the loss of vernal pool or longhorn fairy shrimp, the Applicant will be required to consult with the USFWS. To compensate for impacts, the USFWS will require both a preservation and creation component for compensation as follows:

Preservation component: For every acre of occupied habitat directly or indirectly affected, at least two vernal pool credits will be dedicated within a USFWS-approved ecosystem preservation bank,

or, based on USFWS evaluation of site-specific conservation values, three acres of vernal pool habitat may be preserved on the project site or on another non-bank site as approved by the USFWS.

Creation component: For every acre of occupied habitat directly affected, at least one vernal pool creation credit will be dedicated within a USFWS-approved habitat mitigation bank, or, based on USFWS evaluation of site-specific conservation values, two acres of vernal pool habitat will be created and monitored on the project site or on another non-bank site as approved by the USFWS.

In the event that compensatory mitigation is required, the Applicant shall provide the County with documentation that the USFWS-approved ecosystem preservation or mitigation bank has been credited with the required funds to mitigate project impacts. The Applicant shall provide a report to the County documenting compliance with this requirement prior to issuance of construction permit.

If construction activities would impact or result in the loss of listed vernal pool shrimp or their habitat, prior to ground disturbance, the Applicant shall obtain County approval of the compensation strategy for these impacts. This shall include proof of payment to the USFWS-approved mitigation bank and a detailed plan for creation of vernal pool habitat, if applicable. If this milestone is not met, construction shall not commence.

CVSR BIO-127. Complete focused surveys for Kern primrose sphinx moth and implement avoidance measures. The Applicant shall retain a County-approved biologist to conduct focused surveys for Kern primrose sphinx moth. As there is no USFWS-approved survey protocol for this moth, the surveys shall be based on the methods in Jump et al. (2006) and information from the USFWS 5-year status review of this species. Modification to this survey approach may be authorized by the USFWS and County. Focused surveys shall be conducted during the flight season for this species, which occurs in late January to late February and as far out as March during cooler years. Surveys would be conducted in all areas where populations of *Camissonia spp.*, the larval host food plant and related species, are located within 100 feet of the Project's impact areas. The County-approved biologist will survey for sphinx moths in these areas during the day, when the temperature exceeds 60 degrees Fahrenheit. If the surveys for individual Kern primrose sphinx moths do not detect the species, no further mitigation (including CVSR BIO-128) is necessary, as the species will be considered absent.

As information is available, prior to construction permit issuance, areas supporting *Camissonia spp.* within 100 feet of the project footprint shall be shown on all applicable construction plans (with a highly visible method easily identifiable by construction workers in the field) and submitted with the construction permit application. The Applicant shall avoid to the extent feasible, these identified areas and install sturdy and highly visible delineation markers on-site, that results in a 100-foot buffer around these areas. On-site buffer delineation shall be in place prior to the commencement of construction activities. The method used for delineation shall be kept in good working order for the duration of the construction period, and removed prior to final County inspection.

During construction, the County Environmental Monitor will confirm that surveys are done during the correct time of year if required habitat is present, and other construction provisions are adhered to.

CVSR BIO-128. Compensate for impacts to Kern primrose sphinx moth. If avoidance of *Camissonia spp.* plants cannot be accomplished, compensatory mitigation for impacts to areas supporting these plants will be applied. Areas occupied by *Camissonia spp.* and impacted by the project will be mitigated at a 2:1 ratio for temporary impacts. Permanent impacts shall be mitigated at a 3:1 ratio for which at least 2:1 of the total 3:1 mitigation required must be occupied by known larval host plants, such as field evening primrose or plains evening primrose (*C. contorta*) habitat of equal or greater habitat

quality to the impacted areas in terms of soil features, extent of disturbance, vegetative structure and composition. This 2:1 ratio must contain verified extant populations of *Camissonia*, at a similar size to those impacted. Additionally, 1:1 of the 3:1 mitigation requirement for Kern primrose sphinx moth may include lands to be restored. Restored lands would require the conversion from existing degraded conditions (i.e., active agriculture, unrestricted grazing, or other disturbed lands) to conditions that match or exceed habitat conditions on lands occupied by Kern primrose sphinx moth occurring on the project site.

Habitat shall be preserved through the use of permanent open space easements. Mitigation lands cannot be located on land that is currently publicly held for resource protection. Mitigation lands may include (depending on the habitat requirements of particular species):

a. Areas outside the project boundary, but within the Carrizo Plain;

b. Preservation areas within portions of the project site that are at least 100 feet from solar facilities and are either (1) not permanently impacted by construction and operation of the project, or (2) are temporarily disturbed and then restored according to the requirements in CVSR BIO-115; and

c. Degraded areas (e.g., areas that have been actively dry-farmed) that are restored to high quality habitat through the implementation of a County-approved restoration plan.

Criteria for appropriate mitigation land are species-specific; however, the following factors must be considered in assessing the quality of potential mitigation habitat: (1) current land use; (2) location (e.g., habitat corridor, part of a large block of existing habitat, adjacency to source populations, proximity to solar facilities or other potential sources of disturbance); (3) vegetation composition and structure; (4) slope; (5) soil composition and drainage; and (6) level of occupancy or use by relevant species.

The Applicant shall either provide open space easements or provide funds for the acquisition of such easements to a "qualified easement holder" (defined below). The California Department of Fish and Game (CDFG) is a qualified easement holder. To qualify as a "qualified easement holder" a private land trust must have:

a. Substantial experience managing open space easements that are created to meet mitigation requirements for impacts on special-status species;

b. Adopted the Land Trust Alliance's Standards and Practices; and

c. A stewardship endowment fund to pay for its perpetual stewardship obligations.

The County shall determine whether a proposed easement holder meets these requirements.

The Applicant shall also be responsible for donating to the easement holder fees sufficient to cover: (1) administrative costs incurred in the creation of the easement (appraisal, documenting baseline conditions, etc.), and (2) funds in the form of a non-wasting endowment to cover the cost of monitoring and enforcing the terms of the easement in perpetuity. The amount of these administrative and stewardship fees shall be determined by the easement holder in consultation with the County.

Open space easement(s) shall also be subject to the following:

a. The locations of acceptable easement(s) shall be developed with approval of the CDFG and USFWS.

b. The primary purpose of the easement(s) shall be conservation of impacted species and habitats, but the easement(s) shall also allow livestock grazing when and where it is deemed beneficial for the habitat needs of impacted species.

c. Be held in perpetuity by a qualified easement holder (defined above).

d. Be subject to a legally binding agreement that shall: (1) be recorded with the County Recorder(s); and (2) name the CDFG or another organization to which the easement(s) will be conveyed if the original holder is dissolved.

e. Be subject to the management requirements outlined in CVSR BIO-136 (Prepare a Habitat Mitigation and Monitoring Plan).

However, if lands acquired or protected for the compensation of permanent impacts to giant kangaroo rat, San Joaquin kit fox, San Joaquin antelope squirrel or special-status plants (CVSR BIO-135), and/or vegetative communities (CVSR BIO-116) contain similar sized populations of the impacted *Camissonia spp.*, of equal or greater habitat value, they may be used to achieve the required compensation ratios.

Documentation of recorded easement(s) shall be submitted to the County, for review and approval, prior to the issuance of the construction permit. Verification of having met habitat mitigation requirements shall be reviewed and approved prior to final inspection.

CVSR BIO-129. Conduct protocol and focused pre-construction surveys for blunt-nosed leopard lizard and implement avoidance measures. Prior to the commencement of any site disturbance in areas not previously subject to protocol level surveys, the Applicant shall implement CDFG protocol-level surveys using the most recent CDFG-approved methodology for the entire construction footprint plus a 500-foot buffer (or other buffer distance as recommended by the CDFG) around the construction footprint, as long as the Applicant has authorization from adjacent landowners to do so, if applicable. For all other areas in which the 2009 and 2010 blunt-nosed leopard lizard (BNLL) surveys were conducted the Applicant shall implement pre-construction reconnaissance level surveys (minimum of 3 surveys) for blunt-nosed leopard lizard. Surveys shall be conducted prior to the initiation of ground disturbance in each of the proposed solar array locations and be conducted by a County-approved biologist(s), knowledgeable with the species. These surveys will entail having one or more County-approved biologists walk 30- to 100-foot interval transects through the project area.

If present, active BNLL burrows shall be flagged, a GPS point location recorded and all work activities within 500-feet (or other buffer distance as recommended by the CDFG) of the sighting shall cease. The point location data shall be used to delineate buffers designed to encompass the home range of each individual BNLL. Each buffer shall cover an area of at least 22 acres, which is the approximate size of the largest BNLL home range size computed by Warrick et al. (1998). Each 22-acre buffer shall be delineated by the biologist in consultation with the USFWS, CDFG, and the County using the recorded point location as the approximate center of the buffer area. Using habitat modeling based on the current knowledge base of the most important BNLL habitat parameters, the final boundaries of the buffers shall be determined by the County-approved biologist to encompass the 22-acre area of greatest habitat suitability.

To the extent feasible, the 22-acre buffer around the occupied BNLL habitat will not be impacted, even temporarily, by project activities. No construction activities or vehicular traffic shall be allowed within the identified buffer, and all movement corridors shall be delineated with fencing and signage identifying the buffer as off-limits to construction personnel. The fencing around the buffer shall be elevated 24 inches off the ground surface to allow the passage of San Joaquin kit fox and other small mammals through the area. All fencing will be actively maintained and repaired as directed by biological monitors

and removed upon completion of that portion of project construction. If complete avoidance of the occupied habitat and buffer is feasible, then no additional measures need to be implemented. If avoidance of the occupied habitat and buffer is not feasible, then impacts to the occupied habitat will be minimized, and the following measures will be implemented.

If, in the opinion of the County-approved biologist in consultation with the USFWS, CDFG, and the County, barrier fencing will help to prevent impacts to BNLL without causing undue impact to this species' habitat or other species including giant kangaroo rat or San Joaquin kit fox, such fencing will be constructed around the worksite to prevent entry by lizards. For the area where fencing will be placed, it will be surveyed prior to installation; then, 36-inch tall silt fencing will be installed around the work area, and buried to a depth of 6 inches. No monofilament plastic will be used for erosion control in the vicinity of this species. Barrier fencing will be removed upon completion of work.

If a BNLL (dead or alive) is located during the preconstruction survey or during construction activities by the biological monitor or anyone else, the project supervisors and biological monitor shall be immediately notified.

In the case that a BNLL is killed or injured as a result of project-related activities, all work activities within 500 feet (or other buffer distance as recommended by the CDFG) of the incident shall immediately cease in order to ensure that no additional lizards are impacted by construction activities, and the biological monitor shall immediately notify the USFWS and CDFG via telephone or electronic mail. Work shall not resume until approved by both agencies and any other project design features recommended by the agencies have been fully implemented.

Protocol level surveys shall then be conducted within the proposed solar array in which the species was observed to determine their distribution on the site. If surveys determine the species likely are present on the adjacent arrays, these areas will also require surveys prior to construction. Work may not resume until the protocol surveys have been completed unless otherwise authorized by the CDFG, USFWS, and County.

The biologist shall conduct clearance surveys each morning, prior to initiation of daily construction activities in adjacent arrays, to ensure that no lizards have entered the work area overnight. The monitoring shall remain in place until work in that area is complete or additional protocol-level surveys yield negative results for blunt-nosed leopard lizards in the previously occupied areas. Should a blunt-nosed leopard lizard enter the work area, all construction activities shall cease within 300-feet of the animal until it has left the area on its own.

The buffers described above may prevent portions of proposed solar arrays from being constructed. The buffer and work stoppage will remain in effect in these areas until such a time that Protocol surveys yield negative results for the species. The resumes of the proposed biologist(s) shall be provided to the County of San Luis Obispo, the CDFG, and the USFWS to show adequate qualifications prior to the commencement of surveys.

Prior to any work site mobilization in an area of the Project site, the Applicant shall provide documentation to the County Environmental Monitor that demonstrates completion of the surveys for that area. Mitigation for impacts, if required, must be completed prior to the issuance of construction permits.

The Applicant shall report surveys to the County Environmental Monitor and update the WEEP if impacts to species not previously addressed are identified.

CVSR BIO-130. Compensate for impacts to occupied blunt-nosed leopard lizard habitat. The Applicant shall compensate for impacts to occupied blunt-nosed leopard lizard habitat at a minimum 3:1 ratio. The mitigation areas must provide occupied habitat that is of equal or greater habitat quality compared to the impacted habitat, and must be located within the Carrizo Plain or other area approved by the USFWS, CDFG, and the County. An open space easement shall be recorded on all property associated with the mitigation lands to protect biological resources in perpetuity. An open space easement could be held by CDFG or an approved land management entity and shall be recorded immediately upon the dedication or acquisition of the land. Preserved or acquired mitigation lands will be monitored and maintained per the requirements set forth in the Habitat Mitigation and Monitoring Plan prepared for the project and discussed under CVSR BIO-136.

Habitat shall be preserved through the use of permanent open space easements. Mitigation lands cannot be located on land that is currently publicly held for resource protection. Mitigation lands must:

a. Be within the Carrizo Plain or other agency approved area with potential to contribute to habitat connectivity and build linkages between known populations of blunt-nosed leopard lizard and/or other preserve lands;

b. Provide habitat for blunt-nosed leopard lizard with capacity to regenerate naturally when disturbances are removed;

c. Be contiguous and biologically connected to lands currently occupied by blunt-nosed leopard lizard; ideally with populations that are stable, recovering, or likely to recover;

d. Not be characterized by high densities of invasive species such as yellow star thistle or species that pose demonstrated challenges for eradication either on or immediately adjacent to the parcels under consideration, that might jeopardize habitat recovery and restoration;

e. Not contain hazardous wastes that cannot be removed to the extent that the site could not provide suitable habitat; and

f. If lands are preserved within portions of the project site, they must be at least 100 feet from solar facilities and must not be permanently impacted by construction and operation of the project, or subject to routine disturbance or maintenance (other than managed grazing for fire control or species management).

The Applicant shall either provide open space easements or provide funds for the acquisition of easements to a "qualified easement holder" (defined below). The California Department of Fish and Game (CDFG) is a qualified easement holder. To qualify as a "qualified easement holder" a private land trust must have:

a. Substantial experience managing open space easements that are created to meet mitigation requirements for impacts to special-status species;

b. Adopted the Land Trust Alliance's Standards and Practices; and

c. A stewardship endowment fund to pay for its perpetual stewardship obligations.

The County shall determine whether a proposed easement holder meets these requirements.

The Applicant shall also be responsible for donating to the easement holder fees sufficient to cover: (1) administrative costs incurred in the creation of the easement (appraisal, documenting baseline conditions, etc.), and (2) funds in the form of a non-wasting endowment to cover the cost of monitoring and

enforcing the terms of the easement in perpetuity. The amount of these administrative and stewardship fees shall be determined by the easement holder in consultation with the County.

Open space easement(s) shall also be subject to the following:

a. The locations of acceptable easement(s) shall be developed with approval of the CDFG and USFWS.

b. The primary purpose of the easement(s) shall be conservation of impacted species and habitats, but the easement(s) shall also allow livestock grazing when and where it is deemed beneficial for the habitat needs of impacted species.

c. Be held in perpetuity by a qualified easement holder (defined above).

d. Be subject to a legally binding agreement that shall: (1) be recorded with the County Recorder(s); and (2) name the CDFG or another organization to which the easement(s) will be conveyed if the original holder is dissolved.

e. Be subject to the management requirements outlined in CVSR BIO-136 (Prepare a Habitat Mitigation and Monitoring Plan).

However, if lands acquired or protected for the compensation of permanent impacts to giant kangaroo rat, San Joaquin kit fox, San Joaquin antelope squirrel (CVSR BIO-135) and/or vegetation communities (CVSR BIO-116) contain similar amounts of occupied habitat similar in size to that of the impacted blunt-nosed leopard lizard habitat, of equal or greater habitat value, no further mitigation would be required.

Documentation of recorded easement(s) shall be submitted to the County for review and approval, prior to the issuance of the construction permit. Verification of having met habitat mitigation requirements shall be reviewed and approved prior to final inspection.

CVSR BIO-131. Monitor construction in condor habitat and remove trash and microtrash from the work area daily. To minimize project-related impacts to and avoid the loss of California Condors, the Applicant shall employ the following measures:

a. **Microtrash:** All trash is required to be disposed of as indicated above under CVSR BIO-114. Additional language has been added to this project design feature to address the disposal of microtrash. Workers, as part of the WEEP, shall be trained on the issue of microtrash (what it is, its potential effects to California Condors, and how to avoid the deposition of microtrash). In addition, the Applicant shall assign a specific person(s) to conduct daily sweeps of the work area to collect and remove trash in locations with the potential for California Condors to occur.

b. **Education:** Prior to the commencement of construction activities, all workers will attend the WEEP. The Applicant shall develop a fact sheet or other notice, to be presented as part of the WEEP, which will be distributed to all workers on the project prior to the start of construction containing information on the California Condor. Information to be included consists of the following: species description with photos and/or drawings indicating how to identify the California Condor and how to distinguish condors from Turkey Vultures and Golden Eagles; protective status and penalties for violation of the Endangered Species Act; avoidance measures being implemented on the project; and contact information for communicating condor sightings.

c. **Avoidance:** Should a condor land within the project area, all work shall be stopped within 500 feet of the condor until the bird has left the area on its own. If the bird fails to leave the area because of injury or other factors, the Applicant shall contact the USFWS/CDFG and the County for direction.

d. **Reporting:** All California Condor sightings in the project area shall be reported directly to the USFWS/CDFG and the County within 24 hours.

During construction, compliance will be verified by the County Environmental Monitor.

CVSR BIO-132. Implement Avian Power Line Interaction Committee guidelines (APLIC). The Applicant will be required to construct all transmission facilities, towers, poles, and lines in accordance with the *Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006* (APLIC), to minimize avian electrocutions as a result of the construction of the project. Details of design components shall be indicated on all construction plans and measures to comply with APLIC policies, and guidelines shall be detailed in a separate attachment, all of which will be submitted with the construction permit application for County approval prior to construction permit issuance.

The Applicant shall be required to monitor for new versions of the APLIC guidelines and update designs or implement new measures as needed during project construction, provided these actions do not require the purchase of previously ordered transmission line structures. A review by the County Environmental Monitor of compliance with County-approved plans will be conducted prior to the final County inspection.

CVSR BIO-133. Prepare and implement a Bird Monitoring and Avoidance Plan. The Applicant shall retain a County-approved biologist (ornithologist with a record of publication in peer-reviewed journals) to prepare a Bird Monitoring and Avoidance Plan in consultation with California Department of Fish and Game (CDFG) and U.S. Fish and Wildlife Service (USFWS). This plan shall follow the Avian Protection Plan guidelines outlined by USFWS. The Bird Monitoring Study shall consider prior studies by McCrary et al. (1986) or other applicable literature. The Bird Monitoring and Avoidance Plan shall be submitted to the County for approval prior to the issuance of a construction permit.

The plan will require monitoring the death and injury of birds from collisions with facility features such feeder/distribution lines, solar panels, and evaporation ponds. The study design shall be approved by the County of San Luis Obispo in consultation with the CDFG and USFWS. The Bird Monitoring Study shall include at a minimum detailed specifications on data, a carcass collection protocol, and a rationale justifying the proposed schedule of carcass searches. The study shall also include seasonal trials to assess bias from carcass removal by scavengers as well as searcher bias.

During construction and for three years following the beginning of the solar farm operation the County-approved biologist shall submit quarterly reports to the County of San Luis Obispo, the CDFG, and the USFWS describing the dates, durations, and results of monitoring and data collection. The quarterly reports shall provide a detailed description of any project-related bird or wildlife deaths or injuries detected during the monitoring study or at any other time. Following the completion of the fourth quarter of monitoring, the biologist shall prepare an annual report that summarizes the year's data, analyzes any project-related bird fatalities or injuries detected, and provides recommendations (in consultation with the County) for future monitoring and any adaptive management actions needed.

Thresholds. Thresholds for bird impacts will be determined by the County in consultation with the CDFG and USFWS. If the County determines that bird mortality caused by solar facilities is substantial, the Applicant shall be required to implement some or all of the project design features below.

Implementation Measures. To minimize bird mortality caused by solar facilities, the Applicant may be required to install additional bird flight diverters, alter project components that have been identified as key mortality features (i.e., relocation or undergrounding of some features, when compatible with other

avoidance and minimization measures, the modification of project colors or coatings), or implement other appropriate actions approved by the County and regulatory agencies based on the findings of the Bird Monitoring and Avoidance Plan.

If mitigation actions are required, the annual reporting shall continue until SLO County, in consultation with the CDFG and USFWS determines whether more years of monitoring are needed, and whether additional adaptive management measures are necessary. After the Bird Monitoring Study is determined by the County of San Luis Obispo to be complete, the Applicant shall prepare a paper that describes the study design and monitoring results to be submitted to a peer-reviewed scientific journal. Proof of submittal shall be provided to the County of San Luis Obispo, the CDFG, and the USFWS within one year of concluding the monitoring study.

The County Environmental Monitor shall verify the monitoring of impacts to birds during construction and for one year after completion of construction.

CVSR BIO-134. Complete focused pre-construction giant kangaroo rat burrow/precinct surveys and implement avoidance measures. Prior to commencement of ground disturbing activities, the Applicant shall retain a County-approved biologist to conduct pre-construction surveys for each phase (construction of each solar array) of the project. If active giant kangaroo rat burrows/precincts are present, they shall be flagged, with ground-disturbing activities to be setback a minimum of 50 feet from each active burrow/precinct. The setback shall be delineated in the field in such a method that it is easily visible by all construction personnel. The biological monitor shall periodically field check the mapped burrows/precincts to buffer delineation and ensure that applicable flagging is in good working order. All active burrows/precincts shall be mapped and incorporated into a GIS based figure for use by the on-site monitors and construction crews. Figures shall include each mapped burrow/precinct and buffer utilizing a highly visible method easily identifiable by construction workers and monitors in the field.

If avoidance is not possible, the Applicant and County-approved biologist will develop and implement a Giant Kangaroo Rat Relocation Plan to be submitted to the County, in consultation with the CDFG and USFWS. The plan shall include but shall not be limited to the following actions:

a. Vegetation shall be cleared in the area immediately surrounding active burrows/precincts, followed by a period of one night without further disturbance to allow the giant kangaroo rats to vacate the burrow/precinct. Where giant kangaroo rats occur within 33 feet of the solar arrays or in areas subject to temporary disturbance and no permanent damage to precincts will occur, these animals will be temporarily held and released back into the precinct where trapped. Giant kangaroo rats located beyond 33 feet into the arrays will require translocation to adjacent areas.

b. If giant kangaroo rats do not voluntarily leave occupied burrows/precincts, they shall be live trapped prior to commencing ground disturbing activities in the area. If the disturbance is temporary (< 1 day) trapped individuals may be held under suitable conditions, during the period of disturbance, and then relocated to suitable habitat within conservation lands with highest preference for relocation of animals to constructed or vacant giant kangaroo rat burrow precincts on the project site.

c. The trapping protocol for giant kangaroo rat shall include fencing the precinct area to prevent the animals from escaping and conducting six consecutive trap nights using 20 percent more traps than the number of identified precincts. An area would be considered vacant if the last two trapping nights do not yield positive results. If animals are detected on the last two days, an additional two days of trapping will be required. If there remains evidence that giant kangaroo rats remain, the burrow complexes will be carefully hand excavated. Each animal will be held for a brief period of time, fitted

with a passive integrated transponder (PIT) tag, health-assessed, and released to pre-identified locations.

d. Methods shall be taken to prevent reentry to the burrow (e.g., one way doors) by giant kangaroo rat (and other small mammal species) until construction is complete in these areas. In areas adjacent to the arrays escape burrows will be augured into the ground to provide additional shelter for displaced animals.

e. Once construction activities are complete, access to the burrows shall be restored where possible. If construction-related impacts would result in the crushing or destruction of a burrow, then the burrow shall be excavated (either by hand or mechanized equipment under the direct supervision of the biologist, removing no more than 4 inches at a time). Giant kangaroo rat burrows/precincts shall not be disturbed from January through June (recognized breeding/mating season) unless a County-approved biologist, utilizing video technology, verifies that no young are present in the burrow.

f. Release sites will be prepared so that the survival of relocated giant kangaroo rat is maximized; this will include the construction of artificial burrows, supplemental food, maintenance of spatial relationships at release sites of animals captured at the project site, temporary enclosure fencing to allow the animals to acclimate to the release site and to reduce vulnerability to predation, monitoring, and an adaptive management plan.

g. Relocation and reference sites shall be monitored for a period of ten years. The monitoring shall include radio telemetry monitoring on a subset of the relocated animals, PIT tagging, monthly visits for the first five years to quantify the number distribution, and status of precincts. If the results of the five year monitoring indicate the animals are persisting and increasing in numbers, the monitoring will be reduced to one fall visit each during year seven and year ten.

The Applicant shall document all giant kangaroo rat burrows/precincts abandoned or destroyed and, prior to final County inspection, provide a written report to the County of San Luis Obispo, the CDFG, and the USFWS. The specific requirements of this measure, including the trapping guidelines, handling procedures, or release locations, may be updated as handling and translocation data are obtained, pending the approval of the County, the CDFG, and the USFWS.

During construction, compliance will be verified by the County Environmental Monitor. Prior to the final County inspection, the final report, as detailed above, shall be submitted to the County, the CDFG, and the USFWS.

CVSR BIO-135. Compensate for permanent impacts to giant kangaroo rat, San Joaquin kit fox and San Joaquin antelope squirrel. Prior to ground disturbance, and for each year of construction, the Applicant shall retain a County-approved biologist to map all areas subject to temporary and permanent impacts for the giant kangaroo rat (surveys to be conducted per conditions set forth in CVSR BIO-134), San Joaquin kit fox (surveys to be conducted per conditions set forth in CVSR BIO-137) and San Joaquin antelope squirrel (surveys to be conducted per conditions set forth in CVSR BIO-138). To the extent feasible, the same County-approved biologist(s) should conduct the yearly surveys to reduce observer bias, thereby increasing the consistency of the survey results.

The exact number of acres permanently impacted, and therefore the number of acres requiring compensatory mitigation, shall be determined based on final project design and engineering. For the Solar Generation Facility, impact acreage shall be calculated based on the area inside solar array fence lines plus a 100-foot buffer, and all other areas of permanent impacts such as buildings and roads.

Giant kangaroo rat is considered the key-stone species for the impacted grassland community. For the purposes of this measure, the preservation and creation of habitat for giant kangaroo rat will mitigate project impacts to San Joaquin kit fox and San Joaquin antelope squirrel. Acquisition and preservation of mitigation lands shall be required as described below:

a. **Revised Project.** To mitigate for the loss of habitat and the loss of individual animals, the Applicant shall provide compensatory mitigation acreage adjusted to reflect the final project footprint. Mitigation will be required at a 4:1 ratio for giant kangaroo rat and San Joaquin antelope squirrel (i.e., for every acre of suitable habitat lost four acres of suitable habitat will be preserved) for permanent impacts on the Revised Project site (which avoids core habitat for giant kangaroo rat). The lands comprising the 4:1 ratio shall include a 3:1 ratio of occupied habitat (see requirements below for "Occupied Habitat") and a 1:1 ratio of "Created Habitat" (see requirements below for "Created Habitat" and "Created Habitat Restoration Standards). Permanent loss of habitat to facilities, solar array construction, and project-related disturbance will be compensated at a ratio of 5:1 for San Joaquin kit fox.

Land Acquisition Requirements

The following factors must be considered in assessing the quality of potential mitigation habitat: (1) current land use; (2) location (e.g., habitat corridor, part of a large block of existing habitat, adjacency to source populations, proximity to solar facilities or other potential sources of disturbance); (3) vegetation composition and structure; (4) slope; (5) soil composition and drainage; and (6) level of occupancy or use by relevant species.

Occupied Habitat. To meet the requirements for occupied habitat, the mitigation lands selected for acquisition shall be equal or greater habitat value and have an equivalent level of occupancy by these species and must:

b. Be within the Carrizo Plain or other agency-approved area with potential to contribute to habitat connectivity and build linkages between known populations of giant kangaroo rat, San Joaquin kit fox, and San Joaquin antelope squirrel and/or other preserve lands;

c. Provide habitat for giant kangaroo rat and San Joaquin kit fox with capacity to regenerate naturally when disturbances are removed;

d. Not be characterized by (or adjacent to areas characterized by) high densities of invasive species such as yellow star thistle or species that might jeopardize habitat recovery and restoration;

e. Not contain hazardous wastes that cannot be removed to the extent that the site could not provide suitable habitat;

f. Not be located on land that is currently publicly held for resource protection; and

g. If lands are preserved within portions of the project site they must be at least 100 feet from solar facilities and must not be permanently impacted by construction and operation of the project, or subject to routine disturbance or maintenance (other than managed grazing for fire control or species management).

Created Habitat. To meet the requirements for the creation of habitat, the mitigation lands selected for acquisition must:

h. Be within the Carrizo Plain or other agency-approved area with potential to contribute to habitat connectivity and build linkages between known populations of giant kangaroo rat and San Joaquin kit fox, and/or other preserve lands;

i. Consist of actively dry-farmed land or other disturbed areas (with the approval of the County, the CDFG, and the USFWS);

j. Be contiguous and biologically connected, as agreed to by the County, the CDFG, and the USFWS, to lands currently occupied by giant kangaroo rat, ideally with populations that are stable, recovering, or likely to recover;

k. Support suitable soils, slope, and drainage patterns consistent with giant kangaroo rat and San Joaquin kit fox requirements;

l. Not be located on land that is currently publicly held for resource protection;

m. Not contain hazardous wastes or structures that cannot be removed to the extent that the site could not provide suitable habitat; and

n. Prior to acquisition or implementation, should the land be proposed for limited grazing to complement reestablishment of sensitive biological resources, the County shall evaluate to determine to what extent, if any, the two can jointly qualify for protection of agricultural and sensitive biological lands. Where limited grazing is determined acceptable, a livestock range management expert shall be consulted along with the biologist to determine potential acreages available for grazing and what the sustainable carrying capacity would be given the biological constraints.

Created Habitat Restoration Standards. For created habitat to be considered functional habitat, complete rehabilitation of created habitat lands from existing degraded conditions (i.e., active dry farming or other disturbed condition) to conditions that match or exceed habitat conditions on the project site shall be required. After five years these lands must meet the following restoration standards:

o. Consist of annual grasslands or other grassland vegetation consistent with the known ecology of giant kangaroo rats (without infestations of noxious or invasive weeds (i.e., Russian thistle, star thistle, etc.);

p. Support less than 30 percent shrub cover;

q. Support natural drainage patterns and not be dominated by large areas that are subject to seasonal inundation during periods of normal rainfall; and

r. Meet other restoration criteria as required by the USFWS and CDFG, as specified in the approved restoration plan.

Open Space Easement Requirements

Open space easement(s) shall be recorded on all property associated with the mitigation lands to protect biological resources in perpetuity. The Applicant shall either provide open space easements or provide funds for the acquisition of conservation easements to a "qualified easement holder" (defined below). The CDFG is a qualified easement holder. To be a "qualified easement holder" a private land trust must have:

s. Substantial experience managing open space easements that are created to meet mitigation requirements for impacts to special-status species;

t. Adopted the Land Trust Alliance's Standards and Practices; and

u. A stewardship endowment fund to pay for its perpetual stewardship obligations.

The County shall determine whether a proposed easement holder meets these requirements.

The Applicant shall also be responsible for providing to the easement holder fees sufficient to cover: (1) administrative costs incurred in the creation of the easement (appraisal, documenting baseline conditions,

land acquisition costs, initial clean up, etc.), and (2) funds in the form of an endowment to cover the cost of implementing, monitoring, and enforcing the terms of the easement in perpetuity. The amount of these administrative and stewardship fees shall be determined by the easement holder in consultation with the County.

Open space easement(s) shall also be subject to the following:

v. The locations of acceptable open space easement land(s) shall be developed with approval from the CDFG and USFWS.

w. The primary purpose of the easement(s) shall be conservation of impacted species and habitats, but the easement(s) shall also allow livestock grazing when and where it is deemed beneficial for the habitat needs of impacted species.

x. Be held in perpetuity by a qualified easement holder (defined above).

y. Be subject to a legally binding agreement that shall: (1) be recorded with the County Recorder(s); and (2) name the CDFG or another organization to which the conservation easement(s) will be conveyed if the original holder is dissolved.

The Applicant shall submit a formal acquisition proposal to the County, the CDFG, and the USFWS describing the parcel(s) intended for purchase and creation. This acquisition proposal shall discuss the suitability of the proposed parcel(s) as compensation lands for giant kangaroo rats in relation to the criteria listed above. The proposal must be approved by the County, the CDFG, and the USFWS prior to the issuance of the initial construction permit. Prior to ground disturbance, the Applicant shall obtain County approval of the location of mitigation lands, the holder of open space easements, and the restrictions contained in the easement(s) created for the permanent protection of these lands. Documentation of recorded easement(s) shall be submitted to and approved by the County prior to ground disturbance.

Mitigation lands will be monitored and maintained per the requirements set forth in the Habitat Mitigation and Monitoring Plan prepared for the project, discussed below under CVSR BIO-136. An annual report shall be submitted to the County.

CVSR BIO-136. Prepare a Habitat Mitigation and Monitoring Plan. To ensure the success of on-site preserved land and acquired mitigation lands, required for compensation of permanent impacts to vegetative communities and listed or special-status plants and wildlife, the Applicant shall retain a County-approved biologist to prepare a Habitat Mitigation and Monitoring Plan (HMMP). The HMMP will be submitted to the County of San Luis Obispo for review and approval prior to the issuance of a construction permit. The HMMP will include, at a minimum, the following information:

a. Summary of anticipated habitat impacts and the proposed mitigation.

b. Detailed description of the location and boundaries of undisturbed project areas proposed for preservation, off-site mitigation lands, and a description of existing site-wide conditions. The HMMP shall include detailed analysis showing that the mitigation lands meet the performance criteria outlined in CVSR BIO-115 (Develop a Habitat Restoration and Revegetation Plan) and CVSR BIO-135 (Compensate for permanent impacts to giant kangaroo rat, San Joaquin kit fox and San Joaquin antelope squirrel).

c. Discussion of measures to be undertaken to enhance (e.g., through focused management) the on-site preserved habitat and off-site mitigation lands for listed and special-status species.

d. Dedication of adequate funds consistent with the PAR analysis required for the CDFG and USFWS permit requirements.

e. Description of management and maintenance measures (e.g., managed grazing, fencing maintenance, etc.). Monitoring shall document compliance with CVSR BIO-135 (Compensate for permanent impacts to giant kangaroo rat, San Joaquin kit fox and San Joaquin antelope squirrel) and CVSR SOC-9 (Applicant funding for environmental monitoring).

f. Discussion of habitat and species monitoring measures for on-site preservation areas and off-site mitigation lands, including specific, objectives, performance criteria, monitoring methods, data analysis, reporting requirements, monitoring schedule, etc.

g. Development of a strategy for the monitoring of indirect impacts to vegetation and wildlife from alteration to the solar and hydric regimes as a result of solar panels.

h. Development of a Managed Grazing Plan for mitigation lands. This plan shall, at the minimum, include an annual evaluation of rainfall and total bio mass in order to determine the number of and time period that cattle could be actively grazed on mitigation lands. Adaptive management plans for mitigation lands may require the following depending on the best available research regarding the habitat needs of giant kangaroo rat: (1) apply livestock grazing if required when giant kangaroo rat density < 20 individuals per hectare and residual dry matter (RDM) of vegetation is > 1,600 lbs/acre and RDM is composed of thick, non-native grasses such as Bromus and Hordeum (or other persistent exotics), making up over 70 percent of plant composition in the sampling area; and (2) remove livestock as necessary when minimums (1,000 lbs/acre RDM or biomass, depending on time of year) are reached, to create large suitable areas in the core area and/or a mosaic pattern in landscape. Drought, accumulation of excessive amounts of biomass and inappropriate grazing could affect these areas. The RDM values and amount of managed grazing, if required, will be developed by a County-approved range scientist, and coordinated with and approved by the County, the CDFG, and the USFWS. Population measurements and RDM shall be measured in the fall (October–November). Because of the uncertainty of annual rainfall, continuous adaptive management would be required.

i. Development of a monitoring strategy, which shall serve to document the persistence of giant kangaroo rat, San Joaquin kit fox, and if lands acquired or protected for the compensation of permanent impacts to giant kangaroo rat, San Joaquin kit fox or San Joaquin antelope squirrel populations within the project site and on mitigation lands. This monitoring will be conducted for a minimum of five years after the completion of construction activities. The strategy should include, at the minimum, the following:

    i. Documentation of pre-project population levels for the species noted above, based on results of focused pre-construction surveys and previously supplied Applicant data.

    ii. On-going monitoring of species populations upon completion of construction activities, while the project is in operation, for a minimum of three years.

    iii. Monitoring of reference populations for each of these species in areas that contain undisturbed habitat, such as the Carrizo Plain National Monument.

    iv. An analysis of the comparison of percent changes in population levels at the project and reference sites to be used in the determination of adaptive management strategies.

j. A contingency plan shall be created for mitigation elements that do not meet performance or final success criteria within five years. The contingency plan will include specific triggers for remediation if performance criteria are not being met and a description of the process by which remediation of problems with the mitigation site (e.g., presence of noxious weeds) will occur.

k. The Applicant (in consultation with the land trust/agency that holds open space easements on mitigation lands) is responsible for the monitoring, as specified in the HMMP, of the mitigation lands during project construction and for three years after the completion of construction. During this period, regular reporting shall be provided to the County. Thereafter, mitigation lands shall be monitored at least once per year by the land trust/agency that holds the open space easements. Monitoring reports shall be submitted to the County annually for the specified reporting period.

CVSR BIO-137. Conduct focused pre-construction San Joaquin kit fox surveys and implement avoidance measures. No more than 30 days prior to commencement of construction activities the Applicant shall retain a County- and USFWS-approved biologist to conduct pre-construction surveys for each phase (construction of each solar array) of the project. If present, San Joaquin kit fox dens (potential, known) will be fenced and ground-disturbing activities shall be avoided within a minimum of 100 feet surrounding each potential or known den. Fencing shall encircle each den at the appropriate buffer distance and should not prevent access to the den by San Joaquin kit fox. Once construction activities will no longer affect the den, all fencing will be removed to avoid attracting subsequent attention to the dens. Atypical dens will require a 100-foot buffer demarcated by flagging. The flagging shall consist of 4 to 5 flagged stakes 100 feet from the den entrance(s) to identify the den location. Unoccupied natal dens shall be flagged, in the same manner noted above, and require a 200-foot buffer. All on-site flagging and buffer delineations shall be kept in good working order for the duration of each construction phase. The biologist shall routinely monitor all dens flagged for protection to ensure they are not disturbed during the construction phase.

Occupied natal dens found within 1,000 feet of project activities, from August 1–November 30 shall require immediate contact with the USFWS. All project-related activities within the 1,000-foot radius shall stop until the USFWS gives direction to resume activity. The buffer may be adjusted upon written approval from the USFWS/CDFG and County. If occupied natal dens are encountered from December 1 to July 31, project activities within 1,600 feet of the dens will be prohibited until the pups have left the den. Avoidance of natal dens is mandatory and shall not be disturbed at any time.

If avoidance of potential or known dens is not possible, the Applicant shall take the following sequential steps when working in such areas:

1. Allow for three consecutive days of monitoring to determine the occupancy status of each den. Activity at the den shall be monitored by using tracking medium at the entrance to the den or stationary infrared beam cameras and by spotlighting. If no activity is observed, actions described below under step 3 may be implemented. If kit fox activity is observed, the den shall be monitored for an additional five days from the date of observance. Use of the den during this time can be discouraged by partially plugging its entrance(s) with soil in such a manner that any resident animal can escape easily. If kit fox are still present after five days, den excavation, discussed below under step 3 may proceed when, in the judgment of the qualified/approved biologist, it is temporarily vacant.
2. Once the kit fox has vacated the den, methods (e.g., one way doors) shall be taken to prevent reentry to the burrow by kit fox (and other mammal species) until construction is complete in these areas. Once construction activities are complete access to the burrows shall be restored.
3. As indicated above, natal dens shall not be disturbed at any time. For all other dens, once it has been confirmed that the dens have been vacated, if construction-related impacts would result in the crushing or destruction of a den, then the den shall be excavated. Excavation shall be done only by hand and under the direct supervision of the biologist, removing no more than 4 inches at a time. If at

any time during excavation, a San Joaquin kit fox is discovered inside the den, all activity will cease immediately and monitoring described above under step 1 shall be resumed.

The biologist shall document all kit fox dens abandoned, destroyed or avoided/ protected. Prior to the County's final inspection, the biologist shall prepare a written compliance report for County review and approval. Copies of this report shall also be provided to the CDFG and USFWS.

Prior to the completion of construction in each phase of the project, the Applicant shall replace all excavated kit fox dens with artificial dens on a 2:1 basis. The location and design of the artificial dens shall be prepared by the County-approved biologist and approved by the County, in consultation with the USFWS/CDFG, prior to installation.

Additionally, upon completion of each phase of construction activities, escape dens shall be installed in areas between the arrays to facilitate movement of individuals through the project area. These dens will measure 8 inches across, be constructed of PVC pipe and be installed with rebar to restrict the opening to 6 inches to prevent use by badgers or coyotes. The 8-inch diameter PVC pipe should be at least 25 feet long, placed flat on the ground surface and covered with soil for thermal protection. A minimum of one escape den per quarter mile shall be required. Locations of all escape dens shall be indicated on all constructions plans submitted with the construction permit package and be approved by the County in consultation with the USFWS/CDFG prior to installation.

During construction, compliance will be verified by the County Environmental Monitor, in consultation with the CDFG and USFWS.

CVSR BIO-138. Complete focused pre-construction San Joaquin antelope squirrel surveys and implement avoidance measures. No more than 30 days prior to the commencement of ground disturbance activities, the Applicant shall retain a County-approved biologist to conduct pre-construction surveys for each phase (construction of each solar array) of the project. If present, active San Joaquin antelope squirrel burrows shall be flagged and ground-disturbing activities shall be avoided within a minimum of 50 feet surrounding each active burrow. If avoidance is not possible, the Applicant shall take the following sequential steps when working in such areas:

1. Allow for one night without disturbance to the burrow and surrounding area to allow the antelope squirrels to vacate the burrow.
2. Antelope squirrels shall be live trapped and relocated out of impacted areas in the same manner as described under CVSR BIO-134 for giant kangaroo rat.
3. Methods shall be taken to prevent reentry to the burrow by antelope squirrels (and other small mammal species) until construction is complete in these areas.
4. Once construction activities are complete, access to the burrows shall be restored. If construction-related impacts would result in the crushing or destruction of a burrow, then the burrow shall be excavated (either by hand or mechanized equipment under the direct supervision of the biologist, removing no more than 4 inches at a time). Antelope squirrel burrows shall not be disturbed from January to May (recognized breeding/mating season) unless a County-approved biologist, utilizing video technology, verifies that no young are present in the burrow.

The Applicant shall document all San Joaquin antelope squirrel burrows abandoned or destroyed and, prior to final County inspection, provide a written report to the County of San Luis Obispo, the CDFG, and the USFWS.

During construction, compliance will be verified by the County Environmental Monitor, in consultation with the CDFG and USFWS. Prior to County final inspection, the final report, as detailed above, shall be submitted to the County, the CDFG, and the USFWS.

CVSR BIO-139. Conduct pre-construction surveys for Special-Status plants and implement avoidance measures. Prior to initial ground disturbance for any areas not disturbed prior to Spring 2012, and for undisturbed areas in subsequent construction years, the Applicant shall conduct pre-construction surveys for special-status plant species in all areas subject to ground-disturbing activity, including, but not limited to, solar panel footing preparation and construction areas, assembly yards, and areas subject to grading for new access roads. The surveys shall be conducted during the appropriate blooming period(s) by a County-approved plant ecologist/biologist according to protocols established by the USFWS, the CDFG, and California Native Plant Society (CNPS). All listed plant species found shall be marked and avoided. Any populations of special-status plants found during surveys will be fully described, mapped, and a CNPS Field Survey Form or written equivalent shall be prepared. These surveys must be accomplished within 24 months of construction and during a year in which rainfall totals are at least 80% of average and in which the temporal distribution of rainfall is not highly abnormal (e.g., with the vast majority of rainfall occurring very early or late in the season) to be reasonably certain of the presence/absence of rare plant species, unless surveys of reference populations document that precipitation conditions would not have adversely affected the detectability of the species.

Prior to site grading, any populations of special-status plant species identified during the surveys shall be protected by a buffer zone. The buffer zone shall be established around these areas and shall be of sufficient size to eliminate potential disturbance to the plants from human activity and any other potential sources of disturbance including human trampling, erosion, and dust. The size of the buffer depends upon the proposed use of the immediately adjacent lands, and includes consideration of the plant's ecological requirements (e.g., sunlight, moisture, shade tolerance, physical and chemical characteristics of soils) that are identified by a County-approved plant ecologist and/or botanist. The buffer for herbaceous and shrub species shall be, at minimum, 50 feet from the perimeter of the population or the individual. A smaller buffer may be established, provided there are adequate measures in place to avoid the take of the species, with the approval of the USFWS, the CDFG, and the County of San Luis Obispo. Highly visible flagging shall be placed along the buffer area and remain in good working order during the duration of any construction activities in the area. If project-related impacts result in the loss of more than 10% of the on-site population of any special-status plant species, compensatory mitigation will be required as described below.

During construction, compliance will be verified by the County Environmental Monitor, which will include documenting when yearly survey events occur, reviewing the resulting data, and updating the WEEP if impacts to species not previously addressed are anticipated.

CVSR BIO-140. Compensate for impacts to Special-Status plant species. If project-related impacts result in the loss of more than 10% of the on-site population of any special-status plant species, compensatory mitigation will be required. Compensation will be required for all impacts that exceed the 10% threshold (e.g., impacts to 15% of a population will only require compensation for 5% or the amount of impacts that exceed the 10% threshold). To compensate for permanent (including areas located beneath the arrays) impacts to special-status plant species, habitat (which may include preservation of areas within the undisturbed areas of the project footprint, mitigation lands outside of the main Project site or a combination of both) that is not already public land under resource protection shall be preserved and managed in perpetuity at a 1:1 mitigation ratio (one acre preserved for each acre impacted). Compensation for temporary impacts shall include land acquisition and/or preservation at a 0.5:1 ratio. The preserved habitat for a significantly impacted plant species shall be of equal or greater habitat quality to the

impacted areas in terms of soil features, extent of disturbance, vegetation structure, and will contain verified extant populations, of the same size or greater, of the special-status plants that are impacted. Impacts could include direct impacts resulting from loss of habitat or indirect impacts if a significant population or portion thereof is unable to be avoided.

Habitat shall be preserved through the use of permanent open space easements or other conservation mechanism acceptable to the County. Mitigation lands cannot be located on land that is currently publicly held for resource protection. Mitigation lands may include (depending on the habitat requirements of particular species):

a. Areas outside the project boundary, but within the Carrizo Plain;

b. Preservation areas within portions of the project site that are at least 100 feet from solar facilities and are either (1) not permanently impacted by construction and operation of the project, or (2) are temporarily disturbed and then restored according to the requirements in CVSR BIO-115; and

c. Degraded areas (e.g., areas that have been actively dry-farmed) that are restored to high quality habitat through the implementation of a County-approved restoration plan.

Criteria for appropriate mitigation land are species-specific; however, the following factors must be considered in assessing the quality of potential mitigation habitat: (1) current land use; (2) location (e.g., habitat corridor, part of a large block of existing habitat, adjacency to source populations, proximity to solar facilities or other potential sources of disturbance); (3) vegetation composition and structure; (4) slope; (5) soil composition and drainage; and (6) level of occupancy or use by relevant species.

The Applicant shall either provide open space easements or provide funds for the acquisition of open space easements to a "qualified easement holder" (defined below). The California Department of Fish and Game (CDFG) is a qualified easement holder. To qualify as a "qualified easement holder" a private land trust must have:

- Substantial experience managing open space easements that are created to meet mitigation requirements for impacts to special-status species;
- Adopted the Land Trust Alliance's Standards and Practices; and
- A stewardship endowment fund to pay for its perpetual stewardship obligations.

The County shall determine whether a proposed easement holder meets these requirements.

The Applicant shall also be responsible for donating to the easement holder fees sufficient to cover: (1) administrative costs incurred in the creation of the easement (appraisal, documenting baseline conditions, etc.), and (2) funds in the form of a non-wasting endowment to cover the cost of monitoring and enforcing the terms of the easement in perpetuity. The amount of these administrative and stewardship fees shall be determined by the easement holder in consultation with the County.
Open space easement(s) shall also be subject to the following:

- The locations of acceptable easement(s) shall be developed with approval of the CDFG and USFWS.
- The primary purpose of the easement(s) shall be conservation of impacted species and habitats, but the easement(s) shall also allow livestock grazing when and where it is deemed beneficial for the habitat needs of impacted species.
- Be held in perpetuity by a qualified easement holder (defined above).

- Be subject to a legally binding agreement that shall: (1) be recorded with the County Recorder(s); and (2) name the CDFG or another organization to which the easement(s) will be conveyed if the original holder is dissolved.
- Be subject to the management requirements outlined in CVSR BIO-136 (Prepare a Habitat Mitigation and Monitoring Plan).

If lands acquired or protected for the compensation of permanent impacts to giant kangaroo rat, San Joaquin kit fox or San Joaquin antelope squirrel (CVSR BIO-135), and/or vegetative communities (CVSR BIO-116) contain similar sized populations of the impacted special-status plant species, of equal or greater habitat value, these mitigation lands may be used to achieve the required compensation ratios for special-status plant species.

Documentation of recorded easement(s) shall be submitted to the County, for review and approval, prior to the issuance of the construction permit. Verification of having met habitat mitigation requirements shall be reviewed and approved prior to final inspection.

CVSR BIO-141. Complete focused pre-construction surveys for silvery legless lizards, coast horned lizard, and San Joaquin coachwhip and implement avoidance measures. The Applicant shall retain a County-approved biologist to conduct pre-construction surveys immediately prior to ground disturbance (i.e., the morning of the commencement of). If legless lizards, coast horned lizards or San Joaquin coachwhips are found within the area of disturbance, the biologist will relocate the animals to a pre-approved location outside the project or work area. The candidate locations for species relocation will be identified prior to construction and based on the size and type of habitat present, the potential for negative interactions with resident species, and species range. A final report identifying the number of animals moved, any mortality identified during the relocation event, and the general health of the species shall be completed and submitted to the County on a monthly basis.

During construction, compliance will be verified by the County Environmental Monitor.

CVSR BIO-142. Complete focused pre-construction western spadefoot toad surveys and implement avoidance measures. Prior to the commencement of construction activities and during construction, the County Environmental Monitor shall verify that the County-approved biologist (herpetologist) has completed the following:

a. Conduct a pre-construction survey within and around areas of proposed disturbance during the appropriate time of year when this species can be detected (i.e., during periods or suitable rainfall that result in pooling or the formation of other aquatic habitat) to determine the presence of western spadefoot toad and related habitat.

b. For the duration of construction activities and based on appropriate rainfall and temperatures (generally between the months of February and April), the biologist shall conduct pre-construction surveys in all appropriate vegetation communities within the project footprint. Surveys will include evaluation of all previously documented occupied areas and a reconnaissance level survey of the remaining natural areas of the site. All western spadefoot adults, tadpoles, and egg masses encountered shall be collected and released in the identified/created restoration ponds described below.

c. Should toads and habitat be found, and be impacted by temporary and/or permanent project impacts, a habitat restoration and management plan shall be prepared for review and approval by the County, that addresses the following:

i. Impacted occupied breeding habitat to be replaced, on-site, at a 2:1 ratio.

ii. Relocation areas shall be designed as suitable toad habitat, and as far away as feasible from any project-related structure or foreseeable construction area (minimum 200-foot buffer from construction activities).

iii. Terrestrial habitat surrounding the proposed relocation site shall be as similar in type, aspect, and density to the location of the existing ponds as feasible.

iv. No site preparation or construction activities shall be permitted in the vicinity of any occupied ponds until the design and construction of the relocation habitat in preserved areas of the site has been completed and all western spadefoot toad adults, tadpoles, and egg masses detected are moved to the created pool habitat.

v. Restoration areas shall be monitored and maintained until they are shown as successful habitat for the toad, or up to five years. Success criteria shall be proposed. Provisions to make adjustments to remediate problems shall also be included.

vi. The plan shall include permanent protection and management of restoration areas (e.g., conservation easement or fee title purchase, etc.).

Prior to issuance of a construction permit, this provision shall be shown on all applicable construction plans.

CVSR BIO-143. Complete focused pre-construction Burrowing Owl surveys and implement avoidance measures. No more than 15 days prior to the commencement of initial ground disturbing activities for each phase (construction of each solar array) of the project, the Applicant shall implement focused pre-construction reconnaissance level surveys for Burrowing Owls. Surveys shall be conducted prior to the initiation of ground disturbance and be conducted by a County-approved biologist(s), knowledgeable about the species. In conformance with federal and State regulations regarding the protection of raptors, surveys for Burrowing Owls shall be conducted in conformance with the California Burrowing Owl Consortium's 1995 protocols, which are recommended by the CDFG and consist of a minimum of three site visits. Surveys shall be completed within all areas proposed for ground disturbance and shall include the following avoidance measures:

a. Occupied burrows shall not be disturbed during the nesting season (1 February through 31 August) unless a County-approved biologist approved by CDFG verifies through noninvasive methods that either the birds have not begun egg-laying and incubation or that juveniles from the occupied burrows are foraging independently and are capable of independent survival. Owls present on-site after 1 February will be assumed to be nesting unless evidence indicates otherwise. This protected buffer area will remain in effect until 31 August, or based upon monitoring evidence, until the young owls are foraging independently or the nest is no longer active.

b. Unless otherwise authorized by the CDFG and the County, a 250-foot buffer, within which no activity will be permissible, will be maintained between project activities and nesting Burrowing Owls during the nesting season. This protected area will remain in effect until 31 August or based upon monitoring evidence, until the young owls are foraging independently. For Burrowing Owls present during the non-breeding season (generally 1 September to 31 January), a 150-ft buffer zone will be maintained around the occupied burrow(s).

c. If there is any danger that owls will be injured or killed as a result of construction activity, during the non-breeding season, the birds may be passively relocated. Relocation of owls during the non-breeding season will be performed by a County-approved biologist using one-way doors, which should be installed in all burrows within the impact area and left in place for at least two nights.

These one-way doors will then be removed and the burrows backfilled immediately prior to the initiation of grading. To avoid the potential for owls evicted from a burrow to occupy other burrows within the impact area, one-way doors will be placed in all potentially suitable burrows within the impact area when eviction occurs.

d. Any damaged or collapsed burrows will be replaced with artificial burrows in adjacent habitat at a 2:1 ratio.

During construction, compliance will be verified by the County Environmental Monitor.

CVSR BIO-144. Compensate for impacts to Burrowing Owl. Compensatory mitigation for permanent impacts to Burrowing Owls or their habitat will be provided in the form of habitat preservation and management. The habitat (which may include preservation areas within the undisturbed areas of the project site, mitigation lands outside of the site or a combination of both) must not already be public land under resource protection and shall be preserved and managed in perpetuity. The mitigation lands will be of equal or greater habitat quality compared to the impacted habitat. In accordance with California Burrowing Owl Consortium (1995) guidelines, an area of 6.5 acres per pair will be preserved and managed for this species. This mitigation may occur on lands used simultaneously as mitigation for impacts to other species, such as special-status plants, San Joaquin kit fox, giant kangaroo rat or San Joaquin antelope squirrel.

Habitat shall be preserved through the use of permanent conservation easements. Mitigation lands cannot be located on land that is currently publicly held for resource protection. Mitigation lands may include (depending on the habitat requirements of particular species):

a. Areas outside the project boundary, but within the Carrizo Plain;

b. Preservation areas within portions of the project site that are at least 100 feet from solar facilities and are either (1) not permanently impacted by construction and operation of the project, or (2) are temporarily disturbed and then restored according to the requirements in CVSR BIO-115; and

c. Degraded areas (e.g., areas that have been actively dry-farmed) that are restored to high quality habitat through the implementation of a County-approved restoration plan.

Criteria for appropriate mitigation land are species-specific; however, the following factors must be considered in assessing the quality of potential mitigation habitat: (1) current land use; (2) location (e.g., habitat corridor, part of a large block of existing habitat, adjacency to source populations, proximity to solar facilities or other potential sources of disturbance); (3) vegetation composition and structure; (4) slope; (5) soil composition and drainage; and (6) level of occupancy or use by relevant species.

The Applicant shall either donate conservation easements or provide funds for the acquisition of open space easements to a "qualified open space easement holder" (defined below). The California Department of Fish and Game (CDFG) is a qualified open space easement holder. To qualify as a "qualified open space easement holder" a private land trust must have:

d. Substantial experience managing conservation/open space easements that are created to meet mitigation requirements for impacts to special-status species;

e. Adopted the Land Trust Alliance's Standards and Practices; and

f. A stewardship endowment fund to pay for its perpetual stewardship obligations.

The County shall determine whether a proposed open space easement holder meets these requirements.

The Applicant shall also be responsible for the following: (1) administrative costs incurred in the creation of the open space easement (appraisal, documenting baseline conditions, etc.), and (2) funds in the form of a non-wasting endowment to cover the cost of monitoring and enforcing the terms of the open space easement in perpetuity. The amount of these administrative and stewardship fees shall be determined by the conservation easement holder in consultation with the County.
Open space easement(s) shall also be subject to the following:

g. The locations of acceptable open space easement(s) shall be developed with approval of the CDFG and USFWS.

h. The primary purpose of the open space easement(s) shall be conservation of impacted species and habitats, but the open space easement(s) shall also allow livestock grazing when and where it is deemed beneficial for the habitat needs of impacted species.

i. Be held in perpetuity by a qualified open space easement holder (defined above).

j. Be subject to a legally binding agreement that shall: (1) be recorded with the County Recorder(s); and (2) name the CDFG or another organization to which the open space easement(s) will be conveyed if the original holder is dissolved.

k. Be subject to the management requirements outlined in CVSR BIO-136 (Prepare a Habitat Mitigation and Monitoring Plan).

Documentation of recorded easement(s) shall be submitted to the County, for review and approval, prior to the issuance of the construction permit. Verification of having met habitat mitigation requirements shall be reviewed and approved prior to final inspection.

CVSR BIO-145. Complete focused pre-construction surveys for American badgers and implementation of avoidance measures. No more than 30 days prior to the commencement of construction activities, the Applicant shall retain a County-approved biologist to conduct pre-construction surveys for American badger within suitable habitat on the project site. If present, occupied badger dens shall be flagged and ground-disturbing activities avoided within 50 feet of the occupied den. Maternity dens shall be avoided during pup-rearing season (15 February through 1 July) and a minimum 200-foot buffer established. The extent of buffers shall be flagged in the field utilizing a method highly visible by construction crews. Buffers may be modified with the concurrence of the CDFG. Maternity dens shall be flagged for avoidance, identified on construction maps, and a biological monitor shall be present during construction to monitor for adequate protection of all identified dens and to ensure that all flagging is kept in good working order.

If avoidance of a non-maternity den (impacts to maternity dens is not allowed) is not feasible, badgers shall be relocated by slowly excavating the burrow (either by hand or mechanized equipment under the direct supervision of the biologist, removing no more than 4 inches at a time) before or after the rearing season (15 February through 1 July). Any passive relocation of badgers shall occur only after consultation with the CDFG and the biological monitor.

Prior to the final County inspection or occupancy, whichever comes first, a written report documenting all badger related activities (e.g., den flagging, monitoring, badger removal, etc.) shall be provided to the County of San Luis Obispo. A copy of the report will also be provided to the CDFG.

During construction, compliance will be verified by the County Environmental Monitor.

CVSR BIO-146. Conduct pre-construction maternity colony or hibernaculum surveys for sensitive bats. No more than 15 days prior to grading near or the removal of towers, trees or other structures, the Applicant shall retain a County-approved biologist, holding a CDFG collection permit and a Memorandum of Understanding with the CDFG allowing the biologist to handle bats and to conduct pre-construction surveys for sensitive bats. Surveys shall also be conducted during the maternity season (1 March to 31 July) within 300 feet of project activities.

If active maternity roosts or hibernacula are found, the structure, tree or tower occupied by the roost shall be avoided (i.e., not removed), if feasible. If avoidance of the maternity roost is not feasible, the biologist shall survey (through the use of radio telemetry or other CDFG methods) for nearby alternative maternity colony sites. If the biologist determines in consultation with the CDFG and the County that there are alternative roost sites used by the maternity colony and young are not present then no further action is required, and it will not be necessary to provide alternate roosting habitat. (i.e., CVSR BIO-147 would not apply although CVSR BIO-148 would still apply). However, if there are no alternative roosts sites used by the maternity colony, CVSR BIO-147 is required. If no active roosts are found, then no further action is required. If active maternity roosts are absent, but a hibernaculum (i.e., a non-maternity roost) is present, then CVSR BIO-147 is not necessary, but CVSR BIO-148 is required.

During construction, compliance will be verified by the County Environmental Monitor.

CVSR BIO-147. Provide substitute roosting habitat for bats. If a maternity roost will be impacted by the project, and no alternative maternity roosts are in use near the site, substitute roosting habitat for the maternity colony shall be provided on, or in close proximity to, the project site no less than three months prior to the eviction of the colony. Alternative roost sites will be constructed in accordance with the specific bats requirements in coordination with the CDFG. By making the roosting habitat available prior to eviction (CVSR BIO-148), the colony will have a better chance of finding and using the roost. Alternative roost sites must be of comparable size and proximal in location to the impacted colony. The CDFG shall also be notified of any hibernacula or active nurseries within the construction zone. If construction of alternative roost sites is required, the biologist shall provide a written report, documenting the required coordination with CDFG as well as the location of roost sites. This report shall be provided to the County and the CDFG.

During construction, compliance will be verified by the County Environmental Monitor. The Applicant shall submit a written report detailing activities to the County prior to final County inspection.

CVSR BIO-148. Exclude bats prior to eviction from roosts. If non-breeding bat hibernacula are found in structures, towers or trees scheduled to be removed, the individuals shall be safely evicted, under the direction of a County-approved biologist, by opening the roosting area to allow airflow through the cavity or other means determined appropriate by the bat biologist (e.g., installation of one-way doors). In situations requiring one-way doors, a minimum of one week shall pass after doors are installed and temperatures should be sufficiently warm for bats to exit the roost because bats do not typically leave their roost daily during winter months in southern coastal California. This action should allow all bats to leave during the course of one week. Roosts that need to be removed in situations where the use of one-way doors is not necessary in the judgment of the County-approved biologist shall first be disturbed by various means at the direction of the bat biologist at dusk to allow bats to escape during the darker hours, and the roost tree shall be removed or the grading shall occur the next day (i.e., there shall be no less or more than one night between initial disturbance and the grading or tree removal).

If an active maternity roost is located in an area to be impacted by the project, and alternative roosting habitat is available, the demolition of the roost site must commence before maternity colonies form (i.e.,

prior to 1 March) or after young are flying (i.e., after 31 July) using the exclusion techniques described above.

During construction, compliance will be verified by the County Environmental Monitor.

CVSR BIO-149. Prepare and implement a pronghorn friendly fencing plan. Prior to the issuance of a construction permit, the Applicant shall submit for County approval a Project Fencing Plan that has been developed to allow for movement of pronghorn antelope through the project site. The plan shall include, at a minimum, the following measures, as allowed and appropriate:

a. Identification and maintenance of likely and feasible movement pathways.

b. Removal of non-essential interior fencing consistent with Figure 9-4, Appendix 9 B.

c. Incorporation of measures to increase visibility of the fence (e.g., top strand PVC cover, vinyl markers on all strands, etc.), as appropriate.

d. Discussion of incorporation of alternatives to wire fencing, such as wooden rail fences with occasional dropped rails for wildlife access or adjustable fencing to allow for seasonal wildlife passage.

e. Incorporation of fencing modifications designed to enable movement by pronghorn antelope through the designed movement pathways on the Project site.

f. Placement of wildlife crossing signs at specific locations along the SR-58 corridor to alert drivers of the potential to encounter wildlife crossing the road.

During construction, compliance will be verified by the County Environmental Monitor.

CVSR BIO-150. Establish the "California Valley Land Acquisition Program." Prior to issuance of a construction permit, the Applicant shall enter into an agreement with the County, executed by the Chair of the County Board of Supervisors, in a form approved by County Counsel, providing funding for a program for purchase and consolidation of small lots within California Valley to eliminate their development potential and to promote permanent habitat connectivity therein. The agreement shall provide for the Applicant to work with the County to develop a lot acquisition and consolidation program, which would be reviewed and approved by the County within one year of issuance of construction permit. The agreement shall also include provisions assuring start-up funding for implementation of the program, in an amount no less than $500,000, to acquire and consolidate small lots within antiquated subdivisions in California Valley. The overall purpose of the program is to secure permanent land preservation for long-term conservation of endangered species.

The purpose of the California Valley Land Acquisition Program would be to acquire and aggregate private land parcels within the California Valley subdivision (in addition to lands currently held by the County), with the intent that adequate areas will be secured to maximize use by sensitive wildlife and that a County-approved entity (e.g., land trust) would provide oversight of such a program. The California Valley Land Acquisition Program plan would be submitted to San Luis Obispo County for approval prior to the operation of the CVSR Project. The land acquisition program should include, but is not necessarily limited to, the following components:

1. Definition of boundary of an "Area of Interest" within which the habitat values are considered favorable.

2. Establishment of reclamation and restoration requirements for parcels acquired (removal of developed facilities, debris, housing, or foundations).

3. Work with new development within the Carrizo Plain, and other potential funding sources, to establish a California Valley Land Acquisition Fund to acquire lands for wildlife preservation and enhancement.
4. Definition of acquisition priorities to use for evaluation of parcels offered to the CVLAP.
5. Development of relationships with land conservancy organizations that could manage the CVLAP. Establishment of criteria for assessing and monitoring for the presence of sensitive plants and wildlife.
6. Implementation of enhancement and protective measures that would be proposed for the acquired parcels including management of weeds, exotic wildlife species, removal of fences, reseeding or restoration and the establishment of artificial burrows to attract wildlife.

Milestone: If used, the CVLAP plan would be submitted to the County for approval prior to final inspection or occupancy, whichever occurs first.

Monitoring: For purposes of off-site mitigation credit, the Applicant shall provide County with documentation regarding the acquisition of lands and/or the contribution of funds to a County-approved land management group.

CVSR BIO-151. Establish Fencing Plan to create fence removal or modification incentives. Prior to the issuance of a construction permit, the Applicant shall submit for County approval a Fencing Plan that has been developed to facilitate the removal or modification of at least 10 miles of fences within the Carrizo Plain region. The Plan will consider all areas adjacent to and between the Topaz Solar Farm Project and CVSR Project sites that may pose barriers to movement for pronghorn antelope and tule elk. Because the Plan would consider areas on private lands, land owner permission would be required for implementation. The Plan shall be reviewed by the County (in consultation with the CDFG) and include at a minimum the following measures, as allowed and appropriate:

a. Identification of likely and feasible movement pathways.
b. Removal of non-essential fencing.
c. The modification of fencing to replace barbed with smooth wire on the lower and potentially upper wires of the fence. Incorporation of measures to increase visibility of the fence (e.g., top strand PVC cover, vinyl markers on all strands, etc.).
d. Discussion of incorporation of alternatives to wire fencing, such as wooden rail fences with occasional dropped rails for wildlife access or adjustable fencing to allow for seasonal wildlife passage.
e. The placement of fencing at potential risk areas to encourage movement away from dangerous road crossings.
f. Signage to warn vehicles of wildlife passage.
g. Installation of watering sites.

Landowners who receive funds for removing and/or modifying fencing shall sign contracts agreeing not to revert to previous fencing without consulting the County.

Prior to final inspection, the County Environmental Monitor shall verify that the approved plan has been implemented.

CVSR BIO-152. Implement all avoidance, minimization, and conservation measures identified in the Biological Opinion for California Valley Solar Ranch. The Applicant shall fully implement and adhere to all conservation measures and all other conditions and reporting requirements in the California Valley Solar Ranch, issued by the USFWS, June 24, 2011. The Applicant must provide the USFWS with a report twice a year (6 months apart) to describe the progress of implementation of all the commitments in the conservation measures and terms and conditions sections of the Biological Opinion.

BIOLOGICAL RESOURCES – RECONDUCTORING

PG&E BIO-1. Implement avoidance and minimization measures outlined in PG&E's O&M San Joaquin Valley Habitat Conservation Plan. The blunt-nosed leopard lizard is a covered species in the HCP. The following avoidance and minimization features from the HCP address blunt-nosed leopard lizards:

- If activities take place in suitable blunt-nosed leopard lizard habitat within the range of the species and outside the road shoulder, PG&E staff will identify if burrows are present and if work can avoid the burrows. If work cannot avoid the burrows, a qualified biologist will evaluate the site for occupancy and stake and flag an exclusion zone of 50 feet around the burrows prior to O&M activities at the job site.
- If an exclusion zone cannot extend the specified distance from the habitat, the biologist will stake and flag a restricted activity zone of the maximum practicable distance from the exclusion zone around the habitat. This exclusion zone distance is a guideline that may be modified by a qualified biologist, based on site-specific conditions (including habituation by the species to background disturbance levels). Measures are practicable where physically possible and not conflicting with other regulatory obligations or safety considerations; O&M activities will be prohibited or greatly restricted within restricted activity zones. However, vehicle operation on existing roads and foot travel will be permitted. A qualified biologist will monitor O&M activities near flagged exclusion and restricted activity zones. Within 60 days after O&M activities have been completed at a given worksite, all staking and flagging will be removed.

PG&E BIO-2. Avoid and/or minimize potential impacts to blunt-nosed leopard lizards by establishing work areas in locations that will have the least negative impacts. When construction vehicles must travel off existing access roads within suitable habitat, a qualified biologist will walk ahead of construction vehicles and identify a route for the vehicles to follow that will avoid burrows to the greatest extent practicable. If guard crossing poles need to be established within suitable blunt-nosed leopard lizard habitat, a biologist will work with construction crews to ensure that the poles are sited to avoid burrows. When removal of shrubs is necessary to allow vehicle access, it is recommended that the shrubs be removed by hand.

PG&E BIO-3. Fence work areas, cover burrows with plywood mats, and conduct protocol surveys if burrows cannot be avoided. If burrows occurring within the work area cannot be avoided, the work area will be fenced using material that blunt-nosed leopard lizards cannot climb. Protocol surveys will be conducted to determine if blunt-nosed leopard lizards occur within the fenced area. If blunt-nosed leopard lizards do occur, the burrows that occur along the vehicle access route will be covered with plywood mats during O&M activities and removed before the end of the workday. If necessary, contact a CDFG or USFWS representative so that the lizards may be passively relocated.

PG&E BIO-4. Conduct work in suitable blunt-nosed leopard lizard habitat during the active season. To lessen the potential of entrapping blunt-nosed leopard lizards in burrows, construction

activities should occur during the active seasons for the blunt-nosed leopard lizards (generally April 15 through June 30 and August 1 through September 15).

PG&E BIO-5. Conduct work in suitable habitat during periods when the species are most active. When construction activities occur in habitat suitable for San Joaquin whipsnake and coast horned lizard, when practicable, the work should be conduct work in suitable habitat during warm weather, when these species are most likely to be active. Drive slowly on access roads and overland while in suitable habitat to allow these species to move out of the way of vehicles.

PG&E BIO-6. Remove existing nests on towers, trim trees, and remove shrubs during the non-breeding season. To lessen the potential for nesting birds, especially raptors, from nesting on the towers, PG&E crews should remove existing nests on towers during the non-breeding season (September 1 through February 28). PG&E should also trim any trees or remove any shrubs that could provide nesting habitat during the non-breeding season.

PG&E BIO-7. Conduct preconstruction surveys for active special-status and non-special status raptors and migratory birds. Construction activities are anticipated to occur mainly during the nesting season for migratory birds and raptors (generally March through August). PG&E will retain a qualified wildlife biologist to conduct preconstruction surveys for nesting birds for all construction activities that occur within or near suitable breeding habitat. The surveys will be conducted no more than 1 week prior to the start of construction activities and will cover all affected areas, including construction areas and staging areas where ground disturbance or vegetation clearing is required. If no active nests are detected, a letter report documenting survey methods and findings will be submitted to CDFG, and no further mitigation is required.

PG&E BIO-8. Implement measures to avoid active nests. If surveys indicate that migratory bird or raptor nests do occur in areas where construction activities will take place, a no-disturbance buffer will be established around the nest site to avoid disturbance or destruction of the nest site until after the breeding season or until a wildlife biologist determines that the young have fledged. Generally, the buffer zones are 50 feet for nesting passerine birds and 250 feet for nesting raptors other than Swainson's hawks. However, the extent of these buffers will be determined through coordination with CDFG and will depend on the level of noise or construction disturbance, line of sight between the nest and the disturbance, ambient levels of noise and other disturbances, and other topographical or artificial barriers. These factors will be analyzed to make an appropriate decision on buffer distances. Active nests occurring in or near the study area will be monitored during construction by the on-site monitor. If the on-site monitor determines that birds on the nest are stressed (e.g., a bird constantly leaving an active nest or a bird not returning to the nest regularly to feed chicks), construction will be halted, and CDFG contacted to determine a further course of action.

PG&E BIO-9. Conduct preconstruction surveys for active western Burrowing Owl burrows. CDFG (1995) recommends that preconstruction surveys be conducted at all work areas (except paved areas) in project study areas and in a 250 foot-wide buffer zone around the work areas to locate active Burrowing Owl burrows. PG&E will retain a qualified biologist to conduct preconstruction surveys for active burrows no more than 30 days prior to the start of construction according to the CDFG guidelines. The surveys will include a nesting season survey and a wintering season survey, which is the season immediately preceding construction. If no Burrowing Owls are detected, a letter report documenting survey methods and findings will be submitted to CDFG, and no further mitigation is required.

PG&E BIO-10. Implement avoidance and minimization measures outlined in PG&E's O&M San Joaquin Valley Habitat Conservation Plan if active burrows are observed during the

preconstruction surveys in both Kern and San Luis Obispo Counties. If western Burrowing Owls are present at the site, a qualified biologist will work with O&M staff to determine whether an exclusion zone of 160 feet during the non-nesting season and 250 feet during the nesting season can be established. If it cannot, an experienced Burrowing Owl biologist will develop a site-specific plan (i.e. a plan that considers the type and extent of the proposed activity, the duration and timing of the activity, the sensitivity and habituation of the owls, and the dissimilarity of the proposed activity with background activities) to minimize the potential to affect the reproductive success of the owls. If the owls show signs of disturbance or, upon prior approval from CDFG, a passive relocation effort may be conducted as described below, and subject to the approval of CDFG. Passive relocation of western Burrowing Owls may occur during the non-breeding season (September 1 through January 31) with prior approval from CDFG. Passive relocation would include installing one-way doors on the entrances of burrows. The one-way doors would be left in place for 48 hours to ensure the owls have vacated the nest site. Owls would not be relocated during the breeding season.

PG&E BIO-11. Implement preconstruction measure outlined in PG&E's O&M San Joaquin Valley Habitat Conservation Plan. PG&E will retain qualified biologists to determine whether active Swainson's hawk or white-tailed kite nests are located within 0.25 mile of the proposed work area. If the biologists identify an active nest within 0.25 mile of the proposed work area, they will prescribe measures to avoid nest abandonment and other adverse effects to these species, including working the line another time of year or maintaining an appropriate setback for those species. Evaluations will be performed in consultation with the local CDFG representative.

PG&E BIO-12. Implement avoidance and minimization measures outlined in PG&E's O&M San Joaquin Valley Habitat Conservation Plan if active Swainson's hawk or white-tailed kite nests are observed during the preconstruction surveys. If a Swainson's hawk or white-tailed kite nest is known to be within 0.25 mile of a planned worksite, a qualified biologist will evaluate the effects of the planned O&M activity. If the biologist determines that the activity would disrupt nesting, a buffer and limited operation period during the nesting season (March 15–June 30) will be implemented. Evaluations will be performed in consultation with the local CDFG representative.

PG&E BIO-13. Avoid and/or minimize potential impacts to San Joaquin antelope squirrel, GKR, Tipton kangaroo rat, short-nosed kangaroo rat, and Tulare grasshopper mouse by establishing work areas in locations that will have the least negative impacts. When construction vehicles must travel off existing access roads within suitable habitat, a qualified biologist will walk ahead of construction vehicles and identify a route for the vehicles to follow that will avoid burrows to the greatest extent practicable. If guard crossing poles need to be established within suitable blunt-nosed leopard lizard habitat, a biologist will work with construction crews to ensure that the poles are sited to avoid burrows. When removal of shrubs is necessary to allow vehicle access, it is recommended that the shrubs be removed by hand.

PG&E BIO-14. Implement avoidance and minimization measures outlined in PG&E's O&M San Joaquin Valley Habitat Conservation Plan when working in suitable San Joaquin antelope squirrel, GKR, Tipton kangaroo rat, short-nosed kangaroo rat, and Tulare grasshopper mouse habitat in Kern and San Luis Obispo Counties. PG&E staff shall avoid occupied or potentially occupied burrows identified by a qualified biologist within suitable habitat for San Joaquin antelope squirrel, GKR, Tipton kangaroo rat, short-nosed kangaroo rat, and Tulare grasshopper mouse. If occupied or potentially occupied burrows cannot be avoided, a qualified biologist shall stake and flag a work-exclusion zone of at least 30 feet and remain on-site as a biological monitor, or the biologist shall stake and flag a work exclusion zone of 50 feet around active burrows prior to covered activities at the job site. If work must proceed in the exclusion zone, PG&E will pursue techniques to minimize direct mortality; which may

include having approved biologists trap and hold species in captivity, and excavating and closing burrows. The approved biologist will release the mammals as soon as possible when the work is complete. Another possible technique that may be implemented to minimize direct mortality will be to cover suitable burrows that occur along the vehicle access route with plywood mats during O&M activities. These boards will be removed before the end of the workday.

PG&E BIO-15. Implement avoidance and minimization measures to reduce impacts to American badgers. Avoid suitable burrows to the greatest extent possible. Drive slowly to allow badgers to move out of work area. If potential dens are present in the construction site and cannot be avoided, the following measures are required to avoid potential significant impacts to the American badger:

- If the qualified biologist determines that potential dens are inactive, the biologist shall excavate these dens by hand with a shovel to prevent badgers from re-using them during construction.
- If the qualified biologist determines that potential dens may be active, the entrances of the dens shall be blocked with soil, sticks, and debris for three to five days to discourage the use of these dens prior to project disturbance.

The den entrances shall be blocked to an incrementally greater degree over the three to five day period. After the qualified biologist determines that badgers have stopped using active dens within the project boundary, the dens shall be hand-excavated with a shovel to prevent re-use during construction.

PG&E BIO-16. Implement avoidance and minimization measures outlined in PG&E's O&M San Joaquin Valley Habitat Conservation Plan when construction activities occur in suitable San Joaquin kit fox habitat in Kern and San Luis Obispo Counties. If San Joaquin kit fox dens are present, their disturbance, and destruction will be avoided where possible. However, if dens are located within the proposed work area and cannot be avoided during construction, a qualified biologist will determine if the dens are occupied. If unoccupied, the qualified biologist will remove dens by hand excavating them in accordance with USFWS procedures. Exclusion zones will be implemented following USFWS procedures. The radius of these zones will follow current standards or will be as follows: Potential Den- 50 feet; Known Den-100 feet; Natal or Pupping Den-to be determined on a case-by-case basis in coordination with the USFWS and CDFG. Pipes will be capped and exit ramps will be installed in excavated trenches in these areas to avoid direct mortality.

PG&E BIO-17. May or may not be required pending agency communications. Biologists will consult with CDFG biologists to determine if calving areas for Tule elk or pronghorn occur near the project. If calving grounds do occur near the project, construction activities should be rescheduled to occur after the calving season, generally May through July.

PG&E BIO-18. Implement avoidance measures outlined in PG&E's O&M San Joaquin Valley Habitat Conservation Plan when construction activities occur in occupied habitat for special status plants. When routine O&M activities are conducted in an area of potential valley elderberry longhorn beetle habitat, a qualified individual will survey for the presence of elderberry plants within a minimum of 20 feet from the worksite. If elderberry plants have one or more stems measuring 1 inch or more in diameter at ground level are present, the qualified individual will flag those areas to avoid or minimize potential impacts on elderberry plants. If impacts (pruning/trimming, removal, ground disturbance, or damage) are unavoidable or occur, then additional measures identified in the valley elderberry longhorn beetle conservation plan and compliance brochure will be implemented. The valley elderberry longhorn beetle compliance brochure must be carried in all vehicles performing O&M activities within the potential range of valley elderberry longhorn beetle. In addition:

- If a covered plant species is present, a qualified biologist will stake and flag exclusion zones of 100 feet around plant occupied habitat (both the standing individuals and the seed bank individuals) of the covered species prior to O&M activities.
- If a covered annual plant species is present, O&M activities will occur after plant senescence and prior to the first significant rain to the extent practicable.
- If a covered plant species is present, the upper 4 inches of topsoil will be stockpiled separately during excavations. When this topsoil is replaced, compaction will be minimized to the extent consistent with utility standards. (This bullet point will be implemented for narrow endemic plants only after approval by the USFWS and CDFG).

PG&E BIO-19. Minimize impacts to special status plants to the extent possible. In order to minimize impacts to known and unknown occurrences of special status plants which that cannot be fully avoided, PG&E will conduct surveys in all previously unsurveyed areas which potentially support special-status plants. PG&E will use existing access roads and disturbed areas as much as possible, and will establish work zones in the least densely occupied areas of the population(s). Grading with the applicable work zones will be prohibited and shrub removal, if required, will be conducted by hand and will be limited to the minimum amount of removal necessary to complete project activities.

PG&E BIO-20. Implement management practices to control the introduction and spread of invasive plants. Prior to construction, PG&E will identify the location of noxious weed species of concern within areas that will be disturbed as part of the project. Appropriate management practices will be designed by a botanist and implemented during construction to reduce the likelihood of spreading already established weeds into new areas or increasing their abundance, and of introducing new weed species to the project area. Actions to prevent noxious weed establishment will be described within the SWPPP prepared for the project, and will be consistent with PG&E's draft Invasive Plant Management Strategy. The project SWPPP will include BMPs such as using construction equipment that has been cleaned of soil and plant parts, including seeds, before entering the project area and using weed-free straw for erosion control. Disturbed areas will be revegetated with appropriate locally based native seed mixes.

PG&E BIO-21. Implement general protection measures for waters of the United States. During construction, PG&E will implement the following measures to minimize or avoid impacts to waters of the United States:

- Establish exclusion zones and minimize the amount of area disturbed to the minimum amount necessary to complete the work. Align work areas to avoid wetland areas and margins as much as feasible.
- Delineate wetland areas within proximity to work areas, and restrict construction personnel and equipment from entering fenced protected areas.
- Conduct all fueling of vehicles, equipment, and helicopters at least 100 feet from wetlands and other waterbodies.
- To the extent feasible, complete road construction adjacent or within waters of the United States during the dry season. If it is not feasible to complete road construction work during the dry season, PG&E will use appropriate erosion control measures for the site.
- Install temporary bridges to span waters of the United States during wet season for equipment crossings.

PG&E BIO-22. Compensation for permanent impacts to GKR, San Joaquin kit fox, and San Joaquin antelope squirrel and preparation of a Habitat Mitigation and Monitoring Plan. To compensate for permanent impacts to GKR, San Joaquin kit fox, and San Joaquin antelope squirrel, the Applicant shall acquire parcels of land at a 3:1 ratio, containing suitable and occupied habitat for these species. The habitat must not already be public land and shall be located within the Carrizo Plain. The preserved habitat for permanent impacts to the species noted above shall be of equal or greater habitat quality to the impacted areas in terms of soil features, extent of disturbance, vegetative structure, and composition and shall contain verified extant populations, of a similar size to those impacted, of GKR and/or San Joaquin kit fox and/or San Joaquin antelope squirrel. Depending on availability, lands may have to be acquired in different locations, at the specified ratios, to satisfy mitigation for each of the above species. If one parcel of land meets the habitat and population requirements for all three species, separate acquisitions would not be required. A conservation easement would need to be recorded on all property associated with the mitigation lands as to protect the existing plant resources in perpetuity. A conservation easement could be held by CDFG or an approved land management entity and shall be recorded immediately upon the dedication or acquisition of the land. Preserved or acquired mitigation lands shall be monitored and maintained per the requirements set forth the Habitat Mitigation and Monitoring Plan prepared for the project and discussed below. The location of all lands proposed for mitigation land must be submitted to the CPUC, for review and approval, prior to the issuance of a grading permit.

Habitat Mitigation and Monitoring Plan

To ensure the success of on-site preserved land and acquired mitigation lands required for compensation of permanent impacts to vegetative communities and listed or special status plants and wildlife, the applicant shall retain a qualified biologist to prepare a Habitat Mitigation and Monitoring Plan. The Plan shall be submitted to the CPUC, prior to the issuance of a notice to proceed for construction. The Plan shall include, at a minimum, the following information:

1. Summary of anticipated habitat impacts and the proposed mitigation.
2. Detailed description of the location and boundaries of undisturbed project areas proposed for preservation and off-site mitigation lands and a description of existing site-wide conditions.
3. Discussion of measures to be undertaken to enhance (e.g., through focused management) the on-site preserved habitat and off-site mitigation lands for listed and special-status species.
4. Dedication of adequate funds consistent with the PAR analysis required for the CDFG and USFWS permit requirements.
5. Description of management and maintenance measures (e.g., managed grazing, fencing maintenance).
6. Discussion of habitat and species monitoring measures for on-site preservation areas and off-site mitigation lands, including specific, objectives, performance criteria, monitoring methods, data analysis, reporting requirements, monitoring schedule, etc.
7. Development of a monitoring strategy for the monitoring of indirect impacts to vegetation and wildlife from alteration to the solar and hydric regimes as a result of solar panels.
8. Development of a monitoring strategy, which shall serve to document the persistence of GKR, San Joaquin kit fox, and San Joaquin antelope squirrel populations within the project site. This monitoring shall be conducted for a minimum of 5 years after the completion of construction activities. The strategy, should include, at the minimum, the following:
    a) Documentation of pre-project population levels for the species noted above, based on results of focused preconstruction surveys and previously supplied applicant data.

b) On-going monitoring of species populations upon completion of construction activities, while the project is in operation, for a minimum of three years.

c) Monitoring of reference populations for each of these species in areas that contain undisturbed habitat, such as the Carrizo Plain National Monument.

d) An analysis of the comparison of percent changes in population levels at the project and reference sites to be used in the determination of additional compensatory mitigation.

9. A contingency plan for mitigation elements that do not meet performance or final success criteria within 5 years; this plan shall include specific triggers for remediation if performance criteria are not being met and a description of the process by which remediation of problems within the mitigation site (e.g., presence of noxious weeds) shall occur.

PG&E BIO-23. Focused pre-construction surveys for blunt-nosed leopard lizard and implementation of avoidance measures. Prior to commencing any site disturbance, the Applicant shall implement pre-construction reconnaissance level surveys (minimum of 3 surveys) for blunt-nosed leopard lizard. Surveys shall be conducted by a qualified biologist(s) knowledgeable about the species prior to the initiation of ground disturbance in each of the proposed switching station locations. If present, active blunt-nosed leopard lizard burrows shall be flagged and PG&E shall cease all work activities within 50-feet of the sighting, or as otherwise directed by USFWS and CDFG.

Protocol level surveys shall then be conducted within the switching stations in which the species was observed to determine their distribution on the site. Work may not resume until the protocol surveys have been completed. Upon completion of surveys a 1,000-foot buffer shall be placed around all active blunt-nosed leopard lizard habitat. The buffer may be adjusted pending the approval of the USFWS and CDFG. A minimum of 1,000 feet of linear exclusionary fencing shall be erected to prevent blunt-nose access work areas. Fencing shall consist of 36-inch tall silt fencing which will be partially buried to a depth of 6 inches. Each end of the fencing shall be monitored, during daily construction activities, to insure that no blunt-nosed leopard lizards enter active work areas. Where previously sighted, the biologist shall conduct clearance surveys each morning, prior to initiation of daily construction activities, to ensure that no lizards have entered the work area over night. The fencing and monitoring shall remain in place until work in that area is complete or additional protocol-level surveys yield negative results for blunt-nosed in the previously occupied areas. Should a blunt nosed leopard lizard enter the work area, all construction activities shall cease within 300-feet of the animal until it has left the area on its own.

The buffer and work stoppage will remain in effect in these areas until such a time that Protocol surveys yield negative results for the species. The resumes of the proposed biologist(s) shall be provided to the CPUC, CDFG, and USFWS for concurrence prior to the commencement of surveys.

PG&E BIO-24. Compensation for impacts to occupied blunt-nosed leopard lizard. The Applicant shall compensate for temporary impacts to occupied blunt-nosed leopard lizard habitat at a minimum 0.5:1 ratio. The mitigation areas must provide occupied habitat that is of equal or greater habitat quality compared to the impacted habitat, and must be located within the Carrizo Plain. A conservation easement would need to be recorded on all property associated with the mitigation lands as to protect the existing resources in perpetuity. A conservation easement could be held by CDFG or an approved land management entity and shall be recorded immediately upon the dedication or acquisition of the land. Preserved or acquired mitigation lands shall be monitored and maintained per the requirements set forth the Habitat Mitigation and Monitoring Plan prepared for the project.

If lands acquired or protected for the compensation of permanent impacts to GKR, San Joaquin kit fox, San Joaquin antelope squirrel (discussed below), and/or vegetation communities (discussed above)

contain similar amounts of occupied habitat similar in size to that of the impacted blunt-nosed leopard lizard habitat, of equal or greater habitat value, no further mitigation would be required. The location of all lands proposed for mitigation land must be submitted to the CPUC, CDFG, and USFWS, for review and approval, prior to the issuance of a grading permit.

PG&E BIO-25. Focused pre-construction surveys for San Joaquin whipsnakes and coast horned lizard and implementation of avoidance measures. PG&E shall retain a qualified biologist approved by the USFWS and CDFG to conduct pre-construction surveys immediately prior to (i.e., the morning of the commencement of) construction of the switching stations. If San Joaquin whipsnakes or coast horned lizards are found within the area of disturbance the biologist shall passively relocate the animals to a preapproved location outside the project area. The candidate locations for species relocation shall be identified prior to construction and based on the size and type of habitat present, the potential for negative interactions with resident species, and species range.

PG&E BIO-26. Implement all avoidance, minimization, and conservation measures identified in the Biological Opinion for California Tiger Salamander. PG&E shall implement the following measures for California Tiger Salamander:

- At least 15 days prior to ground disturbance, PG&E shall submit to the USFWS the names(s) and credentials of the biologists who will conduct the following measures.
- The Proposed Action will avoid suitable aquatic habitat.
- All excavated material shall be stored at a minimum of 150 feet from any culvert, wash, pond, vernal pool or stream crossing.
- Tightly woven fiber netting or similar material shall be used for erosion control or other purposes to ensure that California tiger salamander do not get trapped. Plastic monofilament netting shall not be used.
- Construction activities in suitable California tiger salamander upland habitat will be restricted to the dry season, April 15 through October 31, to the maximum extent feasible. If construction activities must occur within suitable California tiger salamander habitat during the wet season, when the species may be migrating overland to suitable breeding habitat, the perimeter of pull sites, staging areas; and/or landing zones will be fenced with exclusion fencing by October 15. Installation of exclusion fencing will occur under the supervision of the agency-approved biologist. The exclusion fencing will remain in place for the duration of construction and will be monitored during SWPPP inspections and by the biological monitors. Where access is necessary, gates will be installed within the exclusion fence.
- As necessary, erosion control measures will be implemented in suitable California tiger salamander upland habitat to prevent any soil or other materials from entering any nearby aquatic habitat. Erosion control measures will be installed adjacent to suitable aquatic habitat to prevent soil from eroding or falling into these areas.
- Locations of erosion control measures will be specified in the SWPPP. Erosion control measures will be furnished, constructed, maintained, and later removed as shown on the plans, as specified in the special provisions, and as directed by the project engineer.
- The biological monitor and construction foreman will be responsible for checking the exclusion fencing around the work areas daily to ensure that they are intact and upright. Any necessary repairs will be immediately addressed. The biological monitor will document the results of the daily monitoring visits on construction monitoring log sheets.

- Surface-disturbing activities will be designed to minimize or eliminate effects to rodent burrows that may provide suitable upland habitat. Areas with a high concentration of burrows will be avoided by surface-disturbing activities, to the maximum extent feasible. In addition, when a concentration of burrows is present at a particular location, the area will be staked or flagged to ensure that work crews are aware of their location and to facilitate avoidance of the area.
- A preconstruction survey will be conducted each day immediately preceding construction activity that occurs in designated California tiger salamander suitable upland habitat between October 31st and April 15th, or in advance of any activity that may result in take of this species. Parked vehicles will be inspected each morning before they are moved. In work sites that occur within 300 feet of suitable aquatic habitat, the survey area will include a 150-foot buffer around the work area. The survey will include a careful inspection of all potential hiding spots, such as large downed woody debris, the perimeter of ponds, wetlands, and riparian areas.
- Any tiger salamanders found will be captured by an approved biologist, holding a current Act 10(a)(1)(A) handling permit, and relocated to a suitable burrow a minimum of 300 feet outside of the work area.
- Nets or bare hands may be used to capture California tiger salamanders. The USFWS-approved biologist will not use soaps, oils, creams, lotions, insect repellents, or solvents of any sort on their hands within two hours before handling tiger salamanders. Latex gloves will not be used. To avoid transferring diseases or pathogens between aquatic habitats during the course of surveys or handling, the biologists will follow the Declining Amphibian Task Force's "Code of Practice." For the brief period in captivity, individual California tiger salamanders will be kept in a cool, moist, aerated environment such as a bucket containing a damp sponge. Containers used for holding or transporting these species will be sanitized and will not contain any standing water.
- No construction activities in sensitive habitat areas will occur during rain events of greater than 0.25 inch within a 24-hour period. No construction activities will be conducted in areas where California tiger salamanders may occur if there is a greater than 70 percent chance of rain based on the National Oceanic and Atmospheric Administration's National Weather Service forecast or within 48 hours following a rain event greater than 0.25 inch, unless approved by the monitor.
- Any California tiger salamander upland habitat temporarily affected by the Proposed Action will be restored to .pre-project conditions. Site-specific restoration measures and success criteria will be outlined in the Habitat Restoration Plan, developed for the PG&E Reconductoring.
- A monitoring report will be due to the USFWS and CDFG annually that will include photo documentation with pre- and post-project photos; and other information as specified in the Habitat Restoration Plan.

PG&E BIO-27. Implement all avoidance, minimization, and conservation measures identified in the Biological Opinion for California Valley Solar Ranch. PG&E shall fully implement and adhere to all conservation measures and all other conditions and reporting requirements in the California Valley Solar Ranch, issued by the USFWS, June 24, 2011. HPR II provide the USFWS with a report twice a year (6 months apart) to describe the progress of implementation of all the commitments in the conservation measures and terms and conditions sections of the Biological Opinion.

CULTURAL RESOURCES – CALIFORNIA VALLEY SOLAR RANCH SITE

CVSR CR-1. Ranch Complex Buffer Zone. Prior to construction, wildlife compatible fencing or other comparable means to visibly delineate a 100-foot-wide “no disturbance” buffer around the recorded Twisselman ranch complex shall be installed. Prior to construction permit issuance, this buffer shall be

delineated on all applicable construction plans. In the event construction work must encroach within this buffer area, the following shall be done prior to construction permit issuance:

a. Completion of subsurface testing by a County-approved historic archaeologist in areas proposed for disturbance. Should resources be encountered, the archaeologist and Applicant shall make all efforts to find the least sensitive area to impact. Should resources still need to be impacted, the archaeologist shall prepare a data recovery program, which shall be implemented prior to and during ground-disturbing activities.

b. Prior to construction permit approval, the (revised) plan shall be submitted to the County for approval.

c. Prior to final inspection, the data recovery program results shall be submitted to the County.

During construction, the County Environmental Monitor shall verify compliance with approved plan.

CVSR CR-2. Evaluation of unanticipated archaeological finds. Should unanticipated archaeological artifacts or features be encountered, a qualified archaeologist will be retained to evaluate the find.

CVSR CR-3. Map and monitor Pleistocene to recent alluvium near SR-58. Although no prehistoric artifacts or features were identified by the survey, Pleistocene to recent alluvium is located 2,000 to 7,000 feet on either side of Carissa Highway (SR-58) and has the potential for buried cultural resources to varying depths due to the young age (10,000 years to present) of the deposits (Smith 1964). LSA recommends that the distribution of Pleistocene to recent alluvium be plotted on the main project map and that any trenching or other ground disturbance in areas covered by this alluvium be monitored by a qualified archaeologist.

CVSR CR-4. Construction crew cultural resources training. The monitoring plan shall also include provisions defining education of the construction crew and establishing protocol for treating unanticipated finds. In consultation with a County-approved archaeologist, the Applicant shall provide cultural resources awareness training to all field crews and field supervisors. This training will include a description of the types of resources that may be found in the project area, the protocols to be used in the event of an unanticipated discovery, the importance of cultural resources to the Native American community, and the laws protecting significant archaeological and historical sites. In addition, the Applicant shall provide all field supervisors with maps showing those areas sensitive for potential buried resources. The County Environmental Monitor shall verify implementation of the Plan during construction.

CVSR CR-5. Identification of Human Remains. If human remains or possible human remains are encountered at any stage in project construction or operation, the Applicant shall be responsible for following State Health and Safety Code Section 7050.5 regarding handling, treatment, and disposition of those remains. Upon discovery, the Applicant shall immediately contact the County Coroner and the County Environmental Monitor on how to proceed. If the remains are determined to be prehistoric, per Public Resources Code Section 5097.98, the Coroner will notify the Native American Heritage Commission, which will initiate a formal process to insure proper notification and proper re-internment.

CVSR CR-6. Record and Evaluate Carrisa Highway (SR-58) and Strip Mines. Prior to construction permit issuance, the Applicant shall retain a County-approved architectural historian to evaluate these resources (stretch of the historic-era Carrisa Highway and two idle gypsum mines on the project site), determine whether they are historic, and prepare a report to be submitted to the County. This evaluation shall include archival research and (where possible) oral interviews with individuals who have

knowledge of the dates of construction, uses, and general history of the resources. If any of the resources are found to be eligible for the California Register of Historical Resources, full recordation and archival research, plus documentation of that work, shall be required.

CVSR CR-7. Cultural Resources Monitoring Plan. Prior to issuance of construction permits, the Applicant shall submit a monitoring plan, prepared by a County-approved archaeologist, for review and approval by the County Department of Planning and Building. The intent of this Plan would be to monitor all earth-disturbing activities in areas identified as potentially sensitive for cultural resources, per the approved monitoring plan. The monitoring plan shall include at a minimum:

a. List of personnel involved in the monitoring activities;

b. Inclusion of involvement of the Native American community, as appropriate;

c. Description of how the monitoring shall occur;

d. Description of frequency of monitoring (e.g., full-time, part time, spot checking);

e. Description of what resources are expected to be encountered;

f. Description of circumstances that would result in the halting of work at the project site (e.g., what is considered "significant" archaeological resources?);

g. Description of procedures for halting work on the site and notification procedures; and

h. Description of monitoring reporting procedures.

Prior to construction/ground-disturbing activities, the Applicant shall ensure that any construction-related subsurface excavation in sensitive areas (those with moderate to high potential for buried prehistoric archaeological resources) are tested by a County-approved archaeologist. Should buried resources be identified, further testing or avoidance shall be required; if avoidance is not possible, mitigation through data recovery shall be required (as defined in CVSR CR-10 and CR-11).

As an alternative to testing, monitoring during construction in these sensitive areas could occur. If monitoring is implemented in sensitive areas, the archaeologist should work with a Native American monitor.

Crew Education. The monitoring plan shall also include provisions defining education of the construction crew and establishing a protocol for treating unanticipated finds. In consultation with a County-approved archaeologist, the Applicant shall provide cultural resources awareness training to all field crews and field supervisors. This training will include a description of the types of resources that may be found in the project area, the protocols to be used in the event of an unanticipated discovery, the importance of cultural resources to the Native American community, and the laws protecting significant archaeological and historical sites. In addition, the Applicant shall provide all field supervisors with maps showing those areas sensitive for potential buried resources.

The County Environmental Monitor shall verify implementation of the Plan during construction.

CVSR CR-8. Survey Areas of New Fencing. Before any fence post construction takes place, the Applicant shall retain a County-approved archaeologist to survey proposed locations of new fencing or other ground disturbance outside of the currently designated Area of Potential Effect. If resources are identified, they shall be avoided or, if avoidance is not possible, evaluated. If any resources are found to be significant, data recovery shall be completed as defined in CVSR CR-10 (Data Recovery Program) and CVSR CR-11 (Completion of Data Recovery).

Any additional evaluation of data recovery shall be conducted consistent with an evaluation/ mitigation plan that shall be reviewed and approved by the County Environmental Monitor prior to work being conducted.

Prior to final inspection, a copy of the archaeologist's report shall be submitted to the County. During construction, as needed, compliance will be verified by the County Environmental Monitor.

CVSR CR-9. Delineate Environmentally Sensitive Areas. Prior to construction permit issuance, the Applicant shall delineate on a confidential copy of project plans provided to the County, all known archaeological sites on or adjacent to the project property as Environmentally Sensitive Area(s). To ensure the integrity of these areas from unauthorized disturbance or collection, the delineated areas shall not be labeled with regard to the specific type of cultural resource identified as sensitive.

During construction, the County Environmental Monitor shall verify compliance that these areas are protected.

CVSR CR-10. Data Recovery Program. Should a Phase III (data recovery) program be necessary, prior to and during ground-disturbing activities, the Applicant shall retain a County-approved archaeologist. The archaeologist responsible for the Phase III program shall be provided with a copy of the previous archaeological investigations completed by the Applicant. The archaeologist shall prepare a work scope to be approved by the County. The Phase III program shall include at least the following:

a. Standard archaeological data recovery practices;

b. Recommendation of sample size adequate to mitigate for impacts to archaeological site, including basis and justification of the recommended sample size;

c. Identification of location of sample sites/test units;

d. Detailed description of sampling techniques and material recovery procedures (e.g., how sample is to be excavated, how the material will be screened, screen size, how material will be collected);

e. Disposition of collected materials;

f. Proposed analysis of results of data recovery and collected materials, including timeline of final analysis results; and

g. List of personnel involved in sampling and analysis.

h. Once approved, these project design features shall be shown on all applicable plans and implemented during construction.

Prior to issuance of a construction permit, this provision shall be shown on all applicable construction plans. During construction, the County Environmental Monitor shall verify compliance with approved program.

CVSR CR-11. Completion of Data Recovery. Should a Phase III (data recovery) program be required, the Applicant shall submit to the County Environmental Monitor prior to final inspection, a letter from the consulting archaeologist indicating that all necessary field work, as identified in the Phase III program, has been completed.

CVSR CR-12. Cultural Resources Reporting. Prior to final inspection, a County-approved archaeologist shall prepare a report, who will submit to the County Environmental Monitor summarizing all monitoring/ mitigation activities and confirming that all recommended project design features have been implemented. If the analysis included in the Phase III program is not complete by the time final inspection or occupancy will occur, the Applicant shall provide to the County Environmental Monitor proof of obligation to complete the required analysis.

CVSR CR-13 Monitoring at the Caliente Switching Station. In the SHPO's letter of concurrence for the project, the following conditions were stipulated pertaining to cultural resources monitoring at the Caliente Switching Station.

- Temporary fencing is placed around site BRM-1 to protect it from construction and grading beyond the current work-plan under the direction of a qualified professional archaeologist.
- For the construction in the vicinity of site BRM-1, an archaeological monitor will be continuously present to monitor during grading or other ground disturbing activities that may result in the disturbance of soil down to bedrock. For all other phases of construction in the vicinity of site BRM-1 not resulting in such ground disturbance, including filling, an archaeological monitor will be on call at all times. The environmental inspector will be briefed by the archaeological monitor. The environmental inspector will be present on site during all construction activities, and will monitor the integrity of the protective fencing when in the area. The archaeological monitor will be present at least biweekly or more frequently as needed to verify the resource is not disturbed and to check the placement of the temporary fencing.
- For periods when the archaeological monitor is on call, if any activity results in the inadvertent disturbance of the site, the archaeological monitor will be notified immediately and work in the area will cease until the archaeological monitor can assess the disturbance and will follow procedures pursuant to 36 CFR 800.13
- The archaeological monitor shall be empowered to stop all work in the area should the monitor determine that the work is impacting site BRM-1 or if the installed fencing is disturbed, ultimately resulting in consultation pursuant to 36 CFR 800.13 Once construction in the vicinity of the BRM-1 site is complete, the archaeological monitor will be present to direct the removal of the temporary fencing surrounding the site.
- The consulting Native American tribes are invited to monitor construction in the vicinity of site BRM-1

CULTURAL RESOURCES – RECONDUCTORING

PG&E CR-1. Pre-construction Worker Education Program. PG&E will design and implement a Worker Education Program that will be provided to all Project personnel who may encounter and/or alter historical resources or unique archaeological properties, including construction supervisors and field personnel. No construction worker will be involved in field operations without having participated in the Worker Education Program.

The Worker Education Program shall include, at a minimum:

- A review of archaeology, history, prehistory, and Native American cultures associated with historical resources in the Project vicinity.
- A review of applicable federal, state, and local ordinances, laws, and regulations pertaining to historic preservation.
- A discussion of site avoidance requirements and procedures to be followed in the event that unanticipated cultural resources are discovered during implementation of the Project.
- A discussion of disciplinary and other actions that could be taken against persons violating historic preservation laws and PG&E policies.
- A statement by the construction company or applicable employer agreeing to abide by the Worker Education Program, PG&E policies and other applicable laws and regulations.

The Worker Education Program may be conducted in concert with other environmental or safety awareness and education programs for the Project, provided that the program elements pertaining to cultural resources are provided by a qualified instructor meeting applicable professional qualifications standards.

PG&E CR-2. Stop work to investigate unanticipated discoveries of cultural resources. If buried cultural resources such as chipped or ground stone, historic debris, or building foundations are inadvertently discovered during site preparation or construction activities, work will stop in that area and within 30 meters (100 feet) of the find until a qualified archaeologist can assess the significance of the find and, if necessary, develop appropriate treatment measures in consultation with PG&E and other appropriate agencies (with the archaeologist's approval, work may continue on other portions of the work area). PG&E will be responsible for ensuring that the archaeologist's recommendations for treatment are implemented. If the discovery can be avoided and no further impacts will occur, the resource will be documented on State of California Department of Parks and Recreation cultural resource records and no further effort will be required. If the resource cannot be avoided and may be subject to further impact, PG&E will evaluate the significance and CRHR eligibility of the resources, and implement data recovery excavation or other appropriate treatment measures if warranted.

PG&E CR-3. Install silt fencing to protect historic resources and prohibit grading along the fenced road segments. Prior to construction, a PG&E cultural resources specialist or PG&E's authorized agent will install standard 2-ft-tall silt fencing along the outside edges of the existing access roads to protect historic resources where they are known to exist (e.g., sites CM-1H, CM-2, CM-3, CM-4H, P-15-4014, and P-15-9736). The locations of silt fencing installation will be mapped on construction plans by PG&E. The fencing will be installed parallel to the road, between the road and the resource. The length of the fencing shall equal the width of the resource area plus 100 feet, such that the fencing extends 50 feet in both directions beyond the width of the resource. PG&E or its authorized agent will inspect the fencing on a weekly basis to ensure its integrity and that of the cultural resource. PG&E will prohibit grading along the fenced portions of the access roads.

PG&E CR-4. Use minimally invasive equipment to avoid foreign transmission line. PG&E will obtain a clearance on the foreign transmission line that crosses the Morro Bay– Midway 230-kV Transmission Line near Tower 159. The line clearance will eliminate the need to build a crossing structure on site P-15-4014 (a prehistoric midden site with human remains). This would result in the lowest impact on site P-15-4014 but may not be feasible for PG&E in that a clearance on a foreign transmission line would result in temporary power supply reductions to a foreign energy service area.

If obtaining a clearance is not feasible, PG&E will use a truck-mounted bucket on an electrically grounded vehicle to guard the foreign transmission line crossing. Use of a vehicle to protect the crossing will eliminate the need for excavation into site P-15-4014, although the vehicle will still have the potential to crush and displace archaeological materials on the site surface. To minimize or prevent damage to surficial archaeological material, PG&E will retain a qualified archaeologist to mark a safe path (one that does not traverse visible archaeological materials) from the nearest road to the transmission line crossing. The archaeologist will identify the path by conducting an intensive archaeological survey between the road and crossing area. The archaeologist will then guide the vehicle to the work area. The archaeologist will also lead the vehicle out of the work area upon the completion of work at the crossing.

Additionally, PG&E will build a low-impact, scaffold-style crossing structure on the surface of site P-15-4014. This structure will substitute smaller 2 x 4 supports for the minimum of two 46-cm (18-inch)-diameter poles that are typically used to construct crossing structures. To minimize or prevent damage to surficial archaeological material, PG&E will retain a qualified archaeologist to mark a safe path (one that does not traverse visible archaeological materials) from the nearest road to the transmission line crossing. The archaeologist will identify the path by conducting an intensive archaeological survey between the road and crossing area. The archaeologist will then guide the vehicle to the work area. The archaeologist will also lead the vehicle out of the work area upon the completion of work at the crossing.

PG&E CR-5. Avoid site P-15-1493. PG&E will not replace or modify the tower(s) located in the vicinity of P-15-1493. If avoidance is not feasible, PG&E will evaluate P-15-1493 (a prehistoric site) for eligibility to the NRHP and CRHR. If P-15-1493 is found to be ineligible for the NRHP and CRHR, no further work is needed at the site. If P-15-1493 is eligible for the NRHP and CRHR, PG&E will prepare a work plan describing criteria for significance, including a research design, and conduct a test excavation at the site. PG&E shall extend to the USACE, SHPO, and any other consulting parties the opportunity to comment on the work plan prior to its implementation. Should P-15-1493 qualify for listing in the NRHP and CRHR, PG&E will prepare and implement a site-specific archaeological treatment plan at P-15-1493. The USACE, SHPO, and any other consulting parties will review the plan during Section 106 consultation. The plan will describe the proposed construction work and approximate volume of site damage expected, methods for the recovery of archaeological materials, laboratory methods, and reporting of results. PG&E will prepare and implement the plan prior to construction.

PG&E CR-6. Stop work if remains that may be of human origin are encountered and follow State Health and Safety Code Section 7050.5. If human remains or possible human remains are encountered at any stage in the project, work will stop within a 30-meter (100-foot) radius of the find and the county coroner will be notified immediately, as required by state law (California Health and Safety Code 7050.5). The Coroner will determine whether the remains are Native American and archaeological in nature. If the remains are not archaeological and Native American, the Coroner will take possession immediately. If the remains are archaeological and Native American, the Coroner will notify the California Native American Heritage Commission; the Commission will identify the Most Likely Descendant (MLD) for the remains. With the permission of the land owner or his/her authorized representative, the MLD may inspect the site of the discovery. The MLD shall complete the inspection within 48 hours of notification by the Commission. The MLD may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials. The MLD will decide on the appropriate treatment and disposition of the remains, in consultation with the landowner or his/her representative. PG&E will also retain a professional archaeological consultant with Native American burial experience who will conduct a field investigation of the specific site and consult with the MLD identified by the NAHC. As necessary, the archaeological consultant may provide professional assistance to the MLD including the excavation and removal of human remains. PG&E or its

appointed representative will implement design features before the resumption of activities at the site where the remains were discovered.

PG&E CR-7. Survey new areas of disturbance that were previously unexamined. As PG&E identifies new project elements or gains access to previously unexamined areas, PG&E will retain qualified cultural resource specialists to survey the area(s) prior to construction. The survey results will be reported in a cultural resources inventory report that meets the standards promulgated in Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines (48 Federal Register 44716–44742) and the Office of Historic Preservation's (1990) Archaeological Resource Management Reports: Recommended Contents and Format. PG&E will forward the report to the appropriate agencies during Section 106 consultation. Construction in the unexamined areas will not commence until the report is approved by the appropriate agencies.

PG&E CR-8. Monitoring at the Caliente Switching Station. The California State Historic Preservation Officer's letter of concurrence for the project added the following conditions for cultural resources monitoring at the Caliente Switching Station.

- Temporary fencing is placed around site BRM-1 to protect it from construction and grading beyond the current work-plan under the direction of a qualified professional archaeologist.
- For the construction in the vicinity of site BRM-1, an archaeological monitor will be continuously present to monitor during grading or other ground disturbing activities that may result in the disturbance of soil down to bedrock. For all other phases of construction in the vicinity of site BRM-1 not resulting in such ground disturbance, including filling, an archaeological monitor will be on call at all times. The environmental inspector will be briefed by the archaeological monitor. The environmental inspector will be present on site during all construction activities, and will monitor the integrity of the protective fencing when in the area. The archaeological monitor will be present at least biweekly or more frequently as needed to verify the resource is not disturbed and to check the placement of the temporary fencing.
- For periods when the archaeological monitor is on call, if any activity results in the inadvertent disturbance of the site, the archaeological monitor will be notified immediately and work in the area will cease until the archaeological monitor can assess the disturbance and will follow procedures pursuant to 36 CFR 800.13
- The archaeological monitor shall be empowered to stop all work in the area should the monitor determine that the work is impacting site BRM-1 or if the installed fencing is disturbed, ultimately resulting in consultation pursuant to 36 CFR 800.13 Once construction in the vicinity of the BRM-1 site is complete, the archaeological monitor will be present to direct the removal of the temporary fencing surrounding the site.

The consulting Native American tribes are invited to monitor construction in the vicinity of site BRM-1

PALEONTOLOGICAL RESOURCES – CALIFORNIA VALLEY SOLAR RANCH SITE

CVSR PA-1. Paleontological Monitoring and Treatment Plan. Prior to construction permit issuance, the Applicant shall retain a County-approved paleontologist to prepare a Paleontological Monitoring and Treatment Plan (Plan), and submit the plan to the County for review and approval. The plan shall be based on Society of Vertebrate Paleontology (SVP) guidelines and meet all regulatory requirements. The County-approved paleontologist shall have a Master's Degree or Ph.D. in paleontology, shall have knowledge of the local paleontology, and shall be familiar with paleontological procedures and techniques. The Plan shall identify construction impact areas of moderate to high

sensitivity for encountering potential paleontological resources and the shallowest depths at which those resources may be encountered. The Plan shall detail the criteria to be used to determine whether an encountered resource is significant, and if it should be avoided or recovered for its data potential. The Plan shall also detail methods of recovery, preparation and analysis of specimens, final curation of specimens at a federally accredited repository, data analysis, and reporting.

The Plan shall outline a coordination strategy to ensure that a County-approved paleontological monitor will conduct full-time monitoring of all grading activities in the "deeper" sediments determined to have a moderate to high sensitivity. For sediments of low or undetermined sensitivity, the Plan shall determine what level of monitoring is necessary. Sediments with no sensitivity will not require paleontological monitoring.

The Plan shall define specific conditions in which monitoring of earthwork activities could be reduced and/or depth criteria established to trigger monitoring. These factors shall be defined by the project paleontological resource specialist, following examination of sufficient, representative excavations.

During construction, the County Environmental Monitor shall verify compliance with approved Plan.

CVSR PA-2. Paleontology Construction Monitoring. Based on the Paleontological Monitoring and Treatment Plan (CVSR PA-1, Paleontological Monitoring and Treatment Plan), the Applicant shall conduct full-time monitoring by a County-approved paleontological monitor as specified in the Plan. This shall include monitoring during rough grading and trenching in areas determined to have moderate to high paleontological sensitivity and which have the potential to be shallow enough to be adversely affected by such earthwork. Sediments of low, marginal undetermined sensitivity shall be monitored by a County-approved paleontological monitor on a part-time basis (as determined by the County-approved Paleontologist).

The Qualified Monitor shall have a B.A. in Geology or Paleontology and a minimum of one year of paleontological monitoring experience in local or similar sediments. Construction activities shall be diverted when data recovery of significant fossils is warranted, as determined by the County-approved Paleontologist.

During construction, as applicable, compliance will be verified by the County Environmental Monitor.

CVSR PA-3. Paleontological data recovery. Prior to final inspection, if avoidance of significant paleontological resources is not feasible during grading, treatment (including recovery, specimen preparation, data analysis, curation, and reporting) shall be carried out by the Applicant, in accordance with the approved Paleontological Monitoring and Treatment Plan per CVSR PA-1 (Paleontological Monitoring and Treatment Plan).

During construction, as applicable, compliance will be verified by the County Environmental Monitor.

CVSR PA-4. Construction Personnel Training. Prior to the initiation of construction or ground-disturbing activities, all construction personnel conducting rough grading shall be trained regarding the recognition of possible subsurface paleontological resources and protection of all paleontological resources during construction grading. The Applicant shall complete training for all applicable personnel. Training shall inform all applicable personnel of the procedures to be followed upon the discovery of paleontological materials.

All personnel shall be instructed that unauthorized collection or disturbance of protected fossils on- or off-site by the Applicant, its representatives, or employees will not be allowed. Violators shall be subject to prosecution under the appropriate State and federal laws. Unauthorized resource collection or disturbance may constitute grounds for the issuance of a stop work order. The following issues shall be addressed in training or in preparation for construction:

a. All construction contracts shall include clauses that require grading personnel to attend training so that they are aware of the potential for inadvertently exposing subsurface paleontological resources, their responsibility to avoid and protect all such resources, and the penalties for collection, vandalism, or inadvertent destruction of paleontological resources.

b. A County-approved paleontologist shall provide a background briefing for supervisory personnel describing the potential for exposing paleontological resources, the location of any potential paleontological resources, and procedures and notifications required in the event of discoveries by project personnel or paleontological monitors. Supervisory personnel shall enforce restrictions on collection or disturbance of fossils.

c. Upon discovery of paleontological resources by paleontologists or construction personnel, work in the immediate area of the find shall be diverted until cleared by the project paleontologist. Once the find has been inspected and a preliminary assessment made by the paleontologist, the County will be notified. The Applicant shall then proceed with data recovery in accordance with the approved Treatment Plan.

d. Prior to final inspection or occupancy, whichever occurs first, the paleontologist shall prepare a final report to be submitted to the County that summarizes impacts to paleontological resources, describes impact minimization efforts, and provides the results of all data recovery efforts.

During construction, compliance will be verified by the County Environmental Monitor, including verification that appropriate training is developed and given to all grading personnel.

PALEONTOLOGICAL RESOURCES – RECONDUCTORING

PG&E PA-1. Paleontological Monitoring and Treatment Plan. Prior to construction permit issuance, PG&E shall retain a qualified paleontologist to prepare a Paleontological Monitoring and Treatment Plan (Plan) and submit the Plan to the CPU for review and approval. The plan shall be based on Society of Vertebrate Paleontology (SVP) guidelines and meet all regulatory requirements. The qualified paleontologist shall have a Master's Degree or Ph.D. in paleontology, shall have knowledge of the local paleontology, and shall be familiar with paleontological procedures and techniques. The Plan shall identify construction impact areas of high sensitivity for encountering potential paleontological resources and the shallowest depths at which those resources may be encountered. The Plan shall detail the criteria to be used to determine whether an encountered resource is significant, and if it should be avoided or recovered for its data potential. The Plan shall also detail methods of recovery, preparation and analysis of specimens, final curation of specimens at a federally accredited repository, data analysis, and reporting.

The Plan shall outline a coordination strategy to ensure that a qualified paleontological monitor will conduct full-time monitoring of all ground disturbance during grading activities in the 'deeper' sediments determined to have a moderate to high sensitivity. For sediments of low or undetermined sensitivity, the Plan shall determine what level of monitoring is necessary. Sediments with no sensitivity will not require paleontological monitoring.

The Plan shall define specific conditions in which monitoring of earthwork activities could be reduced and/or depth criteria established to trigger monitoring. These factors shall be defined by the project paleontological resource specialist, following examination of sufficient, representative excavations.

PG&E PA-2. Paleontology construction monitoring. PG&E will implement construction monitoring during excavations more than 2 feet deep in areas of high sensitivity units, excluding auguring or hand digging for pole or tower fitting holes, because fossils are not recoverable in auger holes and augering crushes rock material, obscuring the identification of fossils. This excavation shall be closely monitored by a qualified Principal Paleontologist or his/her designated assistant. Paleontologist monitors will have the authority to halt or redirect work temporarily in order to assess and/or recover paleontological remains, and to establish buffer zones around potentially significant specimens using flagging on lath until the find is assessed by the Principal Paleontologist. The qualified paleontologist shall have a minimum of a Bachelor of Arts in Geology or Paleontology, and a minimum of one year of paleontological monitoring experience in local or similar sediments.

PG&E PA-3. Stop work for unanticipated discoveries, paleontological data recovery. In the event that previously unidentified paleontological resources are uncovered during implementation of the project, all ground disturbing work would be temporarily halted or diverted away from the discovery to another location. PG&E's paleontological resources specialist or his/her designated representative would inspect the discovery and determine whether further investigation is required. If the discovery is significant, but can be avoided and no further impacts would occur, the resource would be documented in the appropriate paleontological resource records and no further effort would be required. If the resource is significant, but cannot be avoided and may be subject to further impact, PG&E would evaluate the significance of the resources, and implement data recovery excavation or other appropriate treatment measures, in coordination with the landowner, as recommended by a qualified paleontologist. Treatment (including recovery, specimen preparation, data analysis, curation, and reporting) shall be carried out in accordance with the Paleontological Monitoring and Treatment Plan.

PG&E PA-4. Construction crew paleontological training. Prior to the initiation of construction or ground-disturbing activities, all construction personnel conducting rough grading shall be trained regarding the recognition of possible subsurface paleontological resources and protection of all paleontological resources during construction. PG&E shall complete training for all applicable personnel. Training shall inform all applicable personnel of the procedures to be followed upon the discovery of paleontological materials. The training may be combined with other environmental training for the project, provided that the program elements pertaining to cultural resources are provided by a qualified instructor meeting applicable professional qualification standards.

All personnel shall be instructed that unauthorized collection or disturbance of protected fossils on or off-site by PG&E, its representatives, or employees shall not be allowed. Violators shall be subject to prosecution under the appropriate State and federal laws. Unauthorized resource collection or disturbance may constitute grounds for the issuance of a stop work order. The following issues shall be addressed in training or in preparation for construction:

a. All construction contracts shall include clauses that require grading personnel to attend training so they are aware of the potential for inadvertently exposing subsurface paleontological resources, their responsibility to avoid and protect all such resources, and the penalties for collection, vandalism, or inadvertent destruction of paleontological resources.

b. A qualified paleontologist shall provide a background briefing for supervisory personnel describing the potential for exposing paleontological resources, the location of any potential paleontological resources, and procedures and notifications required in the event of discoveries by project personnel

or paleontological monitors. Supervisory personnel shall enforce restrictions on collection or disturbance of fossils.

c. Upon discovery of paleontological resources by paleontologists or construction personnel, work in the immediate area of the find shall be diverted and PG&E's paleontologist notified. Once the find has been inspected and a preliminary assessment made, PG&E's paleontologist shall notify the CPUC and proceed with data recovery in accordance with the approved Treatment Plan.

d. Prior to final inspection or occupancy, whichever occurs first, the paleontologist shall prepare a final report to be submitted to the CPUC that summarizes impacts to paleontological resources and impact minimization efforts and provides the results of all data recovery efforts.

SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE – CALIFORNIA VALLEY SOLAR RANCH SITE

CVSR SOC-1. Temporary Construction Worker Accommodation Area general rules. The Temporary Construction Worker Accommodation Area can accommodate only recreational vehicles or travel trailers. Everyone is expected to keep their site clean and orderly. All trash should be bagged and brought to dumpsters. There is no trash pickup at individual sites. All sewer lines must be free from leaks and have a "do-nut" or threaded attachment into the sewer. Units installed for over 90 days must install rigid conduit for sewage disposal per State regulations. Alcoholic beverages are allowed only at your space. We do not allow clotheslines and please do not wash autos or RVs with a hose to conserve water in the desert environment. Due to noise, generators are only to be used during emergencies. Oil changes and other such types of vehicle maintenance are not allowed but other minor fixes may be permitted. Check with the office before performing any vehicle maintenance or repair. If there are any problems or damages at your site please inform us immediately.

CVSR SOC-2. Quiet hours and outside lighting in the Temporary Construction Worker Accommodation Area. No loud music. Quiet hours are from 10:00 p.m. to 7:00 a.m. Outside RV lights are not to be left on after 9:00 p.m.

CVSR SOC-3. Driving and parking in the Temporary Construction Worker Accommodation Area. Observe a safe speed and watch for pedestrians, construction equipment, delivery trucks, and wildlife. Drive on the roads only. Do not use pull-thru spaces for short cuts. Park in your own area or assigned spot. Do not park in open spaces without prior office approval. Visitor parking in designated areas only.

CVSR SOC-4. Prohibited items and pets in the Temporary Construction Worker Accommodation Area. Absolutely no use of firearms, explosives, drugs, or fireworks is allowed in the Area or on the proposed project site. Dogs and other pets are not allowed.

CVSR SOC-5. Protection of biological resources in the Temporary Construction Worker Accommodation Area.

- To prevent harassment or mortality of special-status animals or destruction of their habitats by dogs or cats, no pets will be permitted on the CVSR site, including the 50-unit Area that Project personnel will use as temporary housing during construction.
- No rodenticides will be used on the Project site to avoid the potential for poisoning of GKRs and San Joaquin antelope squirrels and to avoid the secondary poisoning of San Joaquin kit foxes, California Condors, and other predators and scavengers. The rodenticide ban will also be applied to temporary residential facilities in the Area.

- No rodent trapping (live or lethal) will be permitted on the CVSR site, including within the residential facilities or the utility building associated with the Area.
- Information about the ban of rodenticides and rodent traps, and their potential effects on sensitive wildlife species in the region, will be provided to occupants of the Area. This information will be posted in the Operations and Maintenance facility as well.
- Signs prohibiting the recreational use of on-site conservation lands by Area occupants and other CVSR personnel will be installed at all potential public entrances to these lands and at quarter-mile intervals along existing and future roads adjacent to on-site conservation land borders. Sign maintenance will be part of the ongoing maintenance activities.
- There will be no common areas designated or used for social or recreational activities by occupants of the Area.

CVSR SOC-6. Develop and Implement Worker Housing Program. Prior to issuance of construction permits, the Applicant shall coordinate with San Luis Obispo County to develop and implement a Worker Housing Program that would include:

a. Projection of the peak need for worker housing in relation to San Luis Obispo County's existing demand for temporary accommodations, with particular attention paid to seasonal housing.

b. Classification of workers' housing needs based on the duration of their work on the project:

   i. Hotels, motels, RV parks, and campsites with the ability to accommodate workers for periods of longer than one month shall be identified by coordinating with San Luis Obispo County and the San Luis Obispo and Paso Robles–Atascadero Chambers of Commerce.

   ii. Real estate agents available to find longer-term housing rentals, mobile homes, and RV parks shall be identified in coordination with San Luis Obispo County and the San Luis Obispo and Paso Robles–Atascadero Chambers of Commerce.

c. Development of protocols for the Applicant to reserve or coordinate the reservation of temporary accommodations.

d. Recreational campsites and other facilities deemed unsuitable for worker housing shall be identified and the Applicant, through its hiring process, shall subsequently ensure that construction personnel are aware that the Carrizo Plains National Monument (CPNM) camping grounds are available only to CPNM visitors and are prohibited for use as residential support.

e. Formalization of a free shuttle bus program that shall take workers from San Luis Obispo and Paso Robles–Atascadero to and from the project site, and that shall also take workers to specific on-site work areas.

f. Implementation of a paid parking permit system limiting the number cars driven by individuals to the project site and checked daily by monitors both on-site as well as in the immediate vicinity of the site.

g. Development of a complete set of "Rules and Regulations" governing the Temporary Construction Worker Accommodations Area (TCWAA), including all provisions defined in CVSR SOC-1 to CVSR SOC-5. These shall be submitted to the County for review and approval before the start of construction. The Applicant shall maintain a signed copy of the Rules and Regulations for each occupant of the TCWAA, acknowledging the occupant's commitment to abide by all rules.

The Applicant shall submit a draft Worker Housing Program, to be approved by the County, prior to the issuance of construction permits.

During construction, the County Environmental Monitor shall periodically verify the Applicant's compliance with this program. Should any worker be cited for illegal camping, a copy of this citation will be provided to the Environmental Monitor.

CVSR SOC-7. Local Hiring. The Applicant shall make all efforts to employ local hire (permanent residents within San Luis Obispo County), with adequate experience and qualifications, during construction and operations to the extent possible. To this end, the Applicant shall work with the local unions and local job fairs to promote available positions. Within 60 days of project approval, or such later time as approved by the County, the Applicant shall create and mail a flyer to local residents within 3 miles of the CVSR site describing the types of union and non-union jobs, as well as contact information on how to pursue employment of those jobs relating to construction of the project.

CVSR SOC-8. San Luis Obispo County Fees. The Applicant shall enter into an agreement with San Luis Obispo County, executed by the County Administrative Officer, in a form approved by County Counsel, governing the payment of for the following items:

a. Applicable school fees;

b. Public facilities fees;

c. Housing impact fee (Section 22.12.080);

d. Public service impacts: to ensure that anticipated public service impacts of the Project, including but not limited to, increasing County Fire staffing to serve the area are adequately offset by the Project's sales and use tax revenues to be received by the County, the Applicant shall enter into an agreement with the County, executed by the Chair of the County Board of Supervisors, in a form approved by County Counsel, that includes, but is not limited to, the following terms:

   i. The Applicant shall exert in good faith its best efforts to have all sales and use tax occur in the County, and use its best efforts to direct its Contractors to have sales and use tax occur in the County;

   ii. The Applicant shall establish a business location and tax resale account, and take other reasonable steps, in an effort to maximize receipt of sales and use tax revenues for the County;

   iii. The Applicant shall include in its master contract and any other contract for construction language ensuring that the County will receive the benefit of any sales or use tax generated by the Project to the fullest extent legally permitted;

   iv. The Applicant shall state in all construction contracts that, pursuant to California Board of Equalization, Regulation 1806(b):

   The jobsite is regarded as a place of business of a construction contractor or subcontractor and is the place of sale of "fixtures" furnished and installed by contractors or subcontractors. The place of use of "materials" is the jobsite. Accordingly, if the jobsite is in a county having a state-administered local tax, the sales tax applies to the sale of the fixtures, and the use tax applies to the use of the materials unless purchased in a county having a state-administered local tax and not purchased under a resale certificate;

   Based on returns filed with the State Board of Equalization, San Luis Obispo County will provide: (1) a quarterly list of contractors and subcontractors working on the job site and the amount of sales tax from each directed to unincorporated San Luis Obispo County; (2) an annual estimation of Proposition 172 revenue that can be reasonably associated with construction of the Project.

v. The Applicant shall state the jobsite in all agreements related to the Project as California Valley, San Luis Obispo County, California;

vi. The Applicant, which may enter into a joint venture or other relationship with a contractor, supplier, or designer, shall either establish a buying company within San Luis Obispo County under the terms and conditions of Board of Equalization Regulation 1699(h), to take possession of any goods on which sales or use taxes are applicable but are not defined by Regulation 1806 and shall include in its Requests for Bid, procurement contracts, bid documents, and any other agreement whereby California Sales or Use Taxes may be incurred, that the sale occurs at that place of business within San Luis Obispo County; or, alternatively, any entity that may sell goods on which sales taxes are applicable may establish their own place of business within unincorporated San Luis Obispo County where delivery is ultimately made to the Applicant; principal negotiations for all such sales shall be carried on in San Luis Obispo County;

vii. The Applicant shall provide notice to all out-of-state suppliers of goods and equipment, no matter where originating, that San Luis Obispo County is the jurisdiction where the first functional use of the property is made.

viii. Applicant shall provide a letter of credit issued by a California bank prior to issuance of the first construction permit in the amount of $10.5 million in order to guarantee the County's receipt of sales tax revenue from purchases and construction associated with the Project. The amount of the letter of credit may be reduced each quarter to reflect tax receipts documented as received by the County. The letter of credit may be further reduced by $2.5 million if the County approves and issues a construction permit for the Topaz Solar Farm project. The letter of credit must be maintained until such time as: (1) the County documents receipt of $10.5 million in Project-related sales tax receipts (or $8 million if the County approves and issues a construction permit for the Topaz Solar Farm project); or (2) Applicant pays the County an amount equal to $10.5 million minus documented sales tax receipts (or $8 million minus documented sales tax receipts if the County approves and issues a construction permit for the Topaz Solar Farm project).

e. Decommissioning Fund: to adequately protect the County and its citizens in the event the Applicant, or its successors or assigns, cannot complete the expected twenty-five (25) year Project lifespan, cease ongoing business operations, or abandon the Project and/or the Property for whatever reason, the Applicant shall enter into an agreement with the County, executed by the Chair of the County Board of Supervisors, in a form approved by County Counsel, that provides for the establishment and maintenance of a nonwasting Decommissioning Fund, which shall provide sufficient financial assurances to fully restore the Property to pre-Project conditions. The Decommissioning Fund will consist of a series of four letters of credit issued by California banks at the time of final construction sign-off for each of four Project phases. The agreement shall allow the County to use the Decommissioning Fund to restore the Property to pre-Project conditions in the event that the Applicant, or its successors or assigns, do not properly decommission the Project or restore the Property to its original conditions within a reasonable time following the cessation of business operations or the abandonment of the Project or Property for whatever reason. The agreement shall provide that the amount of the Decommissioning Fund shall be calculated to fully implement decommissioning activities and a Final Closure Plan for the Project and the Property. Applicant shall pay for the County to retain a third party expert to review the decommissioning activities and Final Closure Plan and confirm about the adequacy of the Decommissioning Fund. The Decommissioning Fund shall be adjusted for inflation (every three years) and for any updates to the Final Closure Plan. With regards to the inflationary adjustment, the agreement shall specify either a process or the most appropriate inflationary index(es) to capture the actual costs to perform the necessary decommissioning work. The agreement shall provide that, in the event that the Decommissioning Fund is inadequate to fully decommission the Project or restore the Property, the Applicant, its successors or assigns, shall be liable for any amount expended by the County over the

Decommissioning Fund balance and shall provide for termination of the Decommissioning Fund upon the completion of implementation of the Final Closure Plan.

CVSR SOC-9. Applicant funding for environmental monitoring. Prior to issuance of construction permits, the Applicant shall provide the funding for a San Luis Obispo County Environmental Monitor to oversee and monitor compliance all project design features. The Environmental Monitor shall assist the County with monitoring for all applicable construction, operational, and decommissioning stages of the project, as specified in a scope of work, and as approved by the County Department of Planning and Building.

The Environmental Monitor will prepare a working monitoring plan. This plan will include (1) goals, responsibilities, authorities, and procedures for verifying compliance with environmental measures; (2) lines of communication and reporting methods; (3) daily and weekly reporting of compliance; (4) authority to stop work; and (5) action to be taken in the event of non-compliance. The Environmental Monitor shall be under contract to the County of San Luis Obispo, and, the entire expense of retaining and supervising the Environmental Monitor, including the County's administrative and overhead fees, shall be paid by the Applicant.

The Applicant shall also be responsible for funding work the project design features requiring use of individuals with special expertise (e.g., botanist, wildlife biologist). The County's Environmental Monitor will coordinate with specialists to ensure their availability at appropriate times (prior to issuance of construction permits, during construction or decommissioning).

CVSR SOC-10. Develop and implement construction-phase CPNM camping restrictions. At least 90 days prior to the start of construction, the Applicant shall contact the CPNM land manager to confirm that the project's construction workforce has been instructed not to use the CPNM's camping grounds for temporary housing. The Applicant, through its hiring/contracting process, shall subsequently ensure that construction personnel are aware that the CPNM camping grounds are available only to CPNM visitors and are prohibited for use as residential support. Compliance documentation shall be submitted to the County Department of Planning and Building at least 30 days prior to the start of construction.

Prior to construction, compliance will be verified by the County Environmental Monitor.

SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE – RECONDUCTORING

None.

TRANSPORTATION – CALIFORNIA VALLEY SOLAR RANCH SITE

CVSR TR-1. Parking, carpooling, and shuttle use incentives and requirements. SunPower proposes to offer the financial incentive of a free lunch to SunPower and contractors employees who use the shuttle. SunPower will commit to a requirement in the project conditions of approval that will require 75 percent of specified employee groups during the construction phase of the project to utilize the shuttle (based on a weighted average over a calendar quarter). SunPower will implement a permit system (if necessary) to restrict on-site parking to assist in reaching this goal and will work with the Highway Patrol to limit parking in accord with State law along the SR-58 CVSR frontage. SunPower will take advantage of the rideshare program administered by the San Luis Obispo Council of Governments and Kern Council of Governments and will appoint an on-site rideshare coordinator to assist in matching employees for carpools.

CVSR TR-2. Outreach campaign for truck escort delay periods. The Applicant shall implement an outreach campaign (signage, direct mail, website, recorded telephone update line, newspaper notices, etc.) to notify the public of potential delays during times when truck escorts are proposed. Truck escorts would be planned according to a set schedule so that area residents could avoid traveling this portion of SR-58 during those periods.

CVSR TR-3. Prepare and implement traffic control and management plan. Prior to construction permit issuance, the Applicant shall apply for an Encroachment Permit from Caltrans for implementation of a Traffic Control and Management Plan (TCMP). The TCMP shall, at a minimum:

a. Implement Truck Option 3;

b. Define the locations of project access points and locations of any temporary lane closures;

c. Identify and make provision for circumstances requiring the use of flag persons, warning signs, lights, barricades, cones, etc., to provide safe work areas in the vicinity of the project site and to warn, control, protect, and expedite vehicular and pedestrian traffic;

d. Include signage placed along all proposed construction haul routes and alternate haul routes at appropriate intervals notifying drivers of the presence of construction traffic on those roadways;

e. Identify temporary alternative routes for construction-related truck and shuttle traffic in the event of a temporary closure of the selected construction route;

f. Include signage placed along the south and north shoulders of SR-58 at appropriate intervals (as recommended in Part 7 of Traffic Control for School Areas of the California Manual on Uniform Traffic Control Devices) in the vicinity of Carissa Plains Elementary School and McKittrick Elementary School notifying drivers of the school entrance and school traffic;

g. Prohibit on-site construction activities on the day of the Wildflower Ride during each year of construction, regardless of which Truck Route Option is selected. The project Applicant shall coordinate with San Luis Obispo Bike Club in January of each year of construction to determine the date of the Wildflower Ride for that year and shall confirm the date and the prohibition of Project construction activities with the Department of Planning and Building at least 30 days prior to the Wildflower Ride;

h. Construct standard driveway connections between SR-58 and the mine entrance (should the mine be approved) and between SR-58 and the main project entrance;

i. Place steel rumble plates at mine (should the mine be approved) and project entrances to reduce the potential for gravel, dirt, and debris to enter SR-58;

The TCMP shall include a Truck and Bus Safety Plan ensuring that:

j. Construction truck deliveries along Highway 41/46 shall be during off peak hours (i.e., trucks traveling via Highway 41/46 must arrive after 10:00 a.m. and depart no later than 3:00 p.m.) and no truck deliveries on weekends;

k. Designated worker pick-up and drop-off areas are located on-site and do not result in construction-related shuttle buses parking or queuing along SR-58;

l. All vendors and suppliers creating construction worker traffic adhere to the prohibition of buses over 40 feet in length on SR-58;

m. Drivers of all delivery trucks and passenger buses used for construction worker shuttles shall keep a travel log documenting the arrival and departure times as well as the route traveled from I-5 or Highway 101 to the project and back to I-5 or Highway 101. Travel logs for buses shall include the

number of passengers per trip. Travel logs shall be made available to the San Luis Obispo County Department of Planning and Building upon request.

n. The Applicant shall provide the financial incentive of a free lunch to construction employees who use the free shuttles, utilize existing rideshare programs, appoint an on-site rideshare coordinator to assist matching employees to carpools and take other measures to ensure that:

   i. At least 75% of employees reach the project site other than in a single-occupant motor vehicle (e.g., on the bus/shuttle, in a carpool, or do not commute to the site due to temporary residency at the on-site TWCAA); and

   ii. At least 50% of construction workforce utilizes the shuttles.

   The Applicant shall provide monthly documentation to the San Luis Obispo County Department of Planning and Building of this condition's compliance within 30 days of the end of each calendar month.

o. The Applicant provides funding for up to two additional California Highway Patrol (CHP) units or CHP Commercial Officers to patrol SR-58 between I-5 and the project site between 8:00 a.m. and 5:00 p.m. on weekdays throughout the entire construction duration. The precise number and timing of additional patrols shall be coordinated with CHP and San Luis Obispo County to adequately address potential safety impacts. (Applicant shall coordinate contribution of fair-share funding [should other development be approved in the area with similar construction traffic needs] for these patrols based on coordination with CHP and San Luis Obispo County). Verification by CHP that payment has been made shall be prior to issuance of construction permit;

p. All construction truck and bus drivers are: 1) informed of the additional CHP patrols; 2) informed of and required to adhere to the designated traffic haul routes; and 3) subject to an enforcement program that requires drivers that do not adhere to designated haul routes are subject to fines payable to the County of San Luis Obispo; and

q. The Applicant shall implement an outreach campaign (signage, direct mail, website, recorded telephone update line, newspaper notices, etc.) to notify the public of potential delays during times when truck escorts are proposed. Truck escorts would be planned according to a set schedule so that area residents could avoid traveling this portion of SR-58 during those periods.

The TCMP shall address guided tours at the Carrizo Plain National Monument to minimize impacts on visitors of scheduled activities. The project CPNM construction liaison shall coordinate with the CPNM Goodwin Education Center in December of each year of construction to determine the dates and times of the guided tours for the following year. The liaison shall coordinate construction traffic such that no undue delay on SR-58 due to construction vehicles would result in visitors missing the guided tours, and shall report this construction traffic to the Goodwin Education Center staff. Coordination may include but shall not be limited to delaying the start of construction on Saturdays when guided tours are offered until after 10 a.m. and/or timing road closures to avoid impacts to visitors. The Applicant shall confirm the dates of the guided tours and the coordination plan with the Goodwin Education Center at least 30 days prior to the start of the guided tours.

The measures included in the TCMP shall be consistent with the guidelines outlined in the Standard Specifications for Public Works Construction, the U.S. Department of Transportation's Manual on Uniform Traffic Control Devices (MUTCD), and the Work Area Traffic Control Handbook (WATCH). Copies of the TCMP shall be provided to Caltrans (District 5 and District 6) and the San Luis Obispo County Department of Public Works for approval and issuance of an Encroachment Permit at least 30 days prior to the start of construction.

Required elements of the TCMP shall be added to all applicable construction plans and installed prior to commencement of construction/ground disturbing activities and during construction, as applicable.

During construction, the County Environmental Monitor shall work with the San Luis Obispo County Department of Public Works and Caltrans Districts 5 and 6 to verify that the approved Plan is followed or incorporated. County Planning shall verify compliance post-construction.

Compliance with measures to minimize impact on the CPNM visitation shall be verified by the County Environmental Monitor, in consultation with the CPNM Goodwin Education Center. In addition, the County Environmental Monitor shall periodically check for compliance during construction in April and May.

CVSR TR-4. Prepare and implement annual school bus traffic plan. Prior to issuance of the construction permit, the Applicant shall submit a school bus traffic plan to the San Luis Obispo County Department of Planning for review and approval that provides a process for all project related construction traffic to follow which maximizes the safety, and minimizes delays of Atascadero Unified School District (USD) school buses on Routes 4, 5, and 7.

Annually, and no later than July 1 of any given year during project construction, the Applicant shall coordinate with Atascadero USD staff to obtain the school bus route schedule for the upcoming school year, and then if necessary, instruct all construction-related employees, especially truck operators, of the revised hours or routes, and times to avoid these sections of roadways. The Applicant shall submit documentation of coordination and resulting schedule revisions to the Department of Planning and Building.

During construction, compliance will be verified by the County Environmental Monitor, in consultation with Atascadero USD.

CVSR TR-5. Repair roadway damage. The Applicant shall be responsible for restoring all public roads, easements, rights-of-way (ROWs) and infrastructure (such as signs, utility poles, and cattle guards) within the public road ROWs that have been damaged due to project-related construction activities or traffic through implementation of a Road Restoration Plan (RRP). Restoration shall be to original or near-original condition and undertaken in a timely manner, in consultation and to the satisfaction of San Luis Obispo County and/or Caltrans, as appropriate. At a minimum, the RRP shall:

a. Provide a video log of the proposed haul route.

b. Determine the current Pavement Condition Index (PCI) of the haul route roadways.

c. Identify roadway operational constraints specific to the proposed haul route and provide corrective recommendations.

d. Propose locations to place traffic axle counters to measure project related traffic.

e. Identify the funding mechanism for identified roadway upgrades and ongoing maintenance. The proposed energy projects impacting the roadway segments will be responsible for all costs. Should more than one energy project be using the same road within a similar window of time, a cost sharing program shall be developed.

f. Identify post-construction traffic impacts associated with employee commuting, tourism, truck deliveries and major facility maintenance activities.

g. Ensure all identified operational corrective recommendations, as identified in the RRP, shall be completed prior to commencement of project-related construction activities (including gravel roads under jurisdiction of the California Valley Community Services District).

At least 30 days prior to the start of construction mobilization, the Applicant shall establish baseline road conditions by photographing, videotaping or otherwise documenting existing conditions of all affected public roads, easements, and ROW segment(s), intersections, as well as cattle guards installed within public ROWs, and shall provide the County of San Luis Obispo and Caltrans (if applicable) with a copy of these documents. The Applicant shall enter into a Roadway Repair agreement with the County Public Works Department, in a form acceptable to County Counsel, secure an Encroachment Permit and post a cash damage bond. Additionally, the Applicant shall identify roadway operational constraints along the proposed haul routes, recommend corrective measures, and secure an encroachment permit to perform the corrective work to ensure construction vehicles can safely navigate the haul routes without off-tracking or damaging existing infrastructure. All corrective road work shall be completed prior to the start of mobilization.

Prior to final inspection or occupancy, whichever occurs first, the Applicant shall meet with the County of San Luis Obispo and Caltrans (if applicable) to review the baseline road conditions and identify sections of public ROW that may have been damaged by the project workforce. At that time, the project owner shall establish a schedule to complete the repairs or compensate the County in accordance with the Roadway Repair Agreement. Following completion/compensation of the identified public ROW repairs, the project owner shall provide a letter to the County of San Luis Obispo Planning Director signed by the County of San Luis Obispo Public Works Director and Caltrans stating their satisfaction with the repairs. Compliance will be verified by Department of Planning and Building, in consultation with the San Luis Obispo County Department of Public Works and/or Caltrans.

CVSR TR-6. Comply with Truck Staging Area performance standards on SR-58. Prior to the start of construction, the Applicant shall define a Truck Staging Area along SR-58, which will at a minimum comply with the following performance standards:

1. Proposed area shall not be located within 1,000 feet of noise-sensitive receptors or block any access to existing uses (e.g., agricultural, residential, commercial, etc.).
2. Biological reconnaissance surveys shall be completed prior to any use of the site for use of any areas containing vegetation or potential for use by wildlife. Relevant measures for all identified biological resources shall be implemented.
3. Cultural and paleontological surveys shall be completed for exposed earth and relevant measures shall be implemented.
4. Best management practices for erosion control and spill prevention shall be implemented to ensure that there is no runoff from the site into storm drains or a waterway.
5. Refueling and maintenance of vehicles shall not be allowed. All drips, leaks, and/or spills from vehicles and/or equipment shall be cleaned-up immediately and disposed of in appropriate, labeled containers.
6. No parking or storage of vehicles (including personnel vehicles), equipment, pipe, or any other project-related item shall be allowed on adjacent roadways.

CVSR TR-7. Comply with FAA Advisory Circular 70/7460-1. Prior to issuance of the construction permit for the solar project, generation-tie line or area where 230-kV transmission poles will be constructed, the Applicant shall work with the Federal Aviation Administration (FAA) to resolve any

adverse effects on aeronautical operations. Documentation of FAA consultation, incorporation of any design features required as a result of the aeronautical study, and resolution of issues shall be submitted to the Department of Planning and Building.

During construction of the project, the Applicant shall comply with all applicable requirements to satisfy an FAA Determination of No Hazard to Air Navigation.

During construction, compliance will be verified by the County Environmental Monitor.

CVSR TR-8. Contribute to San Luis Obispo County Road Fund (Twisselman Aggregate Mine). Prior to commencement of mining operation, the operator shall enter into an agreement with the County, in a form acceptable to County Counsel, to deposit into the County Road Fund a sum of money per ton of material to be hauled over County-maintained roads. The agreement shall provide for reports of tonnage, and corresponding payment, to be made quarterly during the life of the mine. The cost per ton shall be subject to annual adjustment based on the Caltrans Construction Cost Index. However, in no case shall a negative cost index be allowed to reduce the previous year's fee. The beginning index date shall be the date that the project receives approval by San Luis Obispo County.

TRANSPORTATION – RECONDUCTORING

PG&E TR-1. Traffic Management Plan. PG&E would develop a project-specific Traffic Management Plan (TMP), which would be submitted to the CPUC for review at least 30 days prior to construction. The TMP would conform to the California Joint Utility Traffic Control Committee's Work Area Protection and Traffic Control Manual. The TMP would include the following:

- Standard safety practices, including installation of appropriate barriers between work zones and transportation facilities, placement of appropriate signage, and use of traffic control devices.
- Flaggers and/or signage would be used to guide vehicles through or around construction zones using proper construction techniques.
- Provision that all equipment and materials would be stored in designated staging areas on or adjacent to the work sites in a manner that minimizes traffic obstructions and maximizes sign visibility.

Vehicle speeds would be limited to safe levels as appropriate for all roads, including access roads and overland routes without existing, posted speed limits.

PG&E TR-2. Traffic Control Plan. Prepare and implement traffic control plan. Prior to the start of construction, the PG&E shall apply for an Encroachment Permit for implementation of a Traffic Control Plan (TCP) with Caltrans. The TCP shall:

- Define the locations of project access points and locations of any temporary lane closures;
- Identify and make provision for circumstances requiring the use of flag persons, warning signs, lights, barricades, cones, etc. to provide safe work areas in the vicinity of the project site and to warn, control, protect, and expedite vehicular and pedestrian traffic;
- Include signage placed along all proposed construction haul routes and alternate haul routes at appropriate intervals notifying drivers of the presence of construction traffic on those roadways; and
- Identify alternative routes for construction-related truck and shuttle traffic in the event of a closure of Shell Creek Road.

The TCP shall include a Truck and Bus Safety Plan that ensures that:

- Construction material and equipment deliveries requiring pilot cars are limited to traveling along SR-41/SR-46 during off peak hours (i.e., between 9:00 a.m. and 4:00 p.m. on weekdays);
- Designated worker pick-up and drop-off areas are located on-site and do not result in construction-related shuttle buses parking or queuing along SR-58;
- All vendors and suppliers creating construction worker transportation adhere to the prohibition of buses over 40 feet in length on SR-58; and
- All construction truck and bus drivers are informed of and required to adhere to the designated traffic haul routes.
- Drivers of all delivery trucks and passenger buses shall follow the routes defined for the solar project.

The measures included in the TCP shall be consistent with the guidelines outlined in the Standard Specifications for Public Works Construction, the U.S. Department of Transportation's Manual on Uniform Traffic Control Devices, and the Work Area Traffic Control Handbook. Copies of the TCP shall be provided to the CPUC for approval at least 30 days prior to start of construction.

PG&E TR-3. Repair roadway damage. PG&E shall restore all public roads, easements, rights-of-way (ROWs), and infrastructure (such as signs, utility poles, and cattle guards) within the public road ROWs that have been damaged due to project-related construction activities or traffic in accordance with required Caltrans or local encroachment permits. Restoration shall be to original or near-original condition and undertaken in a timely manner, in consultation with San Luis Obispo County, Kern County, and Caltrans, as appropriate.

Within 60 calendar days after completion of construction, the project owner shall meet with San Luis Obispo and Kern Counties and Caltrans (if applicable) to identify sections of public ROW to be repaired. At that time, the project owner shall establish a schedule to complete the repairs and to receive approval for the action(s). Following completion of any public ROW repairs, the project owner shall provide a letter signed by the San Luis Obispo County, Kern County, and Caltrans stating their satisfaction with the repairs.

Prior to commencing construction, PG&E shall consult with San Luis Obispo County, Kern County, and Caltrans and notify them of the proposed schedule for project construction. PG&E shall review with these agencies the feasibility of postponing public right-of-way repair or improvement activities in areas affected by project construction until project construction is completed. PG&E shall coordinate with the agencies regarding any concurrent road restoration or improvement activities that are planned or in progress and cannot be postponed. The PG&E shall coordinate with the CPUC, San Luis Obispo County, Kern County, and Caltrans on an ongoing basis to ensure other development projects contributing to traffic on SR-41/SR-46, SR-58, Bitterwater Road, and Shell Creek Road during the same time frame as the proposed project would contribute to the repair of damage.

PUBLIC AND OCCUPATIONAL HEALTH AND SAFETY – CALIFORNIA VALLEY SOLAR RANCH SITE

CVSR HS-1. Handle all fuels, fluids, and components with hazardous materials/wastes in accordance with applicable regulations. All such materials will be kept in segregated storage with secondary containment as necessary. SunPower will maintain all records of storage and inspection and will provide for proper off-site disposal.

CVSR HS-2. Develop and implement a hazardous materials business plan. Prior to issuance of the construction permit, in accordance with the California Health and Safety Code, the Applicant shall prepare a hazardous materials business plan and submit it to the County Environmental Health Services Division for review and approval. The hazardous materials business plan shall delineate hazardous material and hazardous waste storage areas; describe proper handling, storage, and disposal techniques; describe methods to be used to avoid spills and minimize impacts in the event of a spill; describe procedures for handling and disposing of unanticipated hazardous materials encountered during construction; and establish public and agency notification procedures for spills and other emergencies, including fires. The Applicant shall provide the hazardous materials business plan to all contractors working on the project and shall ensure that one copy is available at the project site at all times.

During construction, the County Environmental Monitor shall work with the Environmental Health Division to verify that the approved Plan is followed or incorporated. Environmental Health Division to verify compliance post-construction.

CVSR HS-3. Develop and implement a hazardous waste management plan. Prior to issuance of the construction permit, the Applicant shall prepare a hazardous waste management plan to ensure proper storage, transport, and disposal of hazardous waste generated at the project site during construction and operation. The Applicant shall submit the plan to the County Environmental Health Services Division for review and approval. At a minimum, the hazardous waste management plan shall address:

a. Waste determination (22 CCR §66262.11);

b. On-site container/tank management (22 CCR §66265.171 – .191);

c. Proper disposal (22 CCR §66266.3, HSC §25250.4);

d. Accumulation times (22 CCR §66262.34);

e. Contingency plans (22 CCR §66265.50); and

f. Comply with all future revisions and updates to the regulations cited in this condition.

During construction, the County Environmental Monitor shall work with the Environmental Health Division to verify that the approved Plan is followed or incorporated. Environmental Health Division to verify compliance post-construction.

CVSR HS-4. Provide and maintain emergency access on-site. Prior to the issuance of construction permits, the Applicant shall include and maintain the following features in the design of the CVSR project, which shall be shown on all applicable construction plans:

a. For all potentially habitable buildings, one, possibly two interior (as recommended by Cal Fire), fire-rated stairwell access(es) to the roof for structures taller than 16 feet shall be shown on applicable plans;

b. For all potentially habitable buildings, structure(s) shall be sprinklered, per current Uniform Fire Code requirements;

c. For interior roads, the following shall be shown on all applicable plans: adequate widths and vertical clearances shall be provided for fire and life safety vehicles; all-weather access to all interior areas;

d. Perimeter all-weather access shall be provided around the entire developed site and shown on all applicable plans;

e. Due to the long distance to any medical facility, the Applicant shall provide for temporary helicopter landing zones near construction areas on the project site; as applicable, they shall be designed in accordance with the Federal Aeronautics Administration and County requirements for emergency facilities/helipads; and

f. Compliance with all requirements in the Commercial Fire Review for DRC2008-00097.

Prior to final inspection, implementation of these measures shall be verified by Cal Fire, in consultation with the County Environmental Monitor, as needed.

During construction, compliance will be verified by the County Environmental Monitor.

CVSR HS-5. Develop and implement site-specific spill response plan. Prior to construction permit issuance, the Applicant shall submit to the County for review and approval a site-specific spill response plan that shall include the following elements:

a. **General information:**
   i. Name and location of facility;
   ii. Description of facility operations; and
   iii. Site diagram showing:
      1. Hazardous materials storage areas,
      2. Drains (storm and sanitary),
      3. Surface waters,
      4. Buildings, and
      5. Surrounding neighborhood.

b. **Prevention:** A description of prevention measures to be taken at the project site, such as secondary containment, employee training, and proper storage. Products shall be kept in their original containers with the original manufacturer's label and resealed when possible, and the manufacturer's recommendation for proper disposal shall be followed. The site superintendent shall perform routine inspections to ensure that all materials on-site are being stored and disposed of in an appropriate fashion.

c. **Preparedness:** A description of the planned on-site equipment for spill response and its location. Spill clean-up materials and equipment appropriate to the type and quantity of hazardous materials shall be located on-site and personnel made aware of their location. Key employees shall be trained in spill response procedures in accordance with local, State, and federal regulations. Material safety data sheets (MSDSs) shall be kept on-site during construction and operation of the solar farm. Spill response materials including brooms, dust pans, mops, rags, gloves, absorbent pads/pillows/socks, sand/absorbent litter, sawdust, and plastic and metal containers will be kept on-site. The spill response plan shall also specify:
   i. The Applicant's health and safety training plan, Department of Transportation-required training, and spill response training.
   ii. Local, State, and federal regulatory agency reporting procedures and phone numbers, as well as emergency response contractor contact information and local hospital contact information.

d. **Response Procedures:** An outline of emergency response procedures, including physical spill clean-up procedures, reporting requirements, and stabilization techniques. Spill guidelines shall include the following:

   i. All spills shall be immediately cleaned up upon discovery.

   ii. The spill area shall be kept well ventilated and personnel shall wear the appropriate protective clothing to prevent injury when cleaning up a spill.

   iii. Reportable quantities of spills of hazardous materials shall be reported to the appropriate local, State, and federal authorities.

   iv. All vehicles leaking oil or fluids shall be scheduled for maintenance, and drip plans shall be placed under the leak when parked prior to the maintenance event.

e. A description of spill prevention and response measures for transportation of substation transformer oil to and from the project site. Spill guidelines shall include the following:

   i. The transformer oil transportation route shall be mapped with all navigable or potentially navigable waters adjacent to or perpendicular to the route.

   ii. A list of contact information for the appropriate local, State, and federal authorities shall be located in the transportation vehicle(s) at all times.

   iii. Transformer oil spills during transportation shall be immediately reported to the appropriate local, State, and federal authorities.

The spill response plan shall be implemented during both construction and operation. In addition, during the life of project operation, the project shall not use any hazardous materials not specified in the plan or in greater quantities than specified, unless approved in advance by the County Environmental Health Services Division and the County Department of Planning and Building.

During construction, the County Environmental Monitor shall work with the Environmental Health Division to verify that the approved Spill Response Plan is followed or incorporated. The Environmental Health Division shall verify compliance post-construction.

CVSR HS-6. Develop and implement spill prevention, control, and countermeasures plans. Prior to issuance of the construction permit, the Applicant shall prepare a spill prevention, control, and countermeasures plan for the storage and use of transformer oil, gasoline, or diesel fuel at the site in quantities of 660 gallons or greater. The plans shall include design features of the project that will contain accidental releases of petroleum and vegetable oil products from on-site fuel tanks and transformers. The plans shall be submitted in advance to the U.S. Environmental Protection Agency, the California Environmental Protection Agency, and the County Environmental Health Services Division for their review and approval prior to permit issuance for construction-related elements (e.g., motor vehicle fuel), and 30 days prior to energizing the project or final Inspection, whichever comes first, for operational elements (e.g., substation transformer oil).

During construction, the County Environmental Monitor shall work with the Environmental Health Division, in consultation with U.S. Environmental Protection Agency, and the California Environmental Protection Agency, to verify that the approved Plan is followed or incorporated. The Environmental Health Division shall verify compliance post-construction.

CVSR HS-7. Use licensed herbicide applicator. During the construction and operational phases of the project, the contractor or personnel applying herbicides shall have all the appropriate State and local herbicide applicator licenses and comply with all State and local regulations regarding herbicide use.

Herbicides shall be mixed and applied in conformance with the product manufacturer's directions. The herbicide applicator shall be equipped with splash protection clothing and gear, chemical resistant gloves, chemical spill/splash wash supplies, and material safety data sheets (MSDSs) for all hazardous materials to be used. To minimize harm to wildlife, vegetation, and waterbodies, herbicides shall not be applied directly to wildlife, products identified as non-toxic to birds and small mammals shall be used if nests or dens are observed, and herbicides shall not be applied within 50 feet of any surface waterbody when water is present. Herbicides shall not be applied if it is raining at the site, rain is imminent, or the target area has puddles or standing water. Herbicides shall not be applied when wind velocity exceeds 10 miles per hour. If spray is observed to be drifting to a non-target location, spraying shall be discontinued until conditions causing the drift have abated.

Prior to any herbicide application, the herbicide applicator shall contact the County Environmental Monitor to show where work will be done and to receive information/training about potentially sensitive biological resources that may be within the area to be sprayed and methods to apply to minimize those impacts. Prior to construction permit issuance, a Worker's Training Manual shall be prepared for the County Environmental Monitor's review that includes a provision on herbicide application. Once facility operation commences, this Manual shall be given to any herbicide applicator and followed prior to spraying.

CVSR HS-8. Ensure proper disposal or recycling of photovoltaic panels and support structures. Prior to construction permit issuance, the Applicant shall submit a recycling and disposal plan for photovoltaic panels and support structures for County review and approval, in order that project structures do not pose a risk to human health or the environment after project decommissioning. The plan shall specify how these project components will be disposed of in a manner that will not pose a risk to human health or the environment, and the costs of such disposal.

CVSR HS-9. Develop and implement a fire safety plan. Prior to construction permit issuance, the Applicant shall obtain a Cal Fire–approved fire safety plan for use during construction and operation. The fire safety plan shall contain notification procedures and emergency fire precautions including, but not limited to, the following:

a. All internal combustion engines, stationary and mobile, shall be equipped with spark arresters. Spark arresters shall be in good working order.

b. Light trucks and cars with factory-installed (type) mufflers shall be used only on roads where the roadway is cleared of vegetation. Said vehicle types shall maintain their factory-installed (type) muffler in good condition.

c. Fire rules shall be posted on the project bulletin board at the contractor's field office and areas visible to employees.

d. Equipment parking areas and small stationary engine sites shall be cleared of all extraneous flammable materials.

e. Personnel shall be trained in the practices of the fire safety plan relevant to their duties. Construction and maintenance personnel shall be trained and equipped to extinguish small fires in order to prevent them from growing into more serious threats.

f. Applicant shall make an effort to restrict use of chainsaws, chippers, vegetation masticators, grinders, drill rigs, tractors, torches, and explosives to outside of the official fire season. When the above tools are used, water tanks equipped with hoses, fire rakes, and axes shall be easily accessible to personnel.

g. Smoking shall be prohibited in wildland areas and shall be limited to paved areas or areas cleared of all vegetation. Smoking shall be prohibited within 30 feet of any combustible material storage area (including fuels, gases, and solvents).

h. During project operation, the approved fire plan shall be implemented.

During construction, the County Environmental Monitor shall work with the Cal Fire/ San Luis Obispo County Fire Department to verify that the approved Plan is followed or incorporated. Cal Fire/San Luis Obispo County Fire Department shall verify compliance post-construction.

CVSR HS-10. Cease work during times of high wildfire risk. Prior to construction permit issuance, the Applicant shall work with Cal Fire/County Fire to develop a process during 'Red Flag Warning' times (as issued by the National Weather Service [NWS] for the project area defined as "San Luis Obispo County Interior Valleys"), where the Applicant will cease work during construction and operation, as determined necessary by Cal Fire/County Fire. As approved by Cal Fire/County Fire, exceptions may be made for emergency construction and maintenance activities. This provision shall be clearly stated in the fire safety plan, and submitted to the County prior to construction permit issuance. The Emergency Response Liaison (CVSR HS-14) shall be in regular contact with Cal Fire/County Fire to ensure implementation of the approved process. Should a comparable alternative be proposed by the Applicant, the County Planning Department and Cal Fire/County Fire must review and approve prior to implementation.

During construction, the County Environmental Coordinator will ensure that an effective system of information transfer is in place between the Emergency Response Liaison and Cal Fire/County Fire, which shall be established prior to construction.

CVSR HS-11. Fire sprinklers, water tank, and hydrants for fire suppression. The O&M building and Visitor Center will have fire sprinklers and a pressurized fire system. The required volume of water for

fire use will be based on the number and sizes of structures, occupancy rating, and material composition. The proposed water tank is sized consistent with the recommendations of Cal Fire based on the proposed use of the property. Due to standard pre-formed tank sizes, there will be substantial excess capacity in the 271,000-gallon water tank which will be made available for off-site firefighting if needed. Hydrants will be placed consistent with Cal Fire requirements to allow use of the water supply both on and off-site in emergency situations. In addition, all maintenance trucks will be equipped with a small water tank and pump.

CVSR HS-12. Defensible space around welding and digging operations. Standard defensible space requirements will be maintained surrounding any welding or digging operations.

CVSR HS-13. Install electrical safety signage. Prior to energization or final inspection, whichever occurs first, the Applicant shall install electrical safety signage on all solar arrays in the immediate vicinity of all wiring and on all electrical conduit using weather-resistant and fade-proof materials. The purpose of this measure is to reduce the risk of electric shock and fire. Warning signs shall be designed to be evident to any person tampering with, working on, or dismantling project photovoltaic panels. Signs shall read: "CAUTION: Solar PV Wiring May Remain Energized After Disconnection During Daylight Hours. Tampering With Wiring May Result in ELECTRIC SHOCK or FIRE. Death or Serious Injury May Result. Do Not Expose Wires to Vegetation or Other Flammable Materials."

Prior to final inspection, compliance will be verified by the County Environmental Monitor.

CVSR HS-14. Coordinate traffic during emergencies. Prior to construction work commencing, the Applicant shall designate an Emergency Response Liaison (e.g., on-site construction manager, resident engineer, etc.) to coordinate the reduction of project-related traffic for the duration of any emergency at or nearby the project site. The Carrizo Plain Fire Station/Cal Fire, the San Luis Obispo County Sherriff's Department, and the California Highway Patrol shall be provided with the construction schedule and the on-site contact information for the Liaison prior to construction.

At all times during construction, the Liaison shall be immediately reachable. The Liaison shall have radio contact with project construction vehicles at all times to coordinate traffic reduction measures. In addition, the Liaison shall coordinate with the Carrizo Plain Fire Station/Cal Fire, the San Luis Obispo County Sherriff's Department, and the California Highway Patrol to establish emergency procedures for access to the project site in the event of emergency.

Establishment of a Liaison during construction shall be verified by the County Department of Planning and Building.

CVSR HS-15. Provide helicopter landing areas on-site. Prior to commencement of construction/ground disturbing activities, the Applicant shall work with the County fire department/Cal Fire to provide temporary helicopter landing zones near areas of active construction. On-site supervisory construction personnel shall be made aware of these locations. As applicable, these areas shall be designed in accordance with the Federal Aeronautics Administration and County requirements for emergency facilities/helipads.

During construction, compliance will be verified by the County Environmental Monitor, in consultation with Cal Fire.

CVSR HS-16. Sample and test contaminated soil. During construction and all ground-disturbing activities, if any construction personnel observe visual or olfactory evidence of contamination or if soil

contamination is otherwise suspected, work near the excavation site shall be terminated and the work area cordoned off. Samples shall be collected by an OSHA-trained individual with a minimum of 40 hours hazardous material site worker training. Laboratory data from suspected contaminated material shall be reviewed by the contractor's Health and Safety Officer. If the sample testing determines that contamination is not present, work may proceed at the site. However, if contamination is detected above regulatory limits, the County Environmental Health Services Division shall be notified. All actions related to encountering unanticipated hazardous materials at the site shall be documented and submitted to the County Environmental Health Services Division.

The Applicant's Health & Safety Officer shall apprise the County Environmental Monitor should contamination incidents arise. When thresholds are exceeded, the County Environmental Health Services Division shall verify that proper protocol has been followed.

CVSR HS-17. Prohibit standing water and trash piles. During construction and operation, in order to eliminate potential disease vectors at the site, the Applicant shall ensure that trash is stored in closed containers and removed from the site at regular intervals. Open containers shall be inverted and construction ditches shall not be allowed to accumulate water. Construction and maintenance operations shall not generate standing water, except for reverse osmosis evaporation ponds. Naturally occurring depressions, drainages, and pools at the site shall not be drained or filled without consulting with the appropriate resource agency (San Luis Obispo County, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, California Department of Fish and Game) and obtaining the appropriate permits.

CVSR HS-18. Recycle at least 50 percent of construction waste. Prior to issuance of construction permit, the list of available recyclers shall be placed on all applicable construction plans. The Applicant, and all successors-in interest, shall provide to all contractors the list of companies that offer recycling services or drop box services.

The Applicant shall provide the San Luis Obispo County "Recycling Required at Construction Sites" pamphlet to all contractors prior to commencement of construction work.

During construction, collectively, the Applicant and all contractors shall recycle at least 50 percent of waste generated by the project's construction activity. A signed recycling area shall be established on-site and maintained in a manner to not attract sensitive wildlife. Waste includes anything discarded from the site, such as wood scraps, cardboard, flashing, paint or other finishing products, tools, drywall, concrete, asphalt, plastic bags, remnants of insulation, etc. In addition, construction recycling shall capture 90% steel and concrete wastes.

During construction, compliance will be verified by the County Environmental Monitor.

CVSR HS-19. On-site septic system and leach field will meet all specifications of the San Luis Obispo County Health Department and the Regional Water Quality Control Board Review.

CVSR HS-20. Sheriff Department Access Review. Prior to the issuance of construction permits, the San Luis Obispo County Sheriff's Department shall review and provide input on landscape plans and architectural elevations in relation to the following issues: access for patrol vehicles and deputies on-foot, proper illumination of entryways and parking areas.

Prior to final inspection, compliance will be verified by the San Luis Obispo County Sheriff's Department, in consultation with the County Department of Planning and Building.

CVSR HS-21. Ensure adequate funding for San Luis Obispo County staffing impacts. SunPower shall track the CVSR Project construction expenditures in its Project accounting system and then allocate all expenditures to the County in accordance with State Board of Equalization requirements to maximize the receipt of sales and use taxes by the County related to the construction of the project. During and after construction, the County shall monitor and identify sales and use tax revenues received into various County funds from the State that are related to the CVSR Project. A periodic tracking report will be generated and submitted to the San Luis Obispo County Planning Department as well as the Applicant. At the end of the construction period and related State's sales and use tax reimbursement period, should the actual revenues received be less than the amount of the $10,500,000 estimated fiscal impact (as specified in the Fiscal Impact Study (Appendix 14)), the Applicant shall pay the difference promptly after the State's reimbursement period ends and the amount of the difference has been calculated. Should the Topaz Solar Farm project also be approved by the County the County shall also monitor and identify sales and use tax revenues received that are related to that project. The responsibility for the difference between the combined total revenues received related to both projects and the $10,500,000 estimated fiscal impact shall be allocated between the Applicant and the Topaz Solar farm project on a fractional basis based on the total megawatts of each project, which shall be calculated and paid promptly after the State's sales and use tax reimbursement period for whichever project is last completed. Alternatively, Applicant and San Luis Obispo County may enter into a reimbursement contract for the fiscal impacts of the CVSR Project.

CVSR HS-22. Provide documentation of construction and demolition waste recycling. Prior to final inspection or occupation, whichever occurs first, documentation shall be provided to the San Luis Obispo County Department of Planning and Building and Public Works that at least 50 percent (by weight) of the construction or demolition (applies if demolition is 1,000 square feet or larger) waste has been recycled. Failure to comply will result in fines as noted in County Code section 8.12.485.

During construction, compliance will be verified by the County Environmental Monitor, in consultation with Public Works.

CVSR HS-23. Obtain weekly garbage service. Prior to issuance of construction permits, the Applicant shall either obtain weekly garbage service from the local, permitted, franchised collection company or establish an on-site solid waste disposal program and recycling program and weekly visits to the landfill. This shall be kept in a clean, good-working order and in a manner that discourages wildlife from entering.

During construction, compliance will be verified by the County Environmental Monitor.

CVSR HS-24. Ensure proper handling of livestock. Prior to livestock grazing on the project site, to substantially reduce the risk of livestock transmitting anthrax to personnel, the Applicant shall ensure that all personnel are trained to be aware of the risk of naturally occurring anthrax being transmitted to humans from a diseased animal carcass. In addition, the following practices shall be followed:

a. Only trained livestock handlers shall handle livestock at the project site.

b. Animal carcass disposal shall follow accepted practice if the death is potentially related to anthrax.

c. All suspected cases of anthrax shall be immediately reported to the animal's veterinarian, the San Luis Obispo County Agricultural Commissioner, County Planning and the California Department of Food and Agriculture's Animal Health and Food Safety Services – Animal Health Branch.

d. Livestock carcasses shall be handled only by properly trained livestock handlers, veterinarians, or health officials.

e. If livestock carcasses must be temporarily stored at the project site overnight, all carcasses shall be covered with thick plastic and secured from being accessed by scavenging wildlife.

f. Livestock carcasses shall not be temporarily stored on the project site during a rain storm.

g. Livestock carcasses shall not be allowed to remain unsecured on the project site overnight in order to avoid scavengers and pets opening a potentially diseased carcass.

h. Livestock carcasses shall be burned or removed and properly disposed of as soon as possible after the death of the animal. Disposal shall be coordinated with the San Luis Obispo County Agricultural Commissioner.

CVSR HS-25. Adequate septic system to serve the CVSR. At the time of application for construction permits, the Applicant shall submit evidence that a septic system, adequate to serve the CVSR, can be installed on the CVSR site, that adheres to the following:

a. On-site wastewater system shall be in conformance with the Central Coast RWQCB basin plan approved by San Luis Obispo County and San Luis Obispo County Building and Construction Ordinance, Title 19.

b. No sewage disposal system installations are to be placed closer than 100 feet from the top of any perennial or continuous creek banks, drainage swales, or areas subject to inundation.

c. Sewage disposal systems shall be separated from any individual domestic well and/or agricultural well, as follows: leaching areas, feed lots, etc., 100 feet; and bored seepage pits (dry wells), 150 feet. Domestic wells intended to serve 5 or more parcels shall be separated by a minimum of 200 feet from septic systems and dry wells.

CVSR HS-26. Temporary Switching Yard. Prior to issuance of a construction permit, plans for a temporary switching yard shall be submitted to San Luis Obispo County for approval. The County shall work with PG&E and the California Independent System Operators prior to approval of these plans.

PUBLIC AND OCCUPATIONAL HEALTH AND SAFETY – RECONDUCTORING

PG&E HS-1. Environmental Training and Monitoring Program. An environmental training program will be established to communicate to all field personnel any environmental concerns and appropriate work practices, including spill prevention and response measures and Best Management Practices (BMPs). The training program will emphasize site-specific physical conditions to improve hazard prevention (e.g., identification of flow paths to nearest waterbodies) and will include a review of all site-specific plans, including but not limited to the Project's SWPPP, Erosion Control and Sediment Transport Plan, Health and Safety Plan, and Hazardous Substances Control and Emergency Response Plan.

A monitoring program will also be implemented to ensure that the plans are followed throughout the construction period. BMPs, as identified in the Project SWPPP and Erosion Control and Sediment Transport Plan, will also be implemented during the Project to minimize the risk of an accidental release and to provide the necessary information for emergency response.

PG&E HS-2. Hazardous Substance Control and Emergency Response Plan. PG&E would submit a Hazardous Substance Control and Emergency Response Plan to the CPUC for recordkeeping at least 30 days prior to project construction. The plan would identify methods and techniques to minimize the exposure of the public to potentially hazardous materials during all phases of project construction through operation. The plan would require implementing appropriate control methods and approved containment and spill-control practices (i.e., spill control plan) for construction and materials stored on-site.

All hazardous materials and hazardous wastes would be handled, stored, and disposed of, in accordance with all applicable regulations, by personnel qualified to handle hazardous materials. With the exception of the poles, all hazardous materials would be collected in project-specific containers at the site, and transported to a PG&E service center designated as a PG&E consolidation site. Poles would be scheduled for transportation to the appropriate licensed Class 1 or a composite-lined portion of a solid waste landfill. The plan would include, but not be limited to, the following:

- Proper disposal of potentially contaminated soils,
- Vehicles and equipment parking near sensitive resource areas during construction, and
- Emergency response and reporting procedures to address hazardous material spills.

PG&E HS-3. Health and Safety Plan. PG&E would prepare a site-specific Health and Safety Plan to ensure that potential safety hazards would be kept at a minimum. The Plan would include elements that establish worker training and emergency response procedures relevant to project activities. The Plan would be submitted to the CPUC at least 30 days prior to construction for CPUC record keeping.

PG&E HS-4. Material Safety Data Sheets maintained on-site. If it is necessary to store any chemicals on-site, they would be managed in accordance with all applicable regulations. Material Safety Data Sheets would be maintained and kept available on-site, as applicable.

PG&E HS-5. Dispose of contaminated soil properly. In the event that soils suspected of being contaminated (based on evidence from visual, olfactory, or other means) are removed during excavation activities along the power line corridor, the excavated soil would be tested and, if contaminated above hazardous levels, would be contained and disposed of at a licensed waste facility. The presence of known or suspected contaminated soil would require testing and investigation procedures to be supervised by a qualified person, as appropriate, to meet state and federal regulations.

PG&E HS-6. Fire Prevention and Response Plan. PG&E would prepare and submit a Fire Prevention and Response Plan to the CPUC and to local fire protection authorities for notification at least 30 days prior to construction. The plan would include fire protection and prevention methods for all components of the project during construction. The plan would include procedures to reduce the potential for igniting combustible materials by preventing electrical hazards, use of flammable materials, and smoking on-site during construction and maintenance procedures. Project personnel would be directed to park away from dry vegetation; to equip vehicles with fire extinguishers; not to smoke; and to carry water, shovels, and fire extinguishers in times of high fire hazard.

PG&E HS-7. Use licensed herbicide applicator. Prior to energizing or final inspection (whichever occurs first), the contractor or personnel applying herbicides must have all the appropriate State and local herbicide applicator licenses and comply with all State and local regulations regarding herbicide use. Herbicides shall be mixed and applied in conformance with the product manufacturer's directions. The herbicide applicator shall be equipped with splash protection clothing and gear, chemical resistant gloves, chemical spill/splash wash supplies, and material safety data sheets for all hazardous materials to be used. To minimize harm to wildlife, vegetation, and waterbodies, herbicides shall not be applied directly to wildlife, products identified as non-toxic to birds and small mammals shall be used if nests or dens are observed, and herbicides shall not be applied within 50 feet of any surface waterbody when water is present. Herbicides shall not be applied if it is raining at the site, rain is imminent, or the target area has puddles or standing water. Herbicides shall not be applied when wind velocity exceeds 10 miles per hour.

If spray is observed to be drifting to a non-target location, spraying shall be discontinued until conditions causing the drift have abated.

PG&E HS-8. Cease work during Red Flag Warnings. When a Red Flag Warning is issued by the National Weather Service for all or part of the project area, PG&E shall cease all activities in any affected areas that involve a high potential for starting fires as outlined in the Fire Prevention and Response Plan submitted to the CPUC. This provision shall be clearly stated in the fire safety plan. A designated Emergency Response Liaison shall ensure implementation of a system that allows for immediate receipt of Red Flag Warning information from the Los Angeles/Oxnard office of the National Weather Service.

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C Air Emissions Calculations Worksheets

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Proposed Project, Solar Project T-0 M3

Construction-Phase Emissions (tons) [*metric tonnes]

	VOC	NOx	DPM	Dust PM10	PM10	PM2.5	CO	SOx	CO2*	CH4*	CO2e*
Construction On Road Vehicle Travel	13.12	51.36	1.67		2.98	2.34	107.84	0.18	16,960.20	0.92	16,979.45
Construction Fugitive Dust - Roads				49.51	49.51	3.75					
Construction Off Road Equipment Exhaust	12.88	106.48	4.72		4.73	4.72	44.36	0.13	10,942.80	1.05	10,964.94
Construction Fugitive Dust - Batch Plant				0.45	0.45	0.45					
Construction Fugitive Dust - Grading				47.19	47.19	9.91					
Total Tons [*MT], Entire Construction	**26.00**	**157.85**	**6.40**	**97.15**	**104.85**	**21.16**	**152.20**	**0.31**	**27,902.99**	**1.97**	**27,944.40**

Proposed Project, Solar Project T-0 M3

Construction-Phase Emissions (tons/quarter)

12 q	VOC	NOx	DPM	Dust PM10	PM10	PM2.5	CO	SOx
Construction On Road Vehicle Travel	1.09	4.28	0.14		0.25	0.19	8.99	0.02
Construction Fugitive Dust - Roads				4.13	4.13	0.31		
Construction Off Road Equipment Exhaust	1.07	8.87	0.39		0.39	0.39	3.70	0.01
Construction Fugitive Dust - Batch Plant				0.04	0.04	0.04		
Construction Fugitive Dust - Grading				3.93	3.93	0.83		
Average Construction (tons/quarter)	**2.17**	**13.15**	**0.53**	**8.10**	**8.74**	**1.76**	**12.68**	**0.03**

Proposed Project, Solar Project T-0 M3

Operational Emissions (tons/year) [*metric tonnes/yr]

	VOC	NOx	DPM	Dust PM10	PM10	PM2.5	CO	SOx	CO2*	CH4*	CO2e*
Off Road Onsite Equipment	0.19	1.99	0.07		0.07	0.07	0.52	0.00	174.64	0.07	176.15
On Road On-Highway Vehicles	0.34	0.69	0.01		0.04	0.04	2.94	0.00	358.55	0.03	359.09
Operational Fugitive Dust - Roads				8.89	8.89	0.86					
Total Annual Emissions (tons/yr) [*MT/yr]	**0.53**	**2.68**	**0.08**	**8.89**	**9.00**	**0.96**	**3.46**	**0.01**	**533.19**	**0.10**	**535.24**

Proposed Project, Solar Project T-0 M3

Operational Emissions (lb/day)

	VOC	NOx	DPM	Dust PM10	PM10	PM2.5	CO	SOx
Off Road Onsite Equipment	1.49	15.32	0.51		0.51	0.51	4.00	0.02
On Road On-Highway Vehicles	2.58	5.30	0.09		0.32	0.30	22.60	0.03
Operational Fugitive Dust - Roads				51.04	51.04	4.87		
Solar Project Daily Emissions (lb/day)	**4.07**	**20.62**	**0.60**	**51.04**	**51.87**	**5.68**	**26.60**	**0.05**

Aggregate Mine

Construction-Phase Emissions (tons) [*metric tonnes]

	VOC	NOx	DPM	Dust PM10	PM10	PM2.5	CO	SOx	CO2*	CH4*	CO2e*
Construction Equipment - Aggregate Mine	0.84	6.49	0.38		0.38	0.38	3.17	0.01	538.54	0.07	539.99
Construction Fugitive Dust - Aggregate Mine				25.97	25.97	4.16					
Total Tons [*MT], Entire Construction	**0.84**	**6.49**	**0.38**	**25.97**	**26.35**	**4.53**	**3.17**	**0.01**	**538.54**	**0.07**	**539.99**

Aggregate Mine

Construction-Phase Emissions (tons/quarter)

12 q	VOC	NOx	DPM	Dust PM10	PM10	PM2.5	CO	SOx
Construction Equipment - Aggregate Mine	0.07	0.54	0.03		0.03	0.03	0.26	0.00
Construction Fugitive Dust - Aggregate Mine				2.16	2.16	0.35		
Average Construction (tons/quarter)	**0.07**	**0.54**	**0.03**	**2.16**	**2.20**	**0.38**	**0.26**	**0.00**

Aggregate Mine

Operational Emissions (tons/year) [*metric tonnes/yr]

	VOC	NOx	DPM	Dust PM10	PM10	PM2.5	CO	SOx	CO2*	CH4*	CO2e*
Off Road Equipment - Aggregate Mine	0.28	2.16	0.13		0.13	0.13	1.06	0.00	179.51	0.02	180.00
Operational Fugitive Dust - Aggregate Mine				8.66	8.66	1.39					
On Road Vehicles - Aggregate Mine	0.38	3.39	0.12		0.12	0.12	1.22	0.00	353.13	0.03	353.77
Total Annual Emissions (tons/yr) [*MT/yr]	**0.66**	**5.56**	**0.25**	**8.66**	**8.90**	**1.63**	**2.27**	**0.01**	**532.64**	**0.05**	**533.77**

Aggregate Mine

Operational Emissions (lb/day)

	VOC	NOx	DPM	Dust PM10	PM10	PM2.5	CO	SOx
Off Road Equipment - Aggregate Mine	2.11	16.40	0.96		0.96	0.96	8.00	0.02
Operational Fugitive Dust - Aggregate Mine				103.01	103.01	20.98		
On Road Vehicles - Aggregate Mine	2.90	26.11	0.92		0.95	0.95	9.36	0.03
Aggregate Mine Daily Emissions (lb/day)	**5.01**	**42.51**	**1.88**	**103.01**	**104.91**	**22.89**	**17.36**	**0.05**

Construction On Road Vehicle Travel

On Road Vehicle Travel during 3-year construction period				Total Emissions (lbs) for entire construction period of 3 years							
Trip Type	miles/RT	Total RT	total VMT	CO	NOx	VOC	SOx	PM10	PM2.5	CO2*	CH4*
Aggr. Base for Visitors/O&M, Substation	10	354	3,543	36.21	109.73	8.96	0.14	5.31	4.59	14,942.37	0.41
O&M Facility Building Supplies	150	100	15,000	153.29	464.56	37.93	0.61	22.47	19.42	63,257.75	1.75
Aggregate Road Base	10	7,263	72,630	742.22	2,249.38	183.66	2.93	108.79	94.05	306,294.03	8.47
Backhaul Excess Cut	10	646	6,462	66.04	200.14	16.34	0.26	9.68	8.37	27,252.38	0.75
WATER TRUCK(S)	10	3,780	37,800	386.29	1,170.68	95.59	1.52	56.62	48.95	159,409.53	4.41
Concrete (local)	60	3,861	231,660	2,367.39	7,174.61	585.80	9.34	346.99	299.98	976,952.70	27.03
Concrete (remote)	150	565	84,750	866.08	2,624.74	214.31	3.42	126.94	109.74	357,406.29	9.89
PV	150	2,929	439,350	4,489.82	13,606.85	1,110.99	17.72	658.07	568.92	1,852,819.51	51.26
Tracker Steel	150	1,603	240,450	2,457.22	7,446.84	608.03	9.70	360.15	311.36	1,014,021.74	28.05
Transmission Tower structures	150	60	9,000	91.97	278.73	22.76	0.36	13.48	11.65	37,954.65	1.05
Substation, Switching station, includes Equipment	150	120	18,000	183.95	557.47	45.52	0.73	26.96	23.31	75,909.30	2.10
Electrical Bill of Materials (BOM)	150	1,631	244,650	2,500.14	7,576.91	618.65	9.87	366.44	316.80	1,031,733.91	28.54
Piers	150	2,017	302,550	3,091.83	9,370.10	765.06	12.20	453.17	391.77	1,275,908.83	35.30
Utility Poles	150	50	7,500	76.64	232.28	18.97	0.30	11.23	9.71	31,628.88	0.88
Misc. Materials & Support	150	2,622	393,300	4,019.23	12,180.66	994.54	15.86	589.10	509.29	1,658,618.22	45.89
Misc. Auto & Med. Truck support	150	4,647	697,050	10,796.75	12,089.40	1,561.25	18.77	453.15	382.93	1,928,441.56	74.41
Worker Commute			23,032,800	176,659.94	17,904.23	18,382.30	247.38	2,067.20	1,323.35	25,372,558.47	1,654.83
Bus for workers			432,000	6,691.34	7,492.46	967.59	11.63	280.84	237.33	1,195,160.68	46.12
Construction Phase Emissions Totals (tons for entire construction period)			**26,268,495**	**107.84**	**51.36**	**13.12**	**0.18**	**2.98**	**2.34**	**16,960.20**	**0.92**
								DPM:	**1.67**		

Notes:

1. GHG emissions are reported in metric tons - 2204 pounds per tonne (for totals only)
2. Emissions based on average emission factor over Year 2011, 2012, and 2013.

Vehicle Class Emissions Factors (lbs/mile):

Source: SCAQMD "onroadEF07_26.xls" and "onroadEFHDDT07_26.xls" emission files. These emission factors are based on CARB's EMFAC2007 emission model.

Average of Years 2011-2013

	CO	NOx	VOC	SOx	PM10	PM2.5	CO2	CH4
Heavy-Heavy-Duty Diesel Trucks (>33,001 pounds)	0.01021924	0.03097041	0.00252872	0.00004033	0.00149783	0.00129491	4.21718337	0.00011668
Passenger Vehicles	0.00766993	0.00077734	0.00079809	0.00001074	0.00008975	0.00005746	1.10158376	0.00007185
Delivery Trucks (8,500 - 33,000 pounds)	0.01548921	0.01734367	0.00223980	0.00002692	0.00065009	0.00054936	2.76657565	0.00010675

Years 2011

	CO	NOx	VOC	SOx	PM10	PM2.5	CO2	CH4
Heavy-Heavy-Duty Diesel Trucks (>33,001 pounds)	0.01112463	0.03455809	0.00279543	0.00003972	0.00166087	0.00144489	4.22045680	0.00012910
Passenger Vehicles	0.00826276	0.00084460	0.00085233	0.00001077	0.00008879	0.00005653	1.10235154	0.00007678
Delivery Trucks (8,500 - 33,000 pounds)	0.01693242	0.01893366	0.00241868	0.00002728	0.00070097	0.00059682	2.75180822	0.00011655

Years 2012

Heavy-Heavy-Duty Diesel Trucks (>33,001 pounds)	0.01021519	0.03092379	0.00252764	0.00004042	0.00149566	0.00129354	4.21590774	0.00011651
Passenger Vehicles	0.00765475	0.00077583	0.00079628	0.00001073	0.00008979	0.00005750	1.10152540	0.00007169
Delivery Trucks (8,500 - 33,000 pounds)	0.01545741	0.01732423	0.00223776	0.00002667	0.00064975	0.00054954	2.76628414	0.00010668

Years 2013

Heavy-Heavy-Duty Diesel Trucks (>33,001 pounds)	0.00931790	0.02742935	0.00226308	0.00004086	0.00133697	0.00114629	4.21518556	0.00010441
Passenger Vehicles	0.00709228	0.00071158	0.00074567	0.00001072	0.00009067	0.00005834	1.10087435	0.00006707
Delivery Trucks (8,500 - 33,000 pounds)	0.01407778	0.01577311	0.00206295	0.00002682	0.00059956	0.00050174	2.78163459	0.00009703

Construction Fugitive Dust Emission Factors - Roads

Activity	Road Type	Avg. Daily Mileage (VMT)	Total Mileage (VMT)	Emission Factor[a] (lb/VMT)		Uncontrolled Daily Emissions (lb/day)		Uncontrolled Emissions (tons)		Controlled Daily Emissions (lb/day)		Controlled Emissions (tons)	
				PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
ALL PHASES	Paved Roads	36,484	26,268,495	0.0032	0.00023	116	8.2	41.7	2.96	115.77	8.23	41.7	2.96
	Unpaved	365	262,685	0.30	0.030	109	11	39.2	3.92	21.76	2.18	7.84	0.78
	Subtotal					**225**	**19**	**80.9**	**6.88**	**138**	**10**	**49.5**	**3.75**

Notes:

a. See emission factor derivation table below.

Paved Roads - Emission Factor Derivation Table

$E = (k(sL/2)^{0.65}(W/3)^{1.5}-C)$ AP-42 Section 13.2.1 (11/06 version)

where:

E = particulate emission factor (lb/VMT)

k = particle size multiplier

sL = road surface silt loading (g/m^2)

W = average vehicle weight (tons)

C = emission factor for 1980's vehicle fleet exhaust, break wear and tire wear

Parameter	Units	PM_{10}	$PM_{2.5}$	Reference
Mean Vehicle Weight	tons	3	3	Assumption
k factor	lb/VMT	0.016	0.0024	Table 13.2-1.1
Silt Loading, sL	g/m^2	0.6	0.6	Table 13.2.1-3, ADT <500 on public roads
Silt Loading, sL	g/m^2	0.2	0.2	Table 13.2.1-3, ADT 500-5000 on public roads
Silt Loading, sL	g/m^2	0.06	0.06	Table 13.2.1-3, ADT 5000-10000 on public roads
Silt Loading, sL	g/m^2	0.03	0.03	Table 13.2.1-3, ADT >10000 on public roads
Silt Loading, sL	g/m^3	0.015	0.015	Table 13.2.1-3, ADT >10000 on limited access highways
Emission factor, C	lb/VMT	0.00047	0.00036	Table 13.2.1-2
Emission factor, E	lb/VMT	0.0068	0.00074	ADT <500 on public roads
Emission factor, E	lb/VMT	0.0031	0.00018	ADT 500-5000 on public roads
Emission factor, E	lb/VMT	0.0012	0.00007	ADT 5000-10000 on public roads
Emission factor, E	lb/VMT	0.00057	0.00002	ADT >10000 on public roads
Emission factor, E	lb/VMT	0.00020	0.00001	ADT >10000 on limited access highways
Emission factor, E	lb/VMT	0.0032	0.00023	Weighted Average[a]

Notes:

a. Weighted average assumes he following ADT: <500 (13%), 500-5000 (70%), 5000-10000 (6%), >10000 (3%), >10000 Limit Acc (9%)

Unpaved Roads - Emission Factor Derivation

$E = k(s/12)^a(W/3)^b$ AP-42 Section 13.2.2 (11/06 version)

Controlled E = E * ((100-CE)/100)

where:

E = particulate emission factor (lb/VMT)

k, a, b = empirical constants for industrial roads

s = surface material silt content (%)

W = average vehicle weight (tons)

Parameter	Units	PM_{10}	$PM_{2.5}$	Reference
Mean Vehicle Weight	**tons**	4.25	4.25	Assumption
Constant, k	lb/VMT	1.8	0.18	Table 13.2.2-2 (worst case)
Constant, a		1	1	Table 13.2.2-2 (worst case)
Constant, b		0.45	0.45	Table 13.2.2-2 (worst case)
Silt content, s	%	8.5	8.5	Table 13.2..2-1 (construction sites)
Control Efficiency, CE	**%**	80	80	Assumption based on regular watering

Notes:

Dust control measures include the following (where available, estimated effectiveness included within parenthesis)

1. Vehicles limited to less than 15 mph on all unpaved roads (est. eff.: 40%)
2. Apply water to disturbed areas at lesat twice daily (est. eff. 34%)
3. All trucks hauling, dirt, sand, soil or other loose materials would be covered, or maintain at least two feet of freeboard (est. eff.: 7%)

Construction Off Road Equipment Emission Factors

APPLIED EMISSIONS FACTORS (2011)

			Emission Factor[a] (lb/hr)							
Equipment Type	**Fuel Type**	**Size Range**	**VOC**	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**PM2.5**	**CO_2**	**CH4**
OFF HIWAY TRUCKS	diesel	Max. hp 500	0.2372	0.7058	2.1240	0.0027	0.0785	0.0785	272.3339	0.0214
EXCAVATORs	diesel	Max. hp 250	0.1371	0.3762	1.3632	0.0018	0.0465	0.0465	158.6828	0.0124
EXCAVATORs	diesel	Max. hp 250	0.1371	0.3762	1.3632	0.0018	0.0465	0.0465	158.6828	0.0124
Tractors/Loaders/Backhoes	diesel	Max. hp 120	0.0833	0.3589	0.5288	0.0006	0.0478	0.0478	51.7280	0.0075
WELDER	diesel	Max hp 50	0.1157	0.2949	0.2683	0.0003	0.0275	0.0275	25.9581	0.0104
GRADERS	diesel	Max hp 175	0.1647	0.7384	1.2722	0.0014	0.0745	0.0745	123.9215	0.0149
Trenchers	diesel	Max. hp 250	0.2622	0.7775	2.5293	0.0025	0.1025	0.1025	222.9007	0.0237
RUBBER TIRED DOZERS	diesel	Max hp 250	0.2659	0.7432	2.3209	0.0021	0.1006	0.1006	183.4872	0.0240
Rollers	diesel	Max. hp 250	0.1441	0.4301	1.5140	0.0017	0.0549	0.0549	153.0898	0.0130
OFF HIWAY TRUCKS	diesel	Max hp 250	0.1550	0.4101	1.4773	0.0019	0.0515	0.0515	166.5454	0.0140
OFF HIWAY TRUCKS	diesel	Max hp 250	0.1550	0.4101	1.4773	0.0019	0.0515	0.0515	166.5454	0.0140
RUBBER TIRED LOADERS	diesel	Max hp 175	0.2302	0.8604	1.7086	0.0015	0.0998	0.0998	129.4768	0.0208
SCRAPER	diesel	max hp 500	0.3488	1.4023	3.2148	0.0032	0.1286	0.1286	321.4285	0.0315
OFF HIWAY TRUCKS	diesel	max hp 500	0.2372	0.7058	2.1240	0.0027	0.0785	0.0785	272.3339	0.0214
OFF HIWAY TRUCKS	diesel	Max hp 250	0.1550	0.4101	1.4773	0.0019	0.0515	0.0515	166.5454	0.0140
SKID STEER LOADERS	diesel	Max hp 50	0.0684	0.2411	0.2428	0.0003	0.0198	0.0198	25.5191	0.00618
Generators	diesel	Max hp 250	0.1483	0.4702	1.9373	0.0024	0.0558	0.0558	212.5050	0.0134
			Emission Factor[a] (lb/mile)							
Light Trucks	gasoline	-	0.00085233	0.00826276	0.00084460	0.00001077	0.00008879	0.00005653	1.102352	0.00007678

Notes: Emission factors from SCAQMD "offroadEF_0725.xls". Emission factors based on CARB's OFF-ROAD model. PM2.5 assumed same as PM10; EF for gasoline-powered trucks is based on VMT rather than run time

APPLIED EMISSIONS FACTORS (2012)

			Emission Factor[a] (lb/hr)							
Equipment Type	**Fuel Type**	**Size Range**	**VOC**	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**PM2.5**	**CO_2**	**CH4**
OFF HIWAY TRUCKS	diesel	Max. hp 500	0.2263	0.6661	1.9463	0.0027	0.0705	0.0705	272.3339	0.02042
EXCAVATORs	diesel	Max. hp 250	0.1301	0.3630	1.2438	0.0018	0.0415	0.0415	158.6827	0.01174
EXCAVATORs	diesel	Max. hp 250	0.1301	0.3630	1.2438	0.0018	0.0415	0.0415	158.6827	0.01174
Tractors/Loaders/Backhoes	diesel	Max. hp 120	0.0760	0.3557	0.4910	0.0006	0.0432	0.0432	51.7280	0.00686
WELDER	diesel	Max hp 50	0.1071	0.2854	0.2637	0.0003	0.0260	0.0260	25.9581	0.00966
GRADERS	diesel	Max hp 175	0.1554	0.7363	1.1931	0.0014	0.0688	0.0688	123.9215	0.01402
Trenchers	diesel	Max. hp 250	0.2483	0.7418	2.3854	0.0025	0.0951	0.0951	222.9007	0.02240
RUBBER TIRED DOZERS	diesel	Max hp 250	0.2545	0.7124	2.1985	0.0021	0.0942	0.0942	183.4871	0.02297
Rollers	diesel	Max. hp 250	0.1347	0.4083	1.4103	0.0017	0.0498	0.0498	153.0899	0.01216
OFF HIWAY TRUCKS	diesel	Max hp 250	0.1469	0.3944	1.3513	0.0019	0.0461	0.0461	166.5454	0.01325
OFF HIWAY TRUCKS	diesel	Max hp 250	0.1469	0.3944	1.3513	0.0019	0.0461	0.0461	166.5454	0.01325
RUBBER TIRED LOADERS	diesel	Max hp 175	0.2209	0.8528	1.6304	0.0015	0.0945	0.0945	129.4767	0.01993
SCRAPER	diesel	max hp 500	0.3333	1.3000	3.0162	0.0032	0.1190	0.1190	321.4286	0.03008
OFF HIWAY TRUCKS	diesel	max hp 500	0.2263	0.6661	1.9463	0.0027	0.0705	0.0705	272.3339	0.02042
OFF HIWAY TRUCKS	diesel	Max hp 250	0.1469	0.3944	1.3513	0.0019	0.0461	0.0461	166.5454	0.01325
SKID STEER LOADERS	diesel	Max hp 50	0.0596	0.2332	0.2402	0.0003	0.0180	0.0180	25.5191	0.00538
Generators	diesel	Max hp 250	0.1372	0.4502	1.8047	0.0024	0.0508	0.0508	212.5050	0.0124
			Emission Factor[a] (lb/mile)							
Light Trucks	gasoline	-	0.00079628	0.00765475	0.00077583	0.00001073	0.00008979	0.00005750	1.10152540	0.00007169

Notes: Emission factors from SCAQMD "offroadEF_0725.xls". Emission factors based on CARB's OFF-ROAD model. PM2.5 assumed same as PM10; EF for gasoline-powered trucks is based on VMT rather than run time

APPLIED EMISSIONS FACTORS (2013)

			Emission Factor[a] (lb/hr)							
Equipment Type	**Fuel Type**	**Size Range**	**VOC**	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**PM2.5**	**CO_2**	**CH4**
OFF HIWAY TRUCKS	diesel	Max. hp 500	0.2170	0.6362	1.7865	0.0027	0.0634	0.0634	272.3339	0.0196
EXCAVATORs	diesel	Max. hp 250	0.1242	0.3541	1.1360	0.0018	0.0372	0.0372	158.6828	0.0112
EXCAVATORs	diesel	Max. hp 250	0.1242	0.3541	1.1360	0.0018	0.0372	0.0372	158.6828	0.0112
Tractors/Loaders/Backhoes	diesel	Max. hp 120	0.0694	0.3529	0.4565	0.0006	0.0383	0.0383	51.7280	0.0063
WELDER	diesel	Max hp 50	0.0979	0.2753	0.2535	0.0003	0.0240	0.0240	25.9581	0.0088
GRADERS	diesel	Max hp 175	0.1467	0.7345	1.1193	0.0014	0.0631	0.0631	123.9215	0.0132
Trenchers	diesel	Max. hp 250	0.2354	0.7089	2.2485	0.0025	0.0880	0.0880	222.9007	0.0212
RUBBER TIRED DOZERS	diesel	Max hp 250	0.2435	0.6833	2.0817	0.0021	0.0881	0.0881	183.4871	0.0220
Rollers	diesel	Max. hp 250	0.1262	0.3887	1.3124	0.0017	0.0451	0.0451	153.0898	0.0114
OFF HIWAY TRUCKS	diesel	Max hp 250	0.1400	0.3837	1.2373	0.0019	0.0412	0.0412	166.5454	0.0126
OFF HIWAY TRUCKS	diesel	Max hp 250	0.1400	0.3837	1.2373	0.0019	0.0412	0.0412	166.5454	0.0126
RUBBER TIRED LOADERS	diesel	Max hp 175	0.2119	0.8457	1.5561	0.0015	0.0893	0.0893	129.4768	0.0191
SCRAPER	diesel	max hp 500	0.3186	1.2113	2.8288	0.0032	0.1099	0.1099	321.4286	0.0287
OFF HIWAY TRUCKS	diesel	max hp 500	0.2170	0.6362	1.7865	0.0027	0.0634	0.0634	272.3339	0.0196
OFF HIWAY TRUCKS	diesel	Max hp 250	0.1400	0.3837	1.2373	0.0019	0.0412	0.0412	166.5454	0.0126
SKID STEER LOADERS	diesel	Max hp 50	0.0517	0.2263	0.2279	0.0003	0.0157	0.0157	25.5192	0.0047
Generators	diesel	Max hp 250	0.1277	0.4365	1.6763	0.0024	0.0464	0.0464	212.5049	0.0115
			Emission Factor[a] (lb/mile)							
Light Trucks	gasoline	-	0.00074567	0.00709228	0.00071158	0.00001072	0.00009067	0.00005834	1.10087435	0.0001

Notes: Emission factors from SCAQMD "offroadEF_0725.xls". Emission factors based on CARB's OFF-ROAD model. PM2.5 assumed same as PM10; EF for gasoline-powered trucks is based on VMT rather than run time

APPLIED EMISSIONS FACTORS (Average 2011 to 2013)

Equipment Type	Fuel Type	Size Range	Emission Factor[a] (lb/hr) VOC	CO	NO_x	SO_2	PM_{10}	PM2.5	CO_2	CH4
OFF HIWAY TRUCKS	diesel	Max. hp 500	0.2268	0.6694	1.9523	0.0027	0.0708	0.0708	272.3339	0.0205
EXCAVATORs	diesel	Max. hp 250	0.1305	0.3645	1.2477	0.0018	0.0417	0.0417	158.6827	0.0118
EXCAVATORs	diesel	Max. hp 250	0.1305	0.3645	1.2477	0.0018	0.0417	0.0417	158.6827	0.0118
Tractors/Loaders/Backhoes	diesel	Max. hp 120	0.0762	0.3558	0.4921	0.0006	0.0431	0.0431	51.7280	0.0069
WELDER	diesel	Max hp 50	0.1069	0.2852	0.2618	0.0003	0.0258	0.0258	25.9581	0.0096
GRADERS	diesel	Max hp 175	0.1556	0.7364	1.1949	0.0014	0.0688	0.0688	123.9215	0.0140
Trenchers	diesel	Max. hp 250	0.2486	0.7427	2.3877	0.0025	0.0952	0.0952	222.9007	0.0224
RUBBER TIRED DOZERS	diesel	Max hp 250	0.2546	0.7129	2.2004	0.0021	0.0943	0.0943	183.4871	0.0230
Rollers	diesel	Max. hp 250	0.1350	0.4091	1.4122	0.0017	0.0500	0.0500	153.0898	0.0122
OFF HIWAY TRUCKS	diesel	Max hp 250	0.1473	0.3961	1.3553	0.0019	0.0463	0.0463	166.5454	0.0133
OFF HIWAY TRUCKS	diesel	Max hp 250	0.1473	0.3961	1.3553	0.0019	0.0463	0.0463	166.5454	0.0133
RUBBER TIRED LOADERS	diesel	Max hp 175	0.2210	0.8530	1.6317	0.0015	0.0945	0.0945	129.4768	0.0199
SCRAPER	diesel	max hp 500	0.3336	1.3045	3.0199	0.0032	0.1192	0.1192	321.4286	0.0301
OFF HIWAY TRUCKS	diesel	max hp 500	0.2268	0.6694	1.9523	0.0027	0.0708	0.0708	272.3339	0.0205
OFF HIWAY TRUCKS	diesel	Max hp 250	0.1473	0.3961	1.3553	0.0019	0.0463	0.0463	166.5454	0.0133
SKID STEER LOADERS	diesel	Max hp 50	0.0599	0.2335	0.2369	0.0003	0.0178	0.0178	25.5192	0.0054
Generators	diesel	Max hp 250	0.1377	0.4523	1.8061	0.0024	0.0510	0.0510	212.5050	0.0124
			Emission Factor[a] (lb/mile)							
Light Trucks	gasoline	-	0.000798	0.0077	0.0008	0.000011	0.000090	0.000057	1.1016	0.0001

Notes: Emission factors from SCAQMD "offroadEF_0725.xls". Emission factors based on CARB's OFF-ROAD model. PM2.5 assumed same as PM10; EF for gasoline-powered trucks is based on VMT rather than run time

EMISSIONS CALCULATION - CONSTRUCTION EQUIPMENT

EQUIPMENT	Total Overall Operation of All Units (hr)	Daily Emissions (lb over entire construction period) VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	CO_2	CH4		Annual Emissions (tons - total over 3-year construction period) VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	(mt) CO_2	CH4
3 AXL DUMP TRUCK 10 C.Y.	2,736	621	1,831	5,341	7	194	194	745,105	56		0.310	0.916	2.671	0.004	0.097	0.097	338.070	0.025
330BL EXCAVATOR-CAT (trench digging)	5,472	714	1,994	6,827	10	228	228	868,312	64		0.357	0.997	3.414	0.005	0.114	0.114	393.971	0.029
330BL EXCAVATOR-CAT (pier driving)	11,674	1,523	4,255	14,565	21	487	487	1,852,399	137		0.762	2.127	7.282	0.010	0.244	0.244	840.471	0.062
430D BACKHOE-CAT	6,336	483	2,254	3,118	4	273	273	327,749	44		0.242	1.127	1.559	0.002	0.137	0.137	148.706	0.020
SA250 WELD MACHINE-LINCOLN	14,175	1,516	4,043	3,711	5	366	366	367,955	137		0.758	2.022	1.856	0.002	0.183	0.183	166.949	0.062
GRADER	2371.68	369	1,746	2,834	3	163	163	293,902	33		0.185	0.873	1.417	0.002	0.082	0.082	133.349	0.015
TRENCHER	4,860	1,208	3,610	11,604	12	463	463	1,083,297	109		0.604	1.805	5.802	0.006	0.231	0.231	491.514	0.049
DOZER	1,274	325	909	2,804	3	120	120	233,836	29		0.162	0.454	1.402	0.001	0.060	0.060	106.096	0.013
3-5 TON SMOOTH DRUM ROLLER	1,089	147	445	1,537	2	54	54	166,660	13		0.073	0.223	0.769	0.001	0.027	0.027	75.617	0.006
WATER TRUCK (summer/dry)	3,694	544	1,463	5,006	7	171	171	615,152	49		0.272	0.731	2.503	0.003	0.085	0.085	279.107	0.022
WATER TRUCK (winter/wet)	5,540	816	2,194	7,509	10	256	256	922,728	74		0.408	1.097	3.754	0.005	0.128	0.128	418.661	0.033
GRADER	12,960	2,864	11,055	21,147	19	1,225	1,225	1,678,019	258		1.432	5.527	10.573	0.009	0.612	0.612	761.352	0.117
SCRAPER	2799.36	934	3,652	8,454	9	334	334	899,794	84		0.467	1.826	4.227	0.004	0.167	0.167	408.255	0.038
OFF-HIGHWAY TRUCK	2770.2	628	1,854	5,408	7	196	196	754,419	57		0.314	0.927	2.704	0.004	0.098	0.098	342.295	0.026
light trucks	9576	1,410	3,793	12,978	18	443	443	1,594,839	127		0.705	1.896	6.489	0.009	0.222	0.222	723.611	0.058
light trucks	143640	115	1,102	112	2	13	8	158,231	10		0.057	0.551	0.056	0.001	0.006	0.004	71.793	0.005
Skid steer loader	11,264	675	2,630	2,669	4	201	201	287,448	61		0.337	1.315	1.334	0.002	0.100	0.100	130.421	0.028
Generators (250 hp Accommod.)	10,800	1,551	5,095	20,344	27	574	574	2,393,656	140		0.776	2.547	10.172	0.013	0.287	0.287	1086.051	0.064
Batch Plant Motor	4,752	627	2,575	4,110	5	352	352	384,241	57		0.314	1.288	2.055	0.002	0.176	0.176	174.338	0.026
Proposed Project	**total lbs-->**	**17,070**	**56,501**	**140,079**	**174**	**6,113**	**6,109**	**15,627,743**	**1,540**	**ton:**	**8.54**	**28.25**	**70.04**	**0.09**	**3.06**	**3.05**	**7090.63**	**0.70**
																	7105.30	MTCO2e

Notes:

1. Emissions based on average emission factor over Year 2011, 2012, and 2013.

Additional earthwork factor: 2.937 [T-0 Alt 3 Cut (1.307 million cy) / Proposed Project Cut (0.332 million cy)] -1

											Emissions (tons - total over 3-year construction period) VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	(mt) CO_2	CH4
430D BACKHOE-CAT	18,607	1,419	6,621	9,157	11	802	802	962,515	128		0.709	3.310	4.578	0.006	0.401	0.401	436.713	0.058
GRADER	6,965	1,084	5,129	8,322	10	479	479	863,116	98		0.542	2.564	4.161	0.005	0.240	0.240	391.614	0.044
WATER TRUCK (summer/dry)	10,847	1,598	4,296	14,701	20	502	502	1,806,546	144		0.799	2.148	7.351	0.010	0.251	0.251	819.667	0.065
SCRAPER	8,221	2,742	10,725	24,827	26	980	980	2,642,468	247		1.371	5.362	12.413	0.013	0.490	0.490	1,198.942	0.112
OFF-HIGHWAY TRUCK	8,135	1,845	5,445	15,882	22	576	576	2,215,539	166		0.923	2.723	7.941	0.011	0.288	0.288	1,005.235	0.076
Alternative to the Proposed Project, T-0 Alt 3, Incremental over Proposed Project ---------->										**ton:**	**4.34**	**16.11**	**36.44**	**0.04**	**1.67**	**1.67**	**3852.17**	**0.36**
																	3859.64	MTCO2e

	Annual Emissions (tons - total over 3-year construction period) VOC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$	(mt) CO_2	CH4
TOTAL	**12.88**	**44.36**	**106.48**	**0.13**	**4.73**	**4.72**	**10942.80**	**1.05**

Construction Non-Road Equipment Inventory

From PD	Qty	EQUIPMENT DESCRIPTION	Fuel Type	Engine Rating per Unit (hp)	Load Factor	Daily Operation per Unit (hr/day)	Working Days per Phase / Unit	No. of Units				All Phases (equp*hr/d)	Total Overall Operation of All Units (equip*hr)	Emission Factor Reference	
								PHASE 1	PHASE 2	PHASE 3	TOTAL			Equipment Type	Size
Dump truck	4	3 AXL DUMP TRUCK 10 C.Y.	Diesel	350	0.57	5	240	1	2	1	4	20	2,736	OFF HIWAY TRUCKS	Max. hp 500
Excavator	2	330BL EXCAVATOR-CAT (trench digging)	Diesel	204	0.57	8	240	2	2	1	5	40	5,472	EXCAVATORs	Max. hp 250
Excavator	6	330BL EXCAVATOR-CAT (pier driving)	Diesel	204	0.57	8	160	6	6	4	16	128	11,674	EXCAVATORs	Max. hp 250
Backhoe loader	2	430D BACKHOE-CAT	Diesel	102	0.55	8	240	2	2	2	6	48	6,336	Tractors/Loaders/Backhoes	Max. hp 120
assumed by E&E	10	SA250 WELD MACHINE-LINCOLN	Diesel	40	0.45	7	180	10	10	5	25	175	14,175	WELDER	Max hp 50
Motor Grader	3	GRADER	Diesel	170	0.61	8	54	3	3	3	9	72	2,372	GRADERS	Max hp 175
Trencher	3	TRENCHER	Diesel	170	0.75	8	90	3	3	3	9	72	4,860	Trenchers	Max. hp 200
Dozer	2	DOZER	Diesel	250	0.59	6	72	2	2	1	5	30	1,274	RUBBER TIRED DOZERS	Max hp 250
Pad drum vibratory	2	3-5 TON SMOOTH DRUM ROLLER	Diesel	250	0.56	6	54	2	2	2	6	36	1,089	Rollers	Max. hp 50
4,000-gallon water	6	WATER TRUCK (summer/dry)	Diesel	250	0.57	6	60	6	6	6	18	108	3,694	OFF HIWAY TRUCKS	Max hp 250
4,000-gallon water	6	WATER TRUCK (winter/wet)	Diesel	250	0.57	6	180	3	3	3	9	54	5,540	OFF HIWAY TRUCKS	Max hp 250
Grade-all	4	GRADER	Diesel	175	0.54	10	240	2	2	6	10	100	12,960	RUBBER TIRED LOADERS	Max hp 175
Scraper	3	SCRAPER	Diesel	500	0.72	8	54	3	3	3	9	72	2,799	SCRAPER	max hp 500
Concrete trucks	3	OFF-HIGHWAY TRUCK	Diesel	500	0.57	3	180	3	3	3	9	27	2,770	OFF HIWAY TRUCKS	max hp 500
Light-weight trucks	30	light trucks	Diesel	250	0.57	2	240	10	15	10	35	70	9,576	OFF HIWAY TRUCKS	Max hp 250
Light-weight trucks	30	light trucks	unleaded	150	0.57	30	240	10	15	10	35	1050	143,640	(unleaded) OFF HIWAY TRUCKS	gasoline
bobcats	6	Skid steer loader	Diesel	50	0.55	8	160	6	6	4	16	128	11,264	SKID STEER LOADERS	Max hp 50

Notes:

Emissions factors classifications correspond to EMFAC2007 equipment classification codes

Total working days derived based on percent operation during each phase

gasoline powered trucks assumed to travel at 15 mph for 2 hours for 30 total daily miles travelled

Fugitve Dust Emissions - Construction Sites

Phase	Disturbed Area (acre/phase)	Duration of Activity (mo/phase)	Grading Rate (acre/mo)	Controlled Emission Factor[a] (ton/acre/month)		Daily Emissions (lbs/day)		Project Emissions (tons)	
				PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
Phase 1[b]	180	4	45	0.086	0.018	257.4	54.1	15.4	3.2
Phase 2[b]	180	4	45	0.086	0.018	257.4	54.1	15.4	3.2
Phase 3[b]	180	4	45	0.086	0.018	257.4	54.1	15.4	3.2
Annual end of year disc and reveg	10	0.25	10	0.086	0.018	57.2	12.0	0.86	0.18
TOTAL								**47.2**	**9.91**

Notes:

a. See emission factor derivation table below.

b. Approx 540 acres, divided over 3 phases = Access Roads (102 ac) + General Grading (303 ac) + Drainage (14 ac) + Temporary/ Staging (82 ac) + Founds / Utils / Gen-Tie.

c. Grading would occur during 4 months of each phase. Disc and reveg would occur during last quarter of each year in order to avoid concurrent fugitive dust emissions.

Emission Factor Derivation Table

Parameter	Units	PM_{10}	$PM_{2.5}$
Uncontrolled Emission Factor[1,2]	ton/acre/month	0.22	0.0462
Controlled Emission Factor[3]	ton/acre/month	0.086	0.0180

Notes:

1. PM^{10} Emission factor from URBEMIS2007 for Windows User's Guide (November 2007).

2. $PM_{2.5}$ emission factor calculated by multiplying PM10 emission factor by 0.21.

3. Conservatively assumed dust 61% control factor based on watering. Actual dust control effectiveness TBD based on consultation with local APCD (may be up to 90%)

	PM	PM10	
Aggregate Delivery to ground storage	261	127	
Sand Delivery to ground storage	61	286	
Aggregate Transfer to conveyor	261	127	
Sand Transfer to Conveyor	61	29	
Aggregate Transfer to Elevated Storage	261	127	
Sand Transfer to Elevated Storage	61	29	
Cement Delivery to Silo	8	4	
Cement Supplement Delivery to Silo	12	8	
Weigh Hopper Loading	323	155	
		890	**total lbs.**
CY from SP: **40,835**		**0.45**	**total tons**

(assumes control measures, such as water spray and dust collection systems)

Source:
AP-42; Table 11.12-5

	Uncontrolled		Controlled	
	PM (l\b/cy)	PM10 (lb/cy)	PM (l\b/cy)	PM10 (lb/cy)
Aggregate Delivery to ground storage	0.0064	0.0031	0.0064	0.0031
Sand Delivery to ground storage	0.0015	0.0007	0.0015	0.007
Aggregate Transfer to conveyor	0.0064	0.0031	0.0064	0.0031
Sand Transfer to Conveyor	0.0015	0.0007	0.0015	0.0007
Aggregate Transfer to Elevated Storage	0.0064	0.0031	0.0064	0.0031
Sand Transfer to Elevated Storage	0.0015	0.0007	0.0015	0.0007
Cement Delivery to Silo	0.0002	0.0001	0.0002	0.0001
Cement Supplement Delivery to Silo	0.0003	0.0002	0.0003	0.0002
Weigh Hopper Loading	0.0079	0.0038	0.0079	0.0038

California Valley Solar Ranch Traffic Information- Truck Trips and Car/Bus Trips

Truck Trips

Material Traffic Trips by Type

Type	Assumptions		Source Used	Estimate	Trip Length Categories	Estimate Trips/Day*	Trip Ends*
Aggr. Base for Visitors/O&M, Substation		(78,940 sf + 44,060) +5%= 129,150 sq ft, avg. 8" depth.	NCE grading calcs	354	Site trip (<5 miles)	0.5	0.9
O&M Facility Building Supplies			ATC 2010	100	Remote	0.1	0.3
Aggregate Road Base		Inlcudes areas N. and S. of SR 58	NCE grading calcs	7,263	Site trip (<5 miles)	9.6	19.2
Backhaul Excess Cut	Excess cut imported	Assumes 5,816 cy imported with 9 cy trucks.	[E & E 03-09-11]	646	Site trip (<5 miles)	0.9	1.7
WATER TRUCK(S)	20000 gal/day	4000 gal/truck	[Jsapp 11-10-09]	3,780	Site trip (<5 miles)	5.0	10.0
Concrete (Local)		Includes sand and aggregate as typical dry mix	ATC 2010	3,861	Local trip (<30 mi.)	5.1	10.2
Concrete (Remote)			ATC 2010	565	Remote	0.7	1.5
PV			ATC 2010	2,929	Remote	3.9	7.7
Tracker Steel		Includes torque tubes and drive struts	ATC 2010	1,603	Remote	2.1	4.2
Transmission Tower structures			ATC 2010	60	Remote	0.1	0.2
Substation, Switching station, includes Equipment			ATC 2010	120	Remote	0.2	0.3
Electrical Bill of Materials (BOM)			ATC 2010	1,631	Remote	2.2	4.3
Piers			ATC 2010	2,017	Remote	2.7	5.3
Utility Poles			ATC 2010	50	Remote	0.1	0.1
Misc. materials & support	Large trucks		ATC 2010	2,622	Remote	3.5	6.9
Total Heavy Truck Trips				**27,602**	Remote	**36.5**	**73.0**
Misc. auto. and med.truck support trips for constr.		Fuel, catering, recycling, other vendors, consultants.	Stephen Adelson	4,647	Remote	6.1	12.3
Total, all material traffic during construction				32,249	All trip lengths	42.7	85.3
					(Heavy Truck trips, rounded up)	37.0	74

*36 month constr. period or 756 days

Material Traffic Trips by Trip Length

Trip Length	Description	Total Trips	Daily Trips		Trip Ends
		Estimate for 250 MW AC	30 month Construction Period	36 month Construction Period	36 month Construction Period
Site trip (<5 miles)	Heavy truck trips crossing N/S on SR 58	12,044	19.1	15.9	31.9
Local trip (<30 miles)	Mostly trips to haul materials from SLO or Kern County material sources	3,861	6.1	5.1	10.2
Remote trip (>30 mi)	Mostly trips from the Ontario, CA SunPower warehouse	11,697	18.6	15.5	30.9
Total Heavy Truck Trips		27,602	43.8	36.5	73.0
Auto., and Med. Truck, Remote Trip (>30 miles highway)		4,647	7.4	6.1	12.3
Total all material traffic during constructionHeavy Truck		**32,249**	**51**	**42.7**	**85.3**

Assumptions

25984

Workers On Site

Scenario	SunPower IDL		Grading Contractor/Const.		
	Non-Bus	Bus	Bus	, high mos.	Average
Scenario 1 (36 mos)	20	85	248	353	214
Scenario 2 (36 mos)	11	73	214	298	211

Assume SP IDL	20	Assume peak bussable workers: (i.e. SP DL + Grading Contr./Const.)	500

Traffic and VMT with NO BUSSES and NO CARPOOL:

SP DL & Grad. Cont.	500

SP DL and Grading Contractor/Construction Employees

Origin	Fraction	Miles	Daily Trips (2 trips/worker-day)	VMT/DAY
SLO	25%	58	250	14500
Paso Robles/Atasc.	25%	62	250	15500
Bakersfield	25%	58	250	14500
"Local Area"	25%	35	250	8750
Subtotals	**100%**		**1000**	**53250**

SP IDL Employees

SP IDL - # employees	20			
SLO	0%	58	0	0
Paso Robles/Atasc.	100%	62	40	2480
Bakersfield	0%	58	0	0
"Local Area"	0%	35	0	0
Subtotals	**100%**		**40**	**2480**

TOTAL EMPLOYEE TRAFFIC, NO BUSSES	**1040** trips/day	**55730** vmt/day	(automobiles)

Traffic and VMT WITH BUSSES

Bus Assumptions:

% who use bus	75%	(Not Counting Bakersfield Origin)
Passengers/bus	35	
Daily Trips/bus	2	(2 assumes bus remains on site.)

SP DL and Grading Contractor/Construction Employees USING BUS

Origin	Fraction	Miles	No. of Bus Trips	VMT	
SLO	25%	58	5	290	
Paso Robles/Atasc.	25%	62	5	310	
Bakersfield	25%	(not on bus, see below)			
"Local Area"	25%	(not on bus, see below)			
Subtotals			**10**	**600**	(busses)

SP DL and Grading Contractor/Construction Employees NOT ON BUS

Origin	Fraction	Miles	Daily Trips (2 trips/worker-day)		VMT	
SLO	25%	58	62.5		3625	
Paso Robles/Atasc.	25%	62	62.5		3875	
Bakersfield	25%	58	250		14500	
"Local Area"	25%	35	250		8750	
Subtotals			**625**		**30750**	(automobiles)

SP IDL Carpool Assumptions

SP IDL - # employees 20

Origin	Fraction	Miles	Daily Trips (2 trips/worker-day)		VMT	
SLO	0%	58	0		0	
Paso Robles/Atasc.	100%	62	20		1240	
Bakersfield	0%	58	0		0	
"Local Area"	0%	35	0		0	
Subtotals			**20**		**1240**	(automobiles)

TOTAL EMPLOYEE TRAFFIC, WITH BUSSES	**655**	**32590**	(combined autos and busses)
	trips/day	vmt/day	
	63%	58%	fraction of employee traffic with no busses.

ANNUAL OPERATIONAL EMISSIONS FROM MOBILE SOURCES AND FUGITIVE DUST

	Annual Mobile Emissions (tons per year)							
	VOC	**CO**	**NOx**	**SOx**	**PM10**	**PM2.5**	**CO2***	**CH4***
Off Road Onsite Equipment	0.19	0.52	1.99	0.00	0.07	0.07	174.64	0.07
On Road On-Highway Vehicles	0.34	2.94	0.69	0.00	0.04	0.04	358.55	0.03
total Annual tons	**0.5**	**3.5**	**2.7**	**0.0**	**0.1**	**0.1**	**533.2**	**0.1**
*** Metric tonnes**								

Annual Operational Fugitive Dust, due to mobile sources

		Avg. Daily Mileage	Emission Factor[a] (lb/VMT)		Uncontrolled Daily Emissions (lb/day)		Controlled Daily Emissions (lb/day)		Annual Mileage	Annual (ton/yr)	
Activity	**Road Type**	**(VMT)**	**PM_{10}**	**$PM_{2.5}$**	**PM_{10}**	**$PM_{2.5}$**	**PM_{10}**	**$PM_{2.5}$**	**(VMT)**	**PM_{10}**	**$PM_{2.5}$**
operations	Paved Roads	2,550	**0.003173**	**0.000226**	**8.091486**	**0.575134**	**8.091486**	**0.575134**	663,000	1.05	0.07
	Unpaved	240	**0.298271**	**0.029827**	**71.584975**	**7.158497**	**42.950985**	**4.295098**	87,600	7.84	0.78
	Subtotal				**79.7**	**7.7**	**51.0**	**4.9**		**8.9**	**0.86**

note: travel on unpaved road based on equipment average daily run time at 15mph

fugitve dust emissions on unpaved roads assume 40% control of emissions by limiting vehicle speed to 15 m.p.h. or less

On-Road Vehicle Exhaust Emission Factors

Equipment Type	Fuel Type	Emission Factor[a] (pounds/VMT)							
		VOC	CO	NOx	SOx	PM10	PM2.5	CO2	CH4
Delivery Trucks	Diesel	0.00258958	0.01843765	0.02062	0.0000270	0.0007512	0.0006243	2.732	0.0001258
Gasoline Passenger Vehicles	Gasoline	0.00091399	0.00826276	0.00091814	0.00001077	0.00008698	0.00005478	1.09568235	0.00008146

Notes:

a. Emission factors for gasoline worker vehicles from SCAQMD file "onroadEF07_26.xls".

Annual Vehicle Operations - On Road

Vehicle Type	Fuel	Number	Average VMT Per day	Total VMT per day	Days per year	Total VMT per year
Delivery Trucks	Diesel	1	150	150	260	39,000
Worker Commute	Gasoline	16	150	2400	260	624,000
					TOTAL	663,000

Equipment	VMT/yr	(lb/yr) VOC	(lb/yr) CO	(lb/yr) NOX	(lb/yr) SOX	(lb/yr) PM10	(lb/yr) PM2.5	(lb/yr) CO2	(lb/yr) CH4
Delivery trucks	39,000	100.99	719.07	804.18	1.05	29.30	24.35	106,548.00	4.91
Worker Commute	624,000	570.33	5,155.96	572.92	6.72	54.27	54.27	683,705.79	50.83
	TOTAL LBS/YEAR	**671.32**	**5,875.03**	**1,377.10**	**7.78**	**83.57**	**79**	**790,253.79**	**55.74**
	lb/day	**2.58**	**22.60**	**5.30**	**0.03**	**0.32**	**0.30**		
		(ton/yr)	**(ton/yr)**	**(ton/yr)**	**(ton/yr)**	**(ton/yr)**	**(ton/yr)**	**(mt/yr)**	**(mt/yr)**
	Delivery trucks	**0.05**	**0.36**	**0.40**	**0.00**	**0.01**	**0.01**	**48.34**	**0.00**
	Worker Commute	**0.29**	**2.58**	**0.29**	**0.00**	**0.03**	**0.03**	**310.21**	**0.02**
	total	**0.34**	**2.94**	**0.69**	**0.00**	**0.04**	**0.04**	**358.55**	**0.03**

Off-Road Equipment Exhaust Emission Factors

		(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Equipment	**MaxHP**	**VOC**	**CO**	**NOX**	**SOX**	**PM**	**CO2**	**CH4**
Gators (other equip)	**25**	0.0162	0.0545	0.1039	0.0002	0.0053	13.2	0.0015
Generator (propane)	**180**	0.0590	0.1590	2.0400	0.0003	0.0050	55.0	0.6250
Off-Highway Trucks	**250**	0.1639	0.4301	1.6150	0.0019	0.0574	166.5	0.0148

Annual Operations - OffRoad Equipment

Vehicle Operation - OffRoad					(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)
Equipment	**MaxHP**	**hr per day**	**days per year**	**total hrs.**	**VOC**	**CO**	**NOX**	**SOX**	**PM**	**CO2**	**CH4**
Off-Highway Trucks	250	8	260	2080	340.99	894.64	3,359.10	3.90	119.48	346,414.44	30.77
Generator (propane)	180	1	200	200	11.80	31.80	408.00	0.06	1.00	11,000.00	125.00
Gators (other equip)	25	8	260	2080	33.77	113.44	216.14	0.35	11.12	27,491.97	3.05
				total lbs/yr	386.55	1,039.88	3,983.24	4.31	131.60	384,906.41	158.81
				lb/day	1.49	4.00	15.32	0.02	0.51		
					(ton/yr)	**(ton/yr)**	**(ton/yr)**	**(ton/yr)**	**(ton/yr)**	**(mt/yr)**	**(mt/yr)**
					VOC	**CO**	**NOX**	**SOX**	**PM**	**CO2**	**CH4**
				Off-Highway Trucks	0.17	0.45	1.68	0.00	0.06	157.18	0.01
				Generator (propane)	0.01	0.02	0.20	0.00	0.00	4.99	0.06
				Gators (other equip)	0.02	0.06	0.11	0.00	0.01	12.47	0.00
				TOTAL	**0.19**	**0.52**	**1.99**	**0.00**	**0.07**	**174.64**	**0.07**

Surface Mine Worker and Truck Traffic

Emission Factors

		(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Equipment	**MaxHP**	**VOC**	**CO**	**NOX**	**SOX**	**PM**	**CO2**	**CH4**
Off-Highway Trucks	**250**	0.1639	0.4301	1.6150	0.0019	0.0574	166.5	0.0148

		Emission Factor[a] (pounds/VMT)						
Equipment Type	**Fuel Type**	**VOC**	**CO**	**NOx**	**SOx**	**PM10**	**CO2**	**CH4**
Gasoline Passenger Vehicles	Gasoline	0.00091399	0.00826276	0.00091814	0.00001077	0.00008698	1.09568235	0.00008146

Annual Operations - Surface Mine Worker and Truck Traffic

Vehicle Operation - OffRoad					(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)	(lb/yr)
Equipment	**VMT per day**	**hr per day**	**days per year**	**total hrs.**	**VOC**	**CO**	**NOX**	**SOX**	**PM**	**CO2**	**CH4**
Off-Highway Trucks		16	260	4160	681.98	1,789.29	6,718.19	7.80	238.97	692,828.88	61.53
Worker Commute	300		260		71.29	644.50	71.61	0.84	6.78	85,463.22	6.35
				total lbs/yr	753.27	2,433.78	6,789.81	8.64	245.75	778,292.11	67.89
				lb/day	2.90	9.36	26.11	0.03	0.95		
					(ton/yr)	**(ton/yr)**	**(ton/yr)**	**(ton/yr)**	**(ton/yr)**	**(mt/yr)**	**(mt/yr)**
					VOC	**CO**	**NOX**	**SOX**	**PM**	**CO2**	**CH4**
				Off-Highway Trucks	0.34	0.89	3.36	0.00	0.12	314.35	0.03
				Worker Commute	0.04	0.32	0.04	0.00	0.00	38.78	0.00
				TOTAL	**0.38**	**1.22**	**3.39**	**0.00**	**0.12**	**353.13**	**0.03**

SUMMARY OF SURFACE MINE SITE EMISSIONS, during construction

	Criteria PollutantsTotal Emissions (tons)						GHG Total Emissions (metric tons)		
activity	VOC	CO	NO_x	SO_2	PM10	PM2.5	CO_2	CH_4	CO_2e
Fug Dust (tons, construction)					25.97	4.16			
Equipment (tons/yr)	0.28	1.06	2.16	0.002146	0.13	0.13	180	0.02	
Equipment (tons, construction)	0.84	3.17	6.49	0.01	0.38	0.38	538.54	0.07	
total construction phase (tons)	0.84	3.17	6.49	0.01	26.35	4.53	538.54	0.07	540

Surface Mine Excavation Emissions (Phase 1)
California Valley Solar Ranch

Construction Activity	Daily Operating Hours (hrs)	Duration of Activity (months)	Emission Factor[a] (tons/year)		Construction Emissions (tons)		Daily Emissions (lbs/day)	
			PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
Surface Mining	12	36	7.4	1.0	22.3	3.1	56.2	7.9

Notes:

a. See emission factor derivation table below.

b. Total solar array area for Phase II: 140 acres (Per POD description). Total duration of grading: 25 days.

Emission Factor Derivation Table

Parameter	Units	TSP [(1)]	PM_{10} [(2)]	$PM_{2.5}$ [(3)]
Uncontrolled Emission Factor[1]	lb/hr	6.2	4.7	0.7

Notes:

1. Emission factors bulldozing overburden from AP-42 Section 11.9, Table 11.9-1, assuming a average silt content of 6.9 %, moisture content of 7.9%.
The proposed mine would yield approximately 35,000 to 80,000 cubic yards/year (100,000 tons/year) of siltstone and sandstone
Conservatively assume 80,000 cubic yards/year.

2. PM_{10} emission factor calculated by multiplying TSP emission factor by 0.75 (AP-42 Section 11.9, Table 11.9-1)

3. $PM_{2.5}$ emission factor calculated by multiplying TSP emission factor by 0.105 (AP-42 Section 11.9, Table 11.9-1)

Surface Mine Emissions for Diesel Non-Road Equipment

California Valley Solar Ranch

Construction Phase	Equipment Type	Equipment Engine Size (hp) [a]	Fuel Type	Annual Use (hr/yr)	Criteria Pollutants (ton/yr)					GHG (metric tons/yr)		
					VOC	CO	NO_x	SO_2	PM	CO_2	CH_4	CO_2e
	Crawler Tractors/Dozer	100-175	Diesel	1,056	0.098	0.338	0.731	0.0007	0.045	54.6	0.008	54.8
	Scrapers	175-300	Diesel	528	0.085	0.328	0.768	0.0007	0.033	62.9	0.007	63.0
	Tractors/Loaders/Backhoes	100-175	Diesel	1,584	0.081	0.311	0.534	0.0006	0.041	48.0	0.007	48.1
	Water Truck	175	Diesel	264	0.02	0.08	0.13	0.0002	0.01	14.06	0.001	14.1
	TOTAL				**0.279**	**1.055**	**2.165**	**0.002**	**0.127**	**179.5**	**0.023**	**180.0**

Notes:

(a) Composite emission factors recommended by the South Coast Air Management District were used.

Surface Mine Off-Road Vehicle Usage (Phase I)

California Valley Solar Ranch

Phase I

Vehicle Type	Construction Phase	Vehicle Description	Vehicle Class	Total Working Hours	Total Working Days	Working hours per day	Estimated speed (mph)	Total Daily VMT All Units (VMT/day)			Total Overall VMT of All Units (VMT)		
								Unpaved Roads	Paved Roads	TOTAL	Unpaved Roads	Paved Roads	TOTAL
Heavy Duty Diesel Truck		Bulldozer		1056	264	4.0	15	12.0	0	12	3,168	0	3,168
		Front End Loader		1584	264	6.0	15	18.0	0	18	4,752	0	4,752
		Scraper		528	264	2.0	15	6.0	0	6	1,584	0	1,584
		Water Truck	HDDV6	264	264	1.0	15	15.0	0	15	3,960	0	3,960
	Subtotal	-		-	-	-	-	**51**	**0**	**51**	**13,464**	**0**	**13,464**

Surface Mine Processing Emissions
California Valley Solar Ranch

Construction Activity	Daily Operating Hours (hrs)	Duration of Activity (months)	Uncontrolled Emission Rate (tons/year)		Controlled Emission Rate (tons/year)		Construction Emissions (tons)		Daily Emissions (lbs/day)	
			PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$
Bulldozer	4	36	0.25	0.35	0.05	0.07	0.15	0.21	1.9	2.6
Scraper	2	36	5.5	0.86	1.09	0.17	3.27	0.51	41	6.5
Front End Loader	6	36	0.38	0.519	0.08	0.10	0.23	0.31	2.8	3.9
Water Truck	1	36	0.10	0.010	0.02	0.00	0.06	0.01	0.74	0.07
							3.71	1.04	46.80	13.12

Notes:
a. See emission factor derivation table below.
b. Total solar array area for Phase II: 140 acres (Per POD description). Total duration of grading: 25 days.

Emission Factor Derivation Table

Parameter Uncontrolled Emission Factor	Units	TSP	PM_{10}	$PM_{2.5}$
Bulldozer	lb/hr	6.2	0.47	0.66
Scraper	lb/VMT	34.9	6.9	1.1
Front End Loader	lb/hr	6.2	0.47	0.66
Water Truck	lb/VMT	0.4	0.05	0.005

Notes:
1. Emission factors from AP-42 Section 11.9, Table 11.9-1 for overburden, front end loading assumed to have the same emisisons as bulldozing.
2. Assuming a geometric mean average silt content of 6.9%, and moisture content of 7.9%, with the exceptionof the water truck, which uses a mean silt content of 13.5% and a mean moisture content of 6.5%.
3. The proposed mine would yield approximately 35,000 to 80,000 cubic yards/year (100,000 tons/year) of siltstone and sandstone Conservatively assume 80,000 cubic yards/year.
4. Dragline Emission Factor for $\leq$ 30 ug/m^3 used assuming a geometric mean drop height ofm 28.1 feet,and a geometric meanmoisture content of 7.9%.
5. PM_{10} emission factor calculated by multiplying TSP emission factor by 0.75 (AP-42 Section 11.9, Table 11.9-1)
6. $PM_{2.5}$ emission factor calculated by multiplying TSP emission factor by 0.105 (AP-42 Section 11.9, Table 11.9-1)
7. Assume mine life of 30 years.
8. Assume mean vehicle speed of 15 mph.
9. Emission factor for water truck from AP-42 Section 13.2.2.
10. Project emissions (tons) assumes 80% dust control from constant watering

Non-Road Diesel Equipment Exhaust Emission Factors
California Valley Solar Ranch

Equipment	Maximum Operating Range (hp)	Composite Emission Factor (lb/hr)						
		VOC	CO	NO_x	SO_2	PM	CO_2	CH_4
Vibratory Post Driver / Drill Rig	Composite	0.1052	0.5146	1.1331	0.0017	0.0498	165	0.0095
Crawler Tractors/Dozer	Composite	0.1861	0.6409	1.3854	0.0013	0.0854	114	0.0168
Excavators	Composite	0.1483	0.5581	1.1502	0.0013	0.0638	120	0.0134
Forklifts	Composite	0.0686	0.2319	0.5161	0.0006	0.0281	54.4	0.0062
Generator Set	15	0.0172	0.0726	0.1154	0.0002	0.0069	10.2	0.0016
Graders	Composite	0.1723	0.6314	1.4338	0.0015	0.0753	133	0.0155
Rollers	Composite	0.1176	0.4212	0.7749	0.0008	0.0547	67.1	0.0106
Scrapers	Composite	0.3202	1.2424	2.9078	0.0027	0.1256	262	0.0289
Tractors/Loaders/Backhoes	Composite	0.1021	0.3930	0.6747	0.0008	0.0521	66.8	0.0092
Plate Compactor	Composite	0.0050	0.0263	0.0317	0.0001	0.0015	4.3	0.0005

Source: South Coast Air Quality Management District (SCAQMD). 2008. Off-road Mobile Source Emission Factors (Scenario Years 2007 – 2025).

Notes:

Composite emission factors have horsepower rating and load factors already built into the emission factors. SCAQMD recommends using composite factors if the CEQA practitioner does not know these two parameters when calculating off-road mobile source emissions

D Biological Opinion and Section 7 Consultation

D1 – Listing of Biological Surveys and Reports

D2 – Letter Initiating USFWS Consultation

D3 – Biological Opinion on the Proposed California Valley Solar Ranch

D4 – US Army Corps of Engineers: Letter of Determination, No Waters of U.S. on California Valley Ranch Solar Site

D5 – US Army Corps of Engineers: Letter of Determination, No Waters of the U.S. on Twisselman Mine Site

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D1 Listing of Biological Surveys and Reports

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List of Biological Resources and Survey Reports

The following reports have been prepared for the proposed California Valley Solar Ranch and Morro Bay-Midway Reconductoring projects.

California Valley Solar Ranch Biological Resources Surveys and Reports

- Revised Biological Resources Assessment Report for the California Valley Solar Ranch Project, San Luis Obispo County, California (Parts 1, 2, 3, 4, 5, and 6). Prepared by URS and H. T. Harvey & Associates, December 2009.

  Part 1 available at
  http://www.sloplanning.org/EIRs/CaliforniaValleySolarRanch/feir/apps/Ap08C_pt1_HTH_Bio_Assessment.pdf

  Part 2 available at
  http://www.sloplanning.org/EIRs/CaliforniaValleySolarRanch/feir/apps/Ap08C_pt2_HTH_Bio_Assessment.pdf

  Part 3 available at
  http://www.sloplanning.org/EIRs/CaliforniaValleySolarRanch/feir/apps/Ap08C_pt3_HTH_Bio_Assessment.pdf

  Part 4 available at
  http://www.sloplanning.org/EIRs/CaliforniaValleySolarRanch/feir/apps/Ap08C_pt4_HTH_Bio_Assessment.pdf

  Part 5 available at
  http://www.sloplanning.org/EIRs/CaliforniaValleySolarRanch/feir/apps/Ap08C_pt5_HTH_Bio_Assessment.pdf

  Part 6 available at
  http://www.sloplanning.org/EIRs/CaliforniaValleySolarRanch/feir/apps/Ap08C_pt6_HTH_Bio_Assessment.pdf

- Christmas Bird Count Data for the Carrizo Plain Count Circle in Count Year 2009. Obtained from Audubon Science. 2010. Available at
  http://www.sloplanning.org/EIRs/CaliforniaValleySolarRanch/feir/apps/Ap08D_Christmas_Bird_Count.pdf

- Habitat Connectivity Planning for Selected Focal Species in the Carrizo Plain. Prepared by SC Wildlands. April 2010. Available at
  http://www.sloplanning.org/EIRs/CaliforniaValleySolarRanch/feir/apps/Ap08E_Widlife_Corridor_Study.pdf

- Impacts to Grasslands from Solar Panels Prepared by H. T. Harvey & Associates, July 2009. Available at
  http://www.sloplanning.org/EIRs/CaliforniaValleySolarRanch/feir/apps/Ap08F_Shade_Memo.pdf

- Compensatory Mitigation Program. Prepared by H. T. Harvey & Associates. 2010. Available at
  http://www.sloplanning.org/EIRs/CaliforniaValleySolarRanch/feir/apps/Ap08I_Compensatory_Mitigation_Pgm.pdf

- Draft Giant Kangaroo Rat Conservation Strategy Memo. Prepared by H. T. Harvey & Associates. November 2010. Available at http://www.sloplanning.org/EIRs/CaliforniaValleySolarRanch/feir/apps/Ap08J_GKR_Consvn_Strategy_Draft.pdf

- Golden Eagle Nest Surveys, Topaz Solar Farm and California Valley Solar Ranch San Luis Obispo County. April 30 - May 10, 2010 and May 20 – 23, 2010 Final Report. Prepared by B. Latta. 2010. Available at http://www.sloplanning.org/EIRs/CaliforniaValleySolarRanch/feir/apps/Ap08G_Golden_Eagle_Nest_Surveys.pdf

- Wet Season Vernal Pool Branchiopod Survey Report. Prepared by H. T. Harvey & Associates. July 2010. Available at http://www.sloplanning.org/EIRs/CaliforniaValleySolarRanch/feir/apps/Ap08K_Branchiopod_Survey.pdf

- Focused Surveys of Giant Kangaroo Rats California Valley Solar Ranch Project Site 2009-2010. Prepared by H. T. Harvey & Associates. October 31, 2010. Available at http://www.sloplanning.org/EIRs/CaliforniaValleySolarRanch/feir/apps/Ap08L_Surveys_of_GKR.pdf

- California Valley Solar Ranch San Joaquin Antelope Squirrel Trapping Report. October 2010. Prepared by H. T. Harvey & Associates. CVSR FEIR Available at http://www.sloplanning.org/EIRs/CaliforniaValleySolarRanch/feir/apps/Ap08M_SJAS_Trapping_Report.pdf

- California Valley Solar Ranch Project Blunt-Nosed Leopard Lizard Protocol-Level Survey. Prepared by H. T. Harvey & Associates. August 30, 2010. Available at http://www.sloplanning.org/EIRs/CaliforniaValleySolarRanch/feir/apps/Ap08N_BNLL_Protocol_Level_Survey.pdf

- California Valley Solar Ranch Special-Status Plant Survey Final Report Prepared by H. T. Harvey & Associates. November 18, 2010. Available at http://www.sloplanning.org/EIRs/CaliforniaValleySolarRanch/feir/apps/Ap08O_Carrizo_Plain_Rare_Plant_Report.pdf

- Biological Assessment for the California Valley Solar Ranch Project, San Luis Obispo County, California Covering the California Jewel-flower, San Joaquin Woollythreads, Kern Primrose Sphinx Moth, Longhorn Fairy Shrimp, Vernal Pool Fairy Shrimp, Blunt-nosed Leopard Lizard, California Condor, Mountain Plover, San Joaquin Kit Fox, and Giant Kangaroo Rat. Prepared by H. T. Harvey & Associates. November 2010. Available at https://lpo.energy.gov/?page_id=1514#cvsr.

Morro Bay-Midway Transmission Line Reconductoring Biological Resource Surveys and Reports

- Biological Resources Report and Addendum for the Carrizo to Midway Reconductoring Project. Prepared by ICF International. May 2010. Available at http://www.sloplanning.org/EIRs/CaliforniaValleySolarRanch/feir/apps/Ap04E.1_Biological_Resources_Report.pdf

- Addendum 2 to the Biological Resources Report for the Carrizo to Midway Project, Kern and San Luis Obispo Counties, California. Prepared by ICF International. December 2010. Available at http://www.sloplanning.org/EIRs/CaliforniaValleySolarRanch/feir/apps/Ap04E.2_Bio_Addendum_2.pdf

- Botanical Survey Summary Report. Result of Botanical Surveys for the PG&E Company Carrizo to Midway Reconductoring Project, Kern and San Luis Obispo Counties, California. Prepared by ICF International. December 2010. Available at http://www.sloplanning.org/EIRs/CaliforniaValleySolarRanch/feir/apps/Ap04E.3_Botanical_Survey_Summary_Report.pdf

- Biological Assessment for the Carrizo-Midway 230 kV Reconductoring Project and Sun Power Switching Station. Prepared by ICF International. November 2010. Available at https://lpo.energy.gov/?page_id=1514#cvsr.

- Biological Assessment Addendum SunPower/PG&E Carrizo-Midway 230 kV Reconductoring Project for California Tiger Salamander, San Luis Obispo and Kern County, California. Prepared by ICF International. May 2011. Available at https://lpo.energy.gov/?page_id=1514#cvsr.

D2 Letter Initiating USFWS Consultation

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Department of Energy
Washington, DC 20585

DEC 1 2010

Ken Sanchez
Assistant Field Supervisor
Endangered Species Program
U.S. Fish & Wildlife Service
Sacramento Fish & Wildlife Office
2800 Cottage Way, Suite W-2605
Sacramento, California 95825

Subject: **Request for Formal Consultation Under Section 7 of the Endangered Species Act for the California Valley Solar Ranch**

Dear Mr. Sanchez:

The Department of Energy (DOE) is evaluating an application for and may issue a federal loan guarantee to SunPower Corporation (Applicant) to support construction and start-up of the California Valley Solar Ranch (CVSR) project, a 250 megawatt solar photo-voltaic electricity generation facility on approximately 4,747 acres in eastern San Luis Obispo County and Kern County, California (the Project). DOE requests initiation of formal consultation under Section 7(a)(2) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 et seq.) for construction and operation of the Applicant's proposed Project.

For the CVSR site in San Luis Obispo County, California, DOE has determined that the Project may affect, and is likely to adversely affect the federally listed endangered San Joaquin kit fox (*Vulpes macrotis mutica*), giant kangaroo rat (*Dipodomys ingens*), California jewel-flower (*Caulanthus californicus*), and San Joaquin woollythreads (*Lembertia congdonii*), as well as the federally listed threatened Kern primrose sphinx moth (*Euproserpinus euterpe*). The Project may affect, but is not likely to adversely affect, the federally listed endangered California condor (*Gymnogyps californianus*), blunt-nosed leopard lizard (*Gambelia sila*) or longhorn fairy shrimp (*Branchinecta sandiegonensis*), as well as the federally listed threatened vernal pool fairy shrimp (*Branchinecta lynchi*). In addition, the Project may affect, but is not likely to adversely affect: the mountain plover (*Charadrius montanus)*, a proposed candidate for federal listing; or the San Joaquin antelope squirrel (*Ammospermophilus nelsoni*), a state listed threatened species.

For the reconductoring portion of the Project along the existing PG&E Morrow Bay-Midway 230 kilovolt (kV) transmission line, DOE has determined that the Project may affect, and is likely to adversely affect the federally listed endangered San Joaquin kit fox (*Vulpes macrotis mutica*), blunt-nosed leopard lizard (*Gambelia silus*), giant kangaroo rat (*Dipodomys ingens*), and Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*). The reconductoring portion of the

Project may affect, but is not likely to adversely affect, the federally listed endangered California condor (*Gymnogyps californianus*) or the federally listed threatened valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*).

The Energy Policy Act of 2005 established a federal loan guarantee program for eligible energy projects that employ innovative technologies. The two principal goals of the loan guarantee program are to encourage commercial use in the U.S. of new or significantly improved energy-related technologies and to achieve substantial environmental benefits. On July 29, 2009, DOE issued a solicitation inviting interested parties to submit proposals for projects that employ energy efficiency, renewable energy, and advanced transmission and distribution technologies that constitute new or significantly improved technologies. The Applicant submitted an application to DOE for a loan guarantee to finance the construction and startup of the CVSR project on February 18, 2010. The proposed Project would consist of 10 solar panel array configurations, DC-AC inverters, voltage collection lines, a substation, a transmission line, a switchyard, an operations and maintenance building, a visitor center, two outdoor viewing summits, a water tank, and primary and fire access roads. The Project would also require the reconductoring of 35 miles of the existing PG&E 230 kV Morrow Bay-Midway electricity transmission line between the proposed CVSR site and Midway, California in San Luis Obispo and Kern Counties, California.

The enclosed Biological Assessments (BAs) were prepared for species that may be affected by construction and operation of the Project. There are three BA documents included with this request: 1) the BA of the CVSR site, dated November 9, 2010; 2) the BA completed for the PG&E Morrow Bay-Midway reconductoring portion of the Project, dated November 2010; and 3) a document with edits to the CVSR site BA's section on Compensatory Conservation Measures for further discussion, dated November 24, 2010. The BAs are based upon the best scientific and commercial data available and are intended to satisfy initiation package requirements pursuant to Section 7 regulations specified in 50 C.F.R. § 402.14(c) as described below:

(1) Detailed descriptions of the construction and operation of the proposed Project;
(2) Detailed descriptions of the land areas that may be affected by the construction and operation of the proposed Project;
(3) Detailed descriptions of the listed species that the proposed Project may affect;
(4) Detailed descriptions of the manner in which the Project may affect the listed species; and
(5) Relevant scientific reports and other relevant available information cited in the BAs.

The BAs incorporate measures that the Applicant would follow to avoid and minimize impacts to individuals and habitats of the affected species during construction and operation as well as measures to compensate for impacts to listed species and their habitats. After implementation of these measures, the Project would not have a substantial residual impact on populations of any of these species. Once the Project becomes operational, only 1.3 percent of the CVSR site would be permanently disturbed. Moreover, the Project layout allows 2,453 acres within the CVSR site, or 52 percent of the total acreage, to be set aside for environmental restoration and preservation, which supplements broader local offsite conservation efforts. The CVSR site is

designed in a manner that both minimizes and avoids, to the extent feasible, impacts on species protected under the ESA. Where feasible, it is designed to benefit listed species.

We look forward to receiving a response from you when you have determined that the information in the BA is complete and you are commencing formal consultation and preparation of the Biological Opinion (BO) per 50 C.F.R. § 402.14(e). Additionally, we welcome continued consultation and exchange of information during preparation of the BO and request the opportunity, if feasible, to review interim drafts prior to its completion. Please contact me by telephone at 202-287-5656 or by email at lynn.alexander@hq.doe.gov if you have any questions or require additional information.

Sincerely,

Lynn Alexander
Environmental Protection Specialist
Loan Programs Office

cc: Renee Robin, SunPower Corporation

Enclosures:
- Biological Assessment, California Valley Solar Ranch, November 9, 2010
- Preliminary Draft California Valley Solar Ranch BA Insert Redline, November 24, 2010
- Biological Assessment, Morrow Bay-Midway Reconductoring Project, November 2010

D3 Biological Opinion on the Proposed California Valley Solar Ranch

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

24 June 2011

In Reply Refer To:
81420-2011-F-0511

Lynn Alexander
Environmental Protection Specialist
Loan Programs Office
Department of Energy
Washington, DC 20585

Subject: Biological Opinion on the Proposed California Valley Solar Ranch, San Luis Obispo and Kern Counties, California

Dear Ms. Alexander:

This letter is in response to your letter dated December 1, 2010, requesting formal consultation with the U.S. Fish and Wildlife Service (Service) on the Department of Energy's (DOE) Federal Loan Guarantee for the construction and start-up of the California Valley Solar Ranch (CVSR) and the associated infrastructure. This response is provided in accordance with the Endangered Species Act of 1973, as amended (16 USC 1531 *et seq.*) (Act).

The Proposed Action is a 250-megawatt (MW) solar photovoltaic (PV) energy plant, on approximately 4,781 acres in eastern San Luis Obispo County and western Kern County, California. The Proposed Action includes: 1) construction and operation of the solar generation facility where the solar array complexes and facilities will be located; 2) construction and operation of a generation tie-line to convey electricity generated by the solar generation facility to the Caliente switching station; 3) construction and operation of the switching station, where transfer of electricity from the generation tie-line to an existing transmission line will occur; 4) reconductoring of the existing Morro Bay-Midway transmission line to allow it to handle increased electrical capacity; and 5) expansion and operation of the existing Twisselman Aggregate Mine from which aggregate material will be obtained for the CVSR Project among other regional ongoing and future projects. The 4,781 acre project area includes: 4,691 acres within the Solar Generation Facility and tie-in line, 14 acres within the PG&E Caliente Switching Station, 23 acres within the Twisselman Aggregate Mine, and 53 acres within the reconductoring portion of the transmission line. All of these activities are part of a single federal action and are collectively referred to as the Proposed Action.

This biological opinion is based on information provided in the December 2010 Biological Assessment for CVSR (H. T. Harvey & Associates 2010), the December 2010 Biological

Assessment for the Carrizo-Midway 230 kV Reconductoring Project (ICF International 2010), meetings and site visits conducted with the project proponents, May 2011 amendments to the biological assessment (H. T. Harvey & Associates 2011a, ICF International 2011), and additional information submitted by DOE and their consultants. A complete administrative record of this consultation is on file at the Sacramento Fish and Wildlife Office.

DOE has made the determination that the Proposed Action may affect and is likely to adversely affect the federally-listed endangered:

San Joaquin kit fox (*Vulpes macrotis mutica*);
giant kangaroo rat (*Dipodomys ingens*);
Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*);
blunt-nosed leopard lizard (*Gambelia sila*);
California jewelflower (*Caulanthus californicus*); and
San Joaquin wooly-threads (*Monolopia congdonii*).

and the federally-listed threatened:

Kern primrose sphinx moth (*Euproserpinus euterpe*).

These species do not have designated critical habitat.

DOE did not request consultation on the endangered Kern mallow (*Eremalche kernensis*), however, the December 2010, biological assessment for the PG&E reconductoring submitted with the DOE initiation letter, did determine that the Proposed Action would likely adversely affect this species. Kern mallow is known to occur in the Proposed Action area. Therefore, we will address the adverse effects to the Kern mallow in this biological opinion. No critical habitat for this species occurs in the Proposed Action area, therefore none will be affected.

DOE did not request consultation on California tiger salamander (*Ambystoma californiense*) or on designated critical habitat for vernal pool fairy shrimp or longhorn fairy shrimp which occurs in the Proposed Action area. The Service has determined that the Proposed Action may affect, and is likely to adversely affect, California tiger salamander and vernal pool fairy shrimp and longhorn fairy shrimp designated critical habitat, and these effects will be addressed in this biological opinion. There is no critical habitat for the California tiger salamander in the project area.

Protocol-level surveys for the California jewelflower, San Joaquin wooly-threads, and *Camissonia* spp. (the Kern primrose sphinx moth hostplant) were conducted over most of the Proposed Action area in 2009 (H. T. Harvey & Associates 2010), 2010 (H. T. Harvey & Associates 2010b), and were ongoing in 2011. Neither the California jewelflower nor the San Joaquin wooly-threads were detected during any of these protocol surveys. *Camissonia* spp. were detected within the action area, and therefore focused surveys for Kern primrose sphinx moth based on the methods in Jump et al. (2006) were conducted in 2011 (H.T. Harvey & Associates 2011b). The Kern primrose sphinx moth was not detected during any of these surveys. Subsequent to receipt of your initiation letter and biological assessment, additional information and measures to minimize effects to these species were developed during the

consultation period. The measures include having a Service approved biologist/botanist survey the project site prior to construction and if any of these three species were detected the project would avoid impacts. Based on previous surveys that have not detected these species and the proposal to survey and avoid impacts, we have determined the Proposed Action is not likely to adversely affect the California jewel-flower, San Joaquin wooly-threads, and the Kern primrose sphinx moth. No critical habitat for these three species occurs within the Proposed Action area, therefore none will be affected.

DOE has made the determination the Proposed Action is not likely to adversely affect the federally-listed endangered:

California condor (*Gymnogyps californianus*);

The federally-listed threatened:

valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*);
longhorn fairy shrimp (*Branchinecta longiantenna*); and
vernal pool fairy shrimp (*Branchinecta lynchi*)

and the federal candidate:

mountain plover (*Charadrius montanus*).

Valley longhorn beetle and mountain plover do or are likely to occur in the Proposed Action area. However, based on surveys of the Proposed Action area, documentation of known locations, measures to minimize and avoid effects during construction and operation activities, and the proposal to have a Service approved biologist/botanist on site during construction to assure avoidance of known or suspected occurrences of these species, we concur with your determination that the Proposed Action is not likely to adversely affect the valley elderberry longhorn beetle or the mountain plover. No critical habitat for these species occurs on the Proposed Action area, therefore none will be impacted.

Service approved surveys of all wetland habitats within the action area were conducted for vernal pool fairy shrimp and longhorn fairy shrimp. The construction and operation activities associated with the Proposed Action will not come within 250 feet of any currently occupied or unoccupied vernal pool or longhorn fairy shrimp habitat. Based on surveys of the Proposed Action area, documentation of known locations, measures to minimize and avoid effects during construction and operation activities, and the proposal to have a Service approved biologist/botanist on-site during construction to assure avoidance of known or suspected occurrences of these species, we concur with your determination the vernal pool fairy shrimp and the longhorn fairy shrimp are not likely to be adversely affected by the Proposed Action.

The California condor has not been observed on the Proposed Action area; however, the condor does range widely and is known to occur in the broader region of the mountains surrounding the Carrizo Plain, San Joaquin Valley, and the region. Based on the nature of the solar facility (low lying panels on the valley floor), and the habitat use of the condor (mountainous areas surrounding the valleys) we do not expect the California condor to be affected by this

construction and operation. The reconductoring will mostly occur on existing towers, and based on no known condor interaction with these structures we do not expect this to result in an effect to the California condor. Two new towers will be constructed near the Caliente Switching Station to connect the station to the existing line. The transmission facilities will be designed to be raptor-safe in accordance with the *Suggested Practices for Raptor Protection on Power Lines:*

The State of the Art in 2006 (APLIC 2006). If they were to roost communally, there is some potential that multiple condors would bridge the gap between two energized conductors, but individual wrist-to-wrist lengths for condors are not long enough to simultaneously contact two energized phase conductors of the proposed Gen-Tie Line or the reconductored lines. Moreover, the majority of raptor electrocutions are caused by lines that are energized at voltage levels between 1 kV and 69 kV, and "the likelihood of electrocutions occurring at voltages greater than 69 kV is extremely low" (APLIC 2006). The potential for a collision is low, given the rarity of the species in the area, the ubiquitous nature of towers in the species range, and the rare incidence of collisions known for this species. The project proponent is managing and removing all trash, including micro trash, and carcasses which could attract a condor. Therefore, we concur with your determination the California condor is not likely to be adversely affected by the Proposed Action. No critical habitat for the California condor occurs in the Proposed Action area; therefore, none will be affected.

Your biological assessment also discusses effects to the bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*). The Service has a legal mandate and trust responsibility to maintain healthy, migratory bird populations for the benefit of the American public pursuant to the Migratory Bird Treaty Act (MBTA)) (16 U.S.C. 703 et seq.), the Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. 668-668d). Information from your biological assessment indicates that golden and bald eagles do or may occur in the vicinity of the proposed action. We invite you and Sunpower/California Valley Solar Ranch to contact the Regional Migratory Bird Program to discuss the development of an Avian Bat Protection Plan (ABPP) incorporating avoidance, minimization and mitigation measures into the project. An ABPP would be viewed as good faith effort to comply with MBTA and BGEPA, although it would not abrogate liability inherent to the regulations. A well designed ABPP could ensure the Project's effects on eagles are consistent with the Service's goal of stable or increasing populations and would be consistent with any request for a golden eagle programmatic take permit, when they become available. Please contact Ms. Heather Beeler, Eagle Permit Specialist, at heather_beeler@fws.gov or 916/414-6651 to discuss this process.

Summary

This biological opinion will assess the adverse effects of the Proposed Action on the San Joaquin kit fox, giant kangaroo rat, Tipton kangaroo rat, the blunt-nosed leopard lizard, Kern mallow, California tiger salamander, and designated critical habitat for vernal pool fairy shrimp and longhorn fairy shrimp. We concur with your determination or have determined that the Proposed Action is not likely to adversely affect the California condor, valley elderberry longhorn beetle, mountain plover, vernal pool fairy shrimp, longhorn fairy shrimp, California jewel-flower, San Joaquin wooly-threads, and Kern primrose sphinx moth.

Consultation History

April 1, 2009:	Joint briefing with the Service by High Plains Ranch II, LLC (HPR II)/OptiSolar/Ausra.
April 22, 2009:	Joint meeting with HPR II/OptiSolar/Ausra, the Service and California Department of Fish and Game (CDFG).
May 21, 2009:	Letter to the Service and CDFG from HPR II and OptiSolar biologists describing and seeking comments on San Joaquin kit fox survey protocols as a follow-up to the April 22 meeting.
January 27, 2010:	The Service provided a list of threatened and endangered species that could occur in the California Valley Solar Ranch (CVSR) Project area.
March 24, 2010:	Field review of the CVSR Project site with Service, HPR II, and H. T. Harvey & Associates representatives.
April 8, 2010:	Meeting with HPR II, H. T. Harvey & Associates, Service, and CDFG representatives.
May 4, 2010:	Meeting with HPR II, H. T. Harvey & Associates, Service, U.S. Army Corps of Engineers (USACE), and CDFG representatives.
May 19, 2010:	Meeting with HPR II, H. T. Harvey & Associates, and Bureau of Land Management (BLM) representatives.
June 2, 2010:	Meeting with HPR II, H. T. Harvey & Associates, and Service representatives.
June 21, 2010:	Meeting of representatives from the Service, CDFG, HPR II, First Solar, H. T. Harvey & Associates, Althouse and Meade, BLM, the Endangered Species Recovery Program (ESRP), and The Nature Conservancy (TNC) to discuss a regional conservation strategy for the Carrizo Plain.
July 7, 2010:	Meeting with HPR II, H. T. Harvey & Associates, Service, USACE, and CDFG
August 5, 2010:	Meeting with HPR II, H. T. Harvey & Associates, and Service representatives.
September 15, 2010:	Meeting with HPR II, H. T. Harvey & Associates, and Service representatives.

Late September, 2010: DOE staff indicated they will be the lead Federal agency for preparing a NEPA analysis and completing consultation pursuant to Section 7 of the Act.

September 22, 2010: HPR II provided a draft biological assessment to DOE and the Service requesting formal consultation for potential effects of the CVSR Project on San Joaquin kit fox, giant kangaroo rat, California jewel-flower, and San Joaquin woollythreads, and informal consultation for longhorn fairy shrimp, vernal pool fairy shrimp, Kern primrose sphinx moth, blunt-nosed leopard lizard, California condor, and mountain plover, and critical habitat for longhorn fairy shrimp and vernal pool fairy shrimp under Section 7(a)(2) of the Act.

October 13, 2010: PG&E provided a final biological assessment to the Service and the DOE requesting formal consultation for potential effects of the PG&E Reconductoring on Kern mallow, blunt-nosed leopard lizard, giant kangaroo rat, Tipton kangaroo rat, and San Joaquin kit fox, and informal consultation for valley elderberry longhorn beetle, and California condor under Section 7(a)(2) of the Act.

October 20-21, 2010: Site visit and meeting with representatives of HPR II, H. T. Harvey & Associates, Service, CDFG, DOE, BLM, Aspen Environmental Group, County of San Luis Obispo, San Diego Zoo, San Francisco State University, and University of California Berkeley to discuss on-site conservation, off-site conservation, and relocation of the giant kangaroo rat, with specific focus on the CVSR Project.

November 9, 2010: A final biological assessment was delivered to the DOE and the Service.

November 24, 2010: A conference call was held to reach agreement of the final terms of the biological assessment. All parties agreed the biological assessment was reasonably complete and consultation would be initiated by December 1, 2010.

December 1, 2010: DOE provided the Service with the final biological assessment with a request for formal Section 7 consultation for the Sunpower California Valley Solar Ranch Project and the inter-related PG&E Reconductoring Project and the quarry expansion project.

December 16, 2010: Site visit to the CVSR and surrounding area with representatives of H. T. Harvey & Associates, CDFG, and Service staff biologist new to the project.

December 2 – Present: Conference calls and coordination continued between DOE, the Service, CDFG, HPR II, and H. T. Harvey & Associates, including updates and clarifications to the project description.

BIOLOGICAL OPINION

Description of the Proposed Action

Project Background

The purpose of DOE's Proposed Action is to comply with its statutory mandate to select and fund eligible projects that meet the goals of the Energy Policy Act of 2005 (EPA 2005), as amended by the American Recovery and Reinvestment Act (ARRA) of 2009. The Energy Policy Act of 2005 established a federal loan guarantee program for eligible energy projects with two principal goals to "encourage commercial use in the U.S. of new or significantly improved energy related technologies" and to "achieve substantial environmental benefits."

DOE proposes to provide a loan guarantee to High Plains Ranch II, LLC (HPR II), a wholly owned subsidiary of SunPower Corporation, Systems (SunPower) (applicant) to finance the construction and start-up of the CVSR in eastern San Luis Obispo and western Kern County, California. DOE also proposes to provide a loan guarantee to FirstSolar, Inc. Topaz Solar Farms, LLC, to construct the proposed Topaz Solar Farm project located on a separate site approximately four miles to the west, also in the northern Carrizo Plain. A common feature of both projects is to upgrade and increase the electrical transmission capacity of the existing PG&E Morro Bay-Midway 230 kilovolt (kV) transmission line from the proposed Solar Switching Station at the point of interconnection of the Topaz Solar Farm Project in San Luis Obispo County to the existing Midway Substation in Kern County, California (PG&E Reconductoring Project).

DOE and the Service are conducting a separate Section 7 consultation to address the effects to listed species from the construction and operation of the Topaz Solar Farm Project. DOE's request for consultation for each solar project included the reconductoring portion of the project. We are addressing all of the reconductoring in this (CVSR) biological opinion, except for the Solar Switching Station which is part of the Topaz Solar Farm Project. We will address the Solar Switching Station in our biological opinion for the proposed Topaz Solar Farm Project.

The DOE Loan Guarantee Program typically only funds construction and start-up of each project. The loan guarantee lasts until the loan is repaid which is typically five to 30 years, which means the repayment period may be less than the proposed 30 or more years of project operation. During the loan repayment period, the loan applicant is required to submit certain quarterly and/or annual reports certifying compliance with applicable environmental laws/regulations as well as any project-specific permits or agreements, such as contained in this biological opinion. DOE also would be copied on any communications required of their loan applicants in the Service's biological opinion. DOE would incorporate the Service's reporting requirements contained in this biological opinion into the final Loan Agreement between the DOE and the loan applicant. DOE's authority to ensure compliance with the biological opinion is limited to during the loan repayment period.

The following project description, including the proposed conservation measures, was provided by DOE and is a summarized below with modifications for reasons of clarity and brevity by the Service. A complete description of the Proposed Action can be found in the "Biological

Assessment for the California Valley Solar Ranch Project" (H. T. Harvey & Associates 2010) the "Biological Assessment for the Carrizo-Midway 230 kV Reconductoring Project" (ICF International 2010) and the May addendum to the biological assessment (H.T. Harvey & Associates 2011).

Project Description

For purposes of this biological opinion, the Proposed Action includes: 1) construction and start-up of a 250 MW Solar Generation Facility where the solar array complexes and facilities will be located; 2) construction and operation of a Generation Tie-Line to convey electricity generated by the Solar Generation Facility to the PG&E Caliente Switching Station; 3) construction and operation of the Caliente Switching Station and a new access road, where transfer of electricity from the Generation Tie-Line to an existing transmission line will occur; 3) expansion and operation of the Twisselman Aggregate Mine from which aggregate material will be obtained for the CVSR; 4) reconductoring of 35 miles of an existing PG&E transmission line to allow it to handle increased electrical capacity from the point of interconnection on the proposed Solar Switching Station on the proposed Topaz Solar Farm Project to the existing Midway Substation in Kern County, California; and 5) the preservation, enhancement, and maintenance of on- and off-site conservation lands to support a regional strategy for the conservation of listed species in the Carrizo Plain.

The Solar Generation facility and on-site conservation lands would encompass 4,691 acres in the northern Carrizo Plain in eastern San Luis Obispo County, California and would be situated 56 miles east of the City of San Luis Obispo, 52 miles southeast of the City of Paso Robles, and two miles north of the northern boundary of the Carrizo Plain National Monument (CPNM). Entrance to the project would be from State Route 58. The PG&E Reconductoring would occur along 35 miles of both circuits of the existing PG&E Morro Bay–Midway double-circuit 230 kV transmission line between the point of interconnection of the proposed Topaz Solar Farm Project (to be addressed in a separate biological opinion) in eastern San Luis Obispo County in the Carrizo Plain and the existing Midway Substation in western Kern County. The elevation of the Proposed Action ranges from 80 feet above mean sea level (msl) (at the Midway Substation) to 3,600 feet above msl (in the Temblor Range).

Proposed Construction Schedule
The California Valley Solar Ranch is anticipated to be constructed in three phases; each phase is anticipated to last less than one year. Operations and maintenance of the CVSR are anticipated to occur for 30 years. The PG&E Reconductoring component is expected to last approximately 20 months. According to current plans, construction would begin in 2011 and be substantially complete by 2014. Post reconductoring, operations and maintenance of the lines will be unchanged from what occurs currently.

Components of the Proposed Action
*Solar Generation Facility on the CVS*R - SunPower's T0 Tracker blocks would be clustered in ten photovoltaic arrays spread across the CVSR site. Units are designed with drive motors to track the movement of the sun throughout the day for maximum solar capture. The lower end of the solar panels would be approximately two and half feet off the ground at maximum tilt. Approximately 250 to 1000 DC-AC Inverters would be located within the footprint of the fenced

arrays and housed in enclosures in part to dampen noise. Each array would have ranch-style perimeter fencing that would allow passage for San Joaquin kit fox.

Medium voltage (MV) collection lines would transmit electrical energy at 34.5kV (AC) from the inverter units and transmitted at 34.5kV (AC) to a substation located onsite. These collection lines beginning at the inverters would be located in trenches until output from 10 to 15 Tracker blocks is gathered and transferred at risers to a system of overhead MV collection lines for transmission to the substation. MV collection line designs would be composed of three standard utility pole styles which range in height from 35 to 60 feet tall. The substation houses transformers that step up the voltages from the 34.5 kV medium voltage level to the 230 kV high voltage level prior to being fed into the electrical grid. The substation would have compacted road base all within an approximately 4.8-acre area and encircled by chain-link fence topped with barbed wire. Storm drain pipes will be placed under access roads within the Solar Generation Facility site, under the temporary worker accommodation area, under the Operations and Maintenance area, and along the new road to the PG&E Caliente Switching Station. An arch culvert, approximately 60 foot span, will be placed at the crossing of the Switchyard Access Road at "Wetland B". Other drainages will have "Arizona-style" crossings, consisting of either aggregate based roads constructed at existing grade, or Articulated Concrete Block Matting, also constructed at existing grade, in areas where flow velocities would be erosive to the aggregate base. *Generation Tie-Line* - The proposed overhead 230kV high voltage generation tie-line would run approximately 3.6 miles between the sub-station north to PG&E's Caliente Switching Station, which is the point of connection to the PG&E system. Two miles of the line lies north of State Route 58. The line runs in four northerly straight-line segments and consists of approximately 24 single-column Corten steel poles, which will be placed between about 600 and 1,000 feet apart. The poles would vary in height from 90 feet to approximately 120 feet above ground level, except for the poles closest to the switching station which are would vary in height from 125 to 130 ft. due to topography. An existing parallel access road would be used to provide construction access with minimal need for new spur roads for access.

Twisselman Aggregate Mine - The Twisselman Aggregate Mine (quarry) is located two and a half miles north of State Route 58. Quarry expansion will serve road maintenance within the California Valley Subdivision, FirstSolar's Topaz Solar Farm Project, and the CVSR Project, with the majority of the extracted materials used for the CVSR Project. The proposed quarry expansion area would disturb 11.4 acres of annual grassland. The duration of the quarry expansion would depend on demand for construction aggregates and could last 20 to 30 years; with the majority of material extracted in the first two years of the expansion for the CVSR project. The quarry would operate during Phase 1 (CVSR and Topaz construction periods) Monday through Friday from 6 a.m. to 9 p.m. or dusk, whichever is earlier. During Phase 2 and 3, the mine would operate from 7 a.m. to 7 p.m. Monday through Friday. During all phases, truck deliveries are limited to Monday through Friday 7 a.m. – 7 p.m. or dusk, whichever is earlier. The quarry would have no night lighting, and be accessed from the existing ranch road from State Route 58. The existing ranch road would not be improved for expansion of the aggregate mine. Other elements of the quarry project include two ponding basins (0.92 and 0.35 acres), a portable restroom and waste receptacles.

The existing 11.8-acre Twisselman Aggregate Mine will be expanded by 11.4 acres. The existing mine includes 9.7 of open mine and 2.1 acres of roads and other disturbance.

The Twisselman Aggregate Mine, including the proposed expansion area, comprises an area of 23.2 acres.

The Aggregate Mine is located on a 160-acre parcel owned by Rowland and Catherine Twisselman, on a portion of Section 21, Township 293, Range 19E. The Aggregate Mine is accessed via an existing 2.8-mile dirt road to the north of SR 58 and approximately 4 miles east of Soda Lake Road. Land adjacent to the proposed Aggregate Mine includes a 400-acre parcel to the west and southwest and a 200-acre parcel to the north.

The expansion of the mine will occur in multiple phases. The first phase will occur over a 2-year period, with the majority of the extracted materials being used for construction aggregate for the California Valley Solar Ranch (Solar Project). Materials extracted during subsequent phases will be primarily used for purposes other than the Solar Project, although a small material volume may be used in the Solar Project for roadway maintenance and for minor operational purposes at the Aggregate Mine. The duration of the expansion phases will depend on demand for construction aggregates and may last 20 to 30 years. The hours of operation of the mine will be from 6:00 a.m. to dusk, Monday through Friday.

The Twisselman Aggregate Mine lies in low hills along the northeastern margin of the Carrizo Plain, where the San Andreas Fault zone separates the plain from the Temblor Range to the northeast. More than 75% of the 11.4 expansion area is unsuitable for giant kangaroo rats (>11% slope) and 38% is too steep for occupancy by kit fox (>16% slope).

PG&E Reconductoring - Reconductoring would occur along 35 miles of both circuits of the existing PG&E Morro Bay–Midway double-circuit 230 kV transmission line. The right-of-way varies between 75 and 128 feet wide. Very generally, reconductoring would be accomplished by disconnecting an old conductor and connecting it to a new connector and pulling it in place. The work would involve 20-person work crews with large tractor/trailer units on each end of the 17 segments (each with a pull site) being replaced. One crew would set up at a "pull site" near a tower at one end of the pull, and the other crew would set up a "tension site" near a tower at the other end of the pull. Reconductoring includes the installation of optical ground wire between Tower 001 and the Midway Substations on top of the same towers and pulled in a similar fashion.

Approximately 3 percent of the 171 lattice steel towers (four towers) would be replaced. Replacement towers would generally be erected within 75 feet of the original tower and would be sited to avoid sensitive resources where possible. The height of approximately every other tower (approximately 85 towers) would be raised by approximately 20 feet from an average height of 118 feet to approximately 127 feet tall to accommodate the new conductor and conform to ground clearance requirements. In addition, certain towers may require strengthening of their foundations or superstructures. In addition, to connect the transmission lines to the Caliente Switching Station, two existing towers would be replaced by three lower towers and four new 230 kV tubular steel poles would be added. Helicopters would be used for some of the work to limit ground disturbance.

PG&E Caliente Switching Station - The PG&E Caliente Switching Station would be located approximately two miles north of State Route 58 and would loop into both circuits of the Morro Bay–Midway 230 kV double-circuit transmission line. The Caliente Switching Station area would be surfaced with a combination of concrete pads, compacted road base for internal access roads and compacted earth and enclosed by standard chain link fencing topped by barb wire that would not be permeable to kit fox movement. The Caliente Switching Station would result in 10.26 acres of permanent impacts, including a new all-weather access road from an existing road, and 2.41 acres of temporary impacts. The fenced facility would encompass 8.1 acres and include a 200-foot microwave transmission tower. A 20-foot tall by 30-foot wide passive microwave reflector, which would look like a billboard, would be installed northwest of the switching station on a base of approximately 20 square feet.

Access Roads

Access to the CVSR and the Twisselman Aggregate Mine would be from the existing ranch roads that branch south and north, respectively, from State Route 58. On the CVSR, the existing ranch road and all fire access roads would be widened to 24-foot wide to accommodate two 10-foot travel lanes and two 2-foot shoulders with an aggregate base surface. Fire access roads would be located along the perimeter of the Solar Generation Facility site. Temporary roadways for use in construction ("access drives") would be cleared, compacted and treated with water or a soil binder for stabilization and dust control during construction. During operation, access drives would remain as open areas for annual maintenance and emergency access. There will be 76.5 acres of new and improvement of existing roads and access drives that would be at-grade and will not obstruct or alter natural drainage patterns across the site.

For the PG&E Reconductoring, the existing access roads serving the various tower work sites and staging areas would be evaluated for vegetation removal, repair, and restoration. Access roads would typically be graded with heavy equipment to a standard 10-foot width, with possible 12-foot-wide sections at sharp road angles to accommodate large vehicles and equipment. PG&E would use temporary bridges to span sensitive water crossings during the wet season. Limited new access and spur roads would be constructed to sites that currently lack road access.

Ground Disturbance

CVSR Project Area - Permanent disturbance at the Solar Generation Facility, Generation Tie-Line, and Twisselman Aggregate Mine would result from: widening existing and constructing new access roads, constructing structures, mined material extraction, parking areas, tracker piers (referred to as foundation piles), inverter foundations, tie-line tower pads, equipment pads, the substation, water supply facilities, and security stations. Permanent site conversion of habitat totals approximately 1,707 acres; of which approximately 1,685 acres is from Solar Generation Facility and Generation Tie-Line disturbance, approximately 10.26 acres is from the Caliente Switching Station disturbance, and approximately 11.4 acres is from the expansion of the Twisselman Aggregate Mine (Table 1).

Approximately 71.5 acres would be affected as a result of temporary disturbance associated with the installation of solar arrays, grading, and construction of associated infrastructure, construction of drainage features, laydown/staging areas, temporary trailer park, and trenching during construction (Table 1).

The layout of the Solar Project will feature the equivalent of approximately 312 tracker blocks, each with four trackers of 18 rows each. These tracker blocks will be configured to make up the 10 arrays areas. Within a block, multiple rows are linked by a steel drive strut, which is oriented perpendicular to the axis of rotation. Each row is connected to the drive strut by a torque arm, which acts as a lever, enabling the drive strut to rotate the rows together as the drive unit moves the drive strut forward and backward. The drive unit is typically mounted at the first row in a building block, and consists of a ½-horsepower, bi-directional AC motor that actuates the drive strut via an industrial screw jack. Forces created by the motor and screw are sufficient to actuate a single block. Each of the approximately 312 blocks will contain four ½-horsepower motors.

T0 Trackers sit on foundation piles placed directly into the ground without the need for excavation or concrete foundations. A Bobcat-sized piece of equipment will be used to transport the foundation piles for the T0 Tracker foundations. Once the foundation piles are placed, flatbed trucks carrying pre-assembled T0 Tracker units transport them to the foundation piles. Lightweight vehicles will be used to access each tracker for wiring. When possible, all vehicles traversing through each row will travel from east to west and back. Approximately 20 small gasoline generators will be used to power welding machines used to assemble trackers and to construct tracker arrays.

With the installation of foundation piles, the welding of support frames, the installation of tracker panel assemblies, and the attachment of rod and electrical connections, there will be some temporary disturbance around each installation, lasting for 1-2 days as installations in any one area are completed. For construction of Arrays 1, 2, 5, 6, and 8 little ground disturbance will occur. Rather, trenching for installation of underground conduit and wire, grading for access roads, and screwing the supports for the arrays into the ground will comprise the only ground-disturbing activities necessary for the construction of these arrays.

For construction of Arrays 4, 7, 9, 10, and 11, grading will be necessary to achieve the slopes appropriate for capture of solar energy by the arrays. It is anticipated that material will be moved within arrays and the Twisselman Aggregate Mine to reduce the slopes in those areas. During the site disturbance and/or construction phase, grading and construction activities shall be restricted to the following hours: October 1 through May 31 - Monday through Friday 7:00 a.m. to 6:00 p.m.

June 1 through September 30 – Monday through Friday 5:00 a.m. to 9:00 p.m. Saturday and Sunday 8:00 a.m. to 5:00 p.m.

PG&E Reconductoring - Estimated temporary ground disturbance within the reconductoring area associated with access roads, tension and pull sites, landing zones, line and roadway and line crossings, and other components are preliminarily estimated in Table 1 and would be finalized during final project engineering and design.

Depending on the terrain and the number of angles and dead-end towers, approximately 17 pull and tension sites and three construction work areas at road crossings and nine helicopter-landing zones would be established. Some pull and tension sites may also be used as staging areas and landing zones. Towers either would be constructed and erected at the tower site using a crane or constructed offsite and transported to the site by helicopter.

The work areas for each of the pull sites would be approximately 600 feet by 150 feet (2.07 acres) and would be located within the ROW outside of the existing access road footprint. The footprint of the landing zones will vary depending on the location of the landing zone and proximity to work areas. The work areas for power line and roadway crossings will be situated next to existing roadways and the location of the pole installation will be flexible enough to best avoid burrows. Most of the work areas will be accessible on existing access roads, although some of the roads will need improvement. The exact locations where this improvement occurs will not be known until the project commences.

Table 1. Permanent and Temporary Disturbance from Construction and Operation of the Solar Generation Facility, Generation Tie-Line, PG&E Caliente Switching Station, expansion of the Twisselman Aggregate Mine, and the PG&E Reconductoring.

Proposed Action	Permanent Disturbance (acres)	Temporary Disturbance (acres)
Solar Facility & Generation Tie-Line (Includes access roads)	1685.00	71.50
Twisselman Aggregate Mine	11.40	--
CVSR Subtotal	**1696.40**	**71.50**
PG&E Reconductoring (all subcomponents inc. Caliente Switching Station)	10.26	42.93
CVSR and PG&E Total:	**1706.66**	**114.43 Total: 1821.09**

Operations and Maintenance, Lighting, and Noise

The Solar Generation Facility is anticipated to operate over a period of 30 years. Operations and maintenance (O&M) includes preventative and routine inspection and maintenance of the equipment, structures, and access roads.

Panel washing crews, of approximately 4 workers, are scheduled to clean the panels during daytime hours approximately two times per year (April - June and July - September). They will traverse the site in a purpose-built lightweight to medium duty truck 5 days per week which will be fitted with a water tank and air compressor to operate a high pressure sprayer and cleaning brush system without the use of solvents or chemicals. Panels are sprayed with water and agitated with a brush to loosen dust and dirt and sprayed again to wash them clean. This process requires approximately 1 gallon of water to wash a single solar panel.

A livestock grazing program would be implemented to manage vegetation heights to reduce fire hazard in the Solar Generation Facility. Sheep and/or goats would be utilized for grazing in the array area for their shorter stature. Grazing in the on-site conservation areas would utilize cattle which currently graze the Solar Generation Facility site coexistent with the special-status species. HPR II will prepare and implement a grazing plan that would be compatible with maintaining and possibly enhancing special-status species and will be approved by the Service.

Existing ranch style fencing on the CVSR would be retained and repaired for continued use, removed, or modified to facilitate pronghorn movement consistent with wildlife conservation measures.

Permanent lighting would be restricted to the O&M building, substation, PG&E Caliente Switching Station, water treatment plant, and project entry on State Route 58. New light sources would be minimized, and lighting would be designed (e.g., using downcast lights) to limit the lighted area to the minimum necessary.

Proposed water supply and treatment facilities will include the new (400-ft deep) well, the 271,000 Gal water tank, a 39 ft. by 39 ft. building that will hold reverse osmosis water treatment equipment, and 2 lined evaporation ponds equaling 1.5 acres in size. Reject water, a byproduct of reverse osmosis, will be conveyed to the evaporation ponds where it will spread out and evaporate. This process will gradually fill the ponds with solids, which will be removed on a regular basis. Waste materials will be hauled to an appropriate landfill for disposal. Both evaporation ponds will be fenced and/or screened such that wildlife cannot enter the ponds.

Noise from the Solar Generation Facility during operations would be limited to light duty vehicle traffic for security patrols, maintenance staff, and wash crews. The maximum anticipated DC-AC inverters noise levels, assuming no enclosure or noise barrier, would be 90 decibel (dB) at ten feet. High voltage transmission lines and transformers would emit low levels of noise.

Depending on the demand for aggregate, the Twisselman Aggregate Mine would operate 20 or 30 years, with most of the activities during the first two years as the Solar Generation Facility is being constructed. No new lighting is proposed for the Twisselman Aggregate Mine. Noise levels would be highest during the initial two years and result primarily from the operation of one or two dozers and up to two aggregate transport vehicles.

For the transmission line, standard existing maintenance activities include the following: equipment inspection, periodic washing of the insulators with a helicopter and tower line inspection by trouble men driving existing access roads with rubber tired standard vehicles. All vehicles and personnel would stay on graveled highly disturbed access roads and within the fence line of the switching station.

Project Personnel
During peak Solar Generation Facility installation times, up to 500 construction workers would be on the site in three staggered shifts with arrivals and departures generally scheduled between 7 a.m. and 8 p.m., respectively, five days-a-week, year-round, except for holidays. Construction crews may start as early as 5 a.m. and end as late as 9 a.m. June 1 through September 30. Normal maintenance activities would not occur during night hours, but security personnel would be on-site 24 hours a day. A 50-unit temporary construction trailer park would be available for personnel during the construction phases, with many workers not on-site during weekends and occasional vacancies.

Once fully operational, the Solar Generation Facility would operate seven days a week during daylight hours with a full-time staff of fewer than 15 personnel. During this time, O&M personnel would largely work in the O&M building and monitor the system's performance, with some perimeter security patrols.

The Twisselman Aggregate Mine would operate Monday through Friday from 6 a.m. to 9 p.m. or dusk, whichever is earlier during Phase 1 (CVSR and Topaz construction periods). During Phase

2 and 3, the mine would operate from 7 a.m. to 7 p.m. Monday through Friday. During all phases, truck deliveries are limited to Monday through Friday 7 a.m. – 7 p.m. or dusk, whichever is earlier. Up to two employees would be onsite on an intermittent basis.

For the reconductoring component, ground crews of up to 20 would work at pull and tension sites, plus vehicle and equipment operators. All work would occur during daylight hours.

Decommissioning of the Solar Generation Facility
If at the end of the contract term to sell energy to the utility buyer, no contract extension is available or no other buyer of the energy emerges, the Solar Generation Facility can be de-commissioned and dismantled. Decommissioning would involve removing panels, foundations, equipment, underground conduit, and most if not all structures. Appropriate erosion control measures would be utilized throughout the decommissioning process, and a revegetation plan would be implemented to repair any temporary disturbance from decommissioning activities. Roadways would be left in place to support future agricultural operations, and the O&M Building could be converted to an agricultural-related use or other use at the time of closure.

Proposed Conservation Measures

To reduce potential effects to sensitive biological resources, construction Best Management Practices and avoidance and minimization measures are proposed in the Proposed Action. Measures to compensate for effects to listed species and their habitats through the permanent protection and management of habitats on and off-site of the CVSR Project site are also proposed (Table 2, Figures 1 and 2). DOE would incorporate these measures into the final Loan Agreement between the DOE and HPR II.

General Avoidance and Minimization Measures for the CVSR Component

- Pre-construction biological clearance surveys will be performed by qualified biologists at all activity areas to minimize impacts on listed as well as special-status plant and wildlife species.
- Minimize vegetation removal and permanent loss at activity sites. If necessary, native vegetation will be flagged for protection. A Habitat Restoration and Revegetation Plan will be implemented to restore areas of native habitat temporarily affected during construction.
- Project personnel will avoid affecting wetlands, streambeds, and banks of any streams to the maximum extent practicable.
- Project personnel will be directed to use BMPs where applicable, such as for prevention of soil erosion and sedimentation of streams and introduction and spread of invasive plant species. These measures will be identified prior to construction and incorporated into the construction and maintenance operations and implemented in accordance with a stormwater pollution prevention plan (SWPPP).
- Biological monitors will be assigned to the CVSR Project. The monitors will be responsible for ensuring that impacts to special-status species, native vegetation, wildlife habitat, or unique resources will be avoided to the fullest extent possible. Where

appropriate, monitors will flag the boundaries of areas where activities need to be restricted to protect native plants and wildlife, or special-status species. These restricted areas will be monitored to ensure their protection during construction.

- When on-site monitoring is required, the monitor(s) shall inspect areas under vehicles and equipment, in and around stockpiled materials, and any other areas where listed species could take refuge to ensure that any such individuals are relocated out of harm's way before construction activities begin for the day.
- Prior to project groundbreaking, the applicant shall submit to the Service for their review and approval, the qualifications of its qualified biological monitors. The monitors will be given the authority to stop any work that may result in the take of listed species. If the monitors exercise this authority, the Service will be notified by telephone and electronic mail within one (1) working day. The on-site biologist will be the contact for any employee or contractor who may inadvertently kill or injure a listed species, or anyone who finds a dead, injured, or entrapped individual of these species. The on-site biologist shall possess a working cellular telephone whose number would be provided to the Service.
- Giant kangaroo-rats will be relocated when encountered within construction areas only as necessary to minimize or avoid direct mortality of individuals and relocation will be conducted according to a strict protocol by highly qualified individuals approved by the Service. The relocation is fully described in the biological assessment (H. T. Harvey & Associates 2010).
- If at any time a listed animal other than giant kangaroo rat, or any animal that is thought to potentially be a listed species, is discovered in the construction area by the on-site biologist or anyone else (including during pre-construction surveys), the following protocol shall be followed:
    - All work that could result in direct injury, disturbance, or harassment of the individual animal would immediately cease.
    - The foreman and on-site biologist will be immediately notified.
    - The on-site biologist will allow the animal to disperse on its own outside the construction area. The animal will be monitored until it is determined that the animal is not imperiled by predators or other dangers.
    - The on-site biologist will document each occurrence when construction activities are affected by the presence of listed species and the outcome of the interaction on the individual animal.
- A Worker Environmental Education Program would be presented to CVSR Project personnel by a qualified biologist(s) provided by the applicant. This program would consist of a "tailgate" training session for all personnel who work on aspects of the Project that occur in or near natural habitats in the CVSR Project action area. Printed training materials and briefings would include a discussion of all the listed species covered by this biological opinion for which avoidance and minimization measures are required; a contact person in the event of the discovery of sensitive species on the site; and a review of avoidance and minimization requirements. Maps showing the location of special-status plants and/or wildlife or other construction limitations would be provided

to the environmental monitors and construction crews prior to construction activities. As part of the environmental training, contractors and heavy equipment operators would be provided with literature and photographs or illustrations of potentially occurring special-status plant and/ or wildlife species so the contractors and equipment operators would be able to identify and avoid harming sensitive species during construction.

- The applicant will ensure that a readily available copy of this biological opinion and any related approvals by the CDFG are maintained by the foreman/manager on the Project site whenever construction or other Project-related activities are taking place. The name and telephone number of the construction foreman/manager will be provided to the Service and CDFG prior to Project groundbreaking.
- New light sources will be minimized, and lighting would be designed (e.g., using downcast lights) to limit the lighted area to the minimum necessary. A lighting plan will be submitted to the Service for approval.
- Vehicles and equipment will be parked on pavement, existing roads, and previously disturbed areas to the extent practicable.
- Vehicles will not exceed a speed limit of 15 miles per hour (mph) while on the Project site. Speed limit signs will be installed in the Solar Generation Facility, Generation Tie-Line, PG&E Caliente Switching Station, and Twisselman Aggregate Mine portions of the Project site prior to initiation of site disturbance and/or construction. To minimize disturbance of areas outside of the construction zone, all Project-related vehicle traffic will be restricted to established roads, construction areas, and other designated areas. These areas will be included in preconstruction surveys and, to the extent possible, will be established in locations disturbed by previous activities to prevent further impacts. Off-road traffic outside of designated project areas will be prohibited.
- No vehicles or equipment will be refueled within 100 feet of an ephemeral drainage or wetland unless a bermed and lined refueling area is constructed. Any vehicles driven and/or operated within or adjacent to drainages or wetlands will be checked and maintained daily to prevent leaks of materials.
- Development will maintain existing hydrologic patterns with respect to runoff supporting seasonal wetlands.
- Dust suppression will occur during all construction activities.
- No firearms will be allowed on the CVSR Project action area, unless otherwise approved for security personnel.
- To prevent harassment or mortality of special-status animals, or destruction of their habitats by dogs or cats, no pets or other domesticated animals (with the exception of livestock as prescribed by a Grazing Plan and scat detecting dogs handled by a trained professional) will be permitted on the CVSR Project action area, including within the 50-unit temporary construction trailer park that CVSR Project personnel use as temporary housing.
- All food-related trash items including wrappers, cans, bottles, and food scraps, will be disposed of in tightly covered and secured trash containers, the contents of which will be removed from the site on a regular basis. Food items may attract coyotes and domestic

dogs consequently exposing special-status wildlife to increased risk of predation. No deliberate feeding of wildlife shall be allowed.

- Use of chemicals, fuels, lubricants, or biocides shall be in compliance with all local, state, and federal regulations to minimize the possibility of contamination of habitat or poisoning of wildlife. All uses of such compounds shall observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and other state and federal legislation, as well as additional project-related restrictions deemed necessary by the Service and CDFG. Only minimally necessary quantities of such materials would be stored at the work sites. BMPs shall be implemented to reduce the risk of spills and other accidental exposure to such materials during all project activities.

- No rodenticides will be used in the CVSR Project action area to avoid the poisoning of giant kangaroo rats and to avoid the secondary poisoning of San Joaquin kit foxes, and other predators and scavengers. The rodenticide ban shall also be applied to temporary residential facilities in the temporary construction trailer park.

- No rodent trapping (live or lethal) by anyone, other than by permitted biologists approved by the Service and trapping for authorized purposes, shall be permitted in the CVSR Project action area, including within the residential facilities or the utility building associated with the temporary construction trailer park.

- Information about the ban of rodenticides and rodent traps, and their potential effects on sensitive wildlife species in the region, will be provided to occupants of the temporary construction trailer park. This information will also be posted in the O&M facility.

- Use of herbicides is expected to be minimal for the CVSR except for hand applied spot use in landscaped areas.

- Signs prohibiting the recreational use of on-site conservation lands by trailer park occupants and other CVSR personnel will be installed at all potential public entrances to these lands and at 1/4-mi intervals along existing and future roads adjacent to on-site conservation land borders. Sign maintenance will be part of the ongoing maintenance activities.

- A Project representative will be appointed as the contact for any employee or contractor who inadvertently kills or injures a threatened or endangered animal species, or finds a dead, injured or entrapped individual. The representative will be identified during the employee education program. The representative's name and telephone number will be provided to the Service and CDFG. Any contractor or employee who inadvertently kills or injures a threatened or endangered animal, or finds one either dead, injured, or entrapped, shall report the incident to the representative immediately. The representative will contact the Service and/or CDFG (depending on whether the species is listed under the Act, California Endangered Species Act or both), by telephone by the end of the day, or at the beginning of the next working day if the agency office is closed. In addition, formal notification will be provided in writing within three working days of the incident or finding. Notification will include the date, time, location and circumstances of the

incident. Any threatened or endangered species found dead or injured will be turned over immediately to the Service for care, analysis, or disposition.

- During the site disturbance and/or construction phase, grading and construction activities after dusk will be prohibited unless approved by the Service and CDFG. If such activity is necessary, one or more on-site monitors will be on-site to ensure special-status species active at night are avoided.
- All steep-walled holes or trenches in excess of six inches in depth will be covered at the close of each working day by plywood or similar materials, or provided with one or more escape ramps constructed of dirt fill or wooden planks. Excavations will also be inspected for entrapped individuals of these species each morning prior to onset of field activities and immediately prior to covering with plywood at the end of each working day. Before such holes or trenches are filled, they will be thoroughly inspected for entrapped individuals of these species. Any individuals discovered will be allowed to escape before field activities resume, or removed from the trench or hole by a qualified biologist; kit fox will be allowed to escape unimpeded, while giant kangaroo rats will be relocated to a safe area in suitable habitat outside the Project's impact areas.

  Because San Joaquin kit foxes and giant kangaroo rats are attracted to cavities and dens, these animals could enter objects such as pipes and could become trapped, or could be injured when the pipes are moved. All construction pipes, culverts, or similar structures stored at a construction site for one or more overnight periods will be either securely capped prior to storage or thoroughly inspected by the on-site biologist for these animals before the pipe is subsequently moved, buried, capped, or otherwise used. If an individual of a listed species is discovered inside a pipe by the on-site biologist or anyone else, that section of pipe should not be moved until the Service and/or CDFG has been consulted. If necessary, and under the direct supervision of the biologist, the pipe may be moved once to remove it from the path of construction activity, and left alone until the animal has escaped.

The following is a summarized list of the mitigation and monitoring plans that will be developed by the applicant and approved by the Service prior to their implementation:

CALIFORNIA VALLEY SOLAR RANCH	
Habitat Restoration and Revegetation Plan (HRRP)	The purpose of the HRRP will be to explicitly identify the process by which all disturbed areas shall be restored to pre-construction conditions, address restoration and restoration and revegetation required after decommissioning of the project should it be required.
Habitat Mitigation and Monitoring Plan (HMMP)	A Habitat Mitigation and Monitoring Plan will be developed for the CVSR Project to ensure the successful integration of management techniques designed to protect and enhance on-site and off-site Conservation Lands. These lands are required for compensation of permanent impacts to vegetative communities and listed or special-

	status plants and wildlife. These Conservation Lands will be held in open space easements by a land trust or agency approved to hold such easements in perpetuity. This Plan will describe the measures to be implemented across the Conservation Lands to enhance and restore habitat for listed and special-status species. This Plan will also include detailed measures to monitor vegetative communities, plants, and wildlife for the long term health and persistence of these elements. Specific success criteria will be outlined to ensure that adaptations to the management strategy are implemented in response to adverse monitoring data. A detailed analysis of funds necessary to implement the various management and monitoring tasks within the Plan will be completed to ensure that the endowment fund established for the Conservation Lands is sufficient.
Grazing Plan	A managed livestock Grazing Plan will provide specific management guidelines to ensure that vegetative communities on the Solar Generation Facility site are maintained in appropriate conditions for the suite of special status plants and wildlife that are known to occur on the site, or that have the potential to occur on the site. This plan will take into account the specific habitat requirements of special status species, utilizing livestock to manage vegetation structure in a way that enhances habitat values for target species. The plan is adaptive, and will incorporate annual monitoring to adjust the grazing prescriptions to maximize benefits to target species.
Pronghorn Friendly Fencing Plan	A Pronghorn Antelope Fencing Plan will be developed for the CVSR Project site to ensure the unrestricted movement of pronghorn antelope through the project site. This plan will detail specific measures to adapt existing fencing, remove unnecessary internal fencing, and install appropriate new fencing to encourage passage of pronghorn antelope through the project site.
Worker Environmental Education Program (WEEP)	The WEEP shall include training materials and briefings on special-status species known to, or with the potential to, occur in the project area. The WEEP shall be implemented prior to any site disturbance.

Bird Monitoring and Avoidance Plan	The purpose of Bird Monitoring and Avoidance Plan is to provide a means for validating pre-construction predictions of fatality risk for birds and bats and, if necessary, form a basis for adaptive management; i.e., additional mitigation action to further reduce the risk of fatality when the post-construction monitoring indicates that fatality levels have exceeded acceptable thresholds.
Weed Control Plan (WCP)	The purpose of the WCP is to identify weeds on-site and prescribe a control plan aimed at avoiding and minimizing ecological damage related to noxious weed infestations that may be potentially caused or worsened by construction and operation of the Proposed Action.
Avian and Bat Protection Plan	The purpose of the ABPP is to provide energy project developers a tool for assessing the risk of potential impacts, designing, and then operating a bird- and bat-friendly [renewable-energy] facility.
PG&E RECONDUCTORING	
Habitat Restoration Plan	The purpose of the Habitat Restoration Plan is to provide more detailed information on the measures that PG&E will implement to restore areas temporarily affected by the proposed project. The Habitat Restoration Plan will include how restoration at the work areas will be completed and will include success criteria to ensure that restoration of the work areas is successful.

Monitoring of Adverse Effects and Take

Actions incorporated into the avoidance and minimization measures and in Habitat Mitigation and Management Plan will allow for a "real time" monitoring of impacts and take of giant kangaroo rat and San Joaquin kit fox during construction and operations. These monitoring activities shall assure that adverse effects and take, beyond what is analyzed in the biological opinion, is not exceeded.

As part of the giant kangaroo rat avoidance and minimization measures for the CVSR Project, prior to commencement of ground disturbing activities for each phase of the project, pre-construction surveys for the species shall be conducted. If active giant kangaroo rat precincts are present, the precincts shall be flagged, with ground disturbing activities to be setback a minimum of 50 feet from each active precinct. All active precincts shall be mapped and incorporated into a GIS based figure to further document pre-construction conditions and for use by the on-site monitors and construction crews. Where active precincts cannot be avoided, giant kangaroo rats would be relocated to on-site conservation land outside the Solar Generation Facility's direct and indirect impact areas as described in the *Relocation and Reintroduction of Populations of Giant*

Kangaroo Rat (H.T. Harvey & Associates 2010). Consequently, the preconstruction number and distribution of giant kangaroo rats in the vicinity of construction and, therefore, those harassed by construction, including those relocated, will be documented.

In addition, components of the Habitat Mitigation and Management Plan implemented at the start of construction include documentation of occupancy, distribution, and total minimum population sizes for giant kangaroo rat and San Joaquin kit fox as described below. These analyses will provide an index of the number of San Joaquin kit fox on-site and document the extent of take, should it occur.

Methodology

The following methodology, or similar approaches further developed through technical coordination with the Service prior to construction, will be used to:

- determine pre-project population levels of San Joaquin kit fox and giant kangaroo rat within the on-site conservation lands,
- document annual changes in the relative abundance and habitat use of kit fox, and characterize giant kangaroo rat populations within on-site conservation lands and at a reference population at off-site conservation lands located within the Carrizo Plains National Monument (Monument).

High-resolution digital aerial photographs will serve as a base map for all survey areas. These digital images will be overlain with a north-south and east-west oriented digital grid representing 50 meter (m) by 50 m grid squares. The base map and grid layer will be loaded onto a laptop computer durable enough for use in the field. A GPS unit connected to the computer will enable display of the real time position of the surveyor on the grid and base map, which will enable the primary surveyor to maintain their position on the survey line. Additional surveyors can parallel the primary surveyor, at a distance of 100 m, and will determine and maintain their position on the survey line by following the Universal Transverse Mercator (UTM) northing coordinate associated with the grid east-west survey line and by counting off 50-m increments using the UTM easting position.

Mapping surveys will be conducted annually during September and/or October of each year. Each surveyor traveling along the east-west grid lines will search the area extending 50 meters on either side of the transect line with binoculars. Surveyors will walk to features that are not readily identifiable from the survey line in order to investigate these features at close range.

The 50 by 50 m grid squares will be visually searched for evidence of San Joaquin kit fox dens (including natal dens, escape dens, and potential dens) and giant kangaroo rat precincts

(including both active and inactive burrows). The location of all San Joaquin kit fox dens and giant kangaroo rat precincts will be recorded with GPS units.

Occupation of giant kangaroo rat burrow precincts will be determined based on presence of scat, tracks, tail-drags, pit caches, fresh excavations, and cropped vegetation around a series of typically sized horizontal and vertical burrow openings. When active giant kangaroo rat sign is

observed, the entire grid square in which it was located will be considered active and indicated as such on the GIS layer. Giant kangaroo rat precincts that do not appear to be occupied will also be identified and mapped accordingly. Precincts are considered unoccupied when characteristic horizontal and vertical burrow openings and the surrounding area are devoid of all sign of activity and/or maintenance of the precinct (e.g., fresh scat, tracks, fresh digging, and cropped vegetation).

If an active precinct is located anywhere within a grid square, the square will be identified as active, even if inactive precincts are found. If only inactive precincts are found within a given grid square, the square will be identified as inactive. In the case where precincts span grid lines, all grid squares within which the precinct occurs will be identified accordingly. Locations of San Joaquin kit fox dens will be recorded as points identified by GPS coordinates (UTM).

Document annual changes in San Joaquin kit fox relative abundance and habitat use

San Joaquin kit fox typically occupy relatively large home ranges that may include more than 1,000 acres (1.5 miles^2) on the Carrizo Plain (White et al. 1996). As a result, even large areas of contiguous conservation lands, such as those on the California Valley Solar Ranch, may function to support only a portion of a pair or individual kit fox home range. For example, results of different types of surveys (e.g., den counts, spotlighting, camera stations) may indicate that conservation lands are occupied by a number of resident pairs and a number of individuals that utilize the conservation lands as a portion of their home ranges, the center of which may be on neighboring lands.

Home range size may increase or decrease significantly based on environmental conditions. For example on the Carrizo Plain, White et al. (1996) found home ranges varied from 1000 acres to ~1600 acres (2.6 mi^2). Due to the variability in home range sizes and fluctuations in population size due to large scale climatic or environmental patterns, tracking absolute numbers or density of kit foxes is problematic as these trends may be governed by regional environmental processes and may not directly reflect activities within the project site or the ongoing management of the land and habitats.

Documenting continued use of habitats on the on-site conservation lands, however, provides a measure of suitability of these areas that is a function of habitat suitability and land management practices (e.g., management of vegetation, abundance of prey species, exotic competitors) independent of regional climatic or environmental patterns. San Joaquin kit fox use of can be documented through surveys of potential dens, positively identified escape dens, confirmed natal dens, documentation of sign (e.g., tracks and scat), and direct observations.

Mapping all confirmed and potential San Joaquin kit fox dens will be accomplished during the grid surveys described above. Spotlight surveys and camera station surveys will be used to document current occupation, habitat use, and relative abundance of kit fox through direct observations (spotlight surveys) and indirect observations (camera station surveys).

Spotlight Surveys

Spotlighting surveys will be conducted annually on and in the vicinity of the CVSR Project site during the summer when kit fox are active well in to the night and are not breeding. Each

spotlighting session will comprise five consecutive nights. The surveys will begin 30 minutes after sunset. Survey sessions will be continued until all conservation lands within each region are surveyed. Two observers in a high-clearance vehicle (placing the observer's eyelevel 4 -5 ft above the ground) will conduct the surveys along all paved and unpaved roads using one million-candlepower spotlights. Spotlights will be used to systematically search all lands and habitats present on and around the on-site conservation lands. Vehicle speed will be limited to 10-15 MPH during the surveys. Once "eyeshine" is detected, the vehicle will be stopped so that the animal can be observed with high-powered binoculars. The animal should be identified to species at this time and noted on standard datasheets along with the coordinates and times of observation. If the species identification cannot be determined, documentation of that fact will be made on the datasheet. Surveyors will also record data on predators, competitors, and potential prey species (e.g., giant kangaroo rats).

Camera Station Surveys

During the summer of each year 2 to 3 cameras per square mile will be installed at fixed stations within the CVSR Project site. Cameras will be deployed at each station for 5-night sessions. Each camera unit will be attached to a stake or fence post approximately 2-3 feet above the ground surface. Cameras should be set so that animals can be detected by motion or infrared signature. Each camera will have a minimum 4GB Digital SD HC Memory Card installed within the unit or equivalent. Camera placement should be facing north to prevent sunset/sunrise false activations and may be baited with a scent lure. At the completion of the camera survey, all units will be removed. Each photo will be reviewed to identify species photographed, included as an Appendix in the Annual Monitoring Report, and archived.

Characterize giant kangaroo rat populations within on-site conservation lands and at a reference population at off-site conservation lands located within the Carrizo Plains National Monument (Monument)

Monitoring of an off-site reference population on conservation lands within the Monument and comparison to the on-site population of giant kangaroo rats will allow for analysis of causal factors affecting regional population fluctuations. For example, a substantial decline in the on-site population could be the result of management or other factors associated with the development and/or operation of the CVSR Project; however, a decline may also reflect fluctuations in regional populations that might be more accurately attributed to climatic patterns.

The largest segment of the regional giant kangaroo rat population is located within the Monument southeast of Soda Lake. Giant kangaroo rat colonies spread seamlessly over Monument lands and adjacent private in-holdings, and management of these in-holdings reflects the management of the adjacent public lands.

A comparison of giant kangaroo rat populations on the CVSR project site and off-site conservation lands within the Monument will separate analysis of on-site development and management effects from regional patterns and processes. In addition, populations of giant kangaroo rats have been and are currently being monitored at locations within the Monument (Prugh and Brashares 2010, 2009, 2008, 2007) and these data can provide a robust and independent means for evaluating results of comparable surveys described below:

Mark-Recapture Trapping Surveys

The most straightforward and directly comparable means for characterizing populations is to conducted mark-recapture surveys at randomly located plots within occupied areas of and the CVSR Project site and off-site reference conservation lands. The methods that will be used are compatible with methods used to characterize populations of giant kangaroo rats on the Monument.

A stratified random sampling design will be used to identify 1-hectare (ha) survey plots that include 4 adjacent 0.25 ha grid squares confirmed occupied by giant kangaroo rat during the mapping surveys. Eight 1-ha plots will be established within the CVSR Project site with an additional 8 1-ha plots established at 1 or 2 off-site conservation lands in-holdings within the Monument.

The numbers of precincts per grid square (precincts/grid square) will be used to stratify the data collected during the mapping surveys. The range of numbers of precincts/grid square will be divided into 4 equal sized categories that include the lowest number of precincts/grid square to the highest number of precincts/grid square. Two 1-ha plots will be randomly located within blocks comprised of 4 adjacent grid squares representing the range of precincts/grid square from the specified category. For example, in 2010 the number of precincts/grid square on the CVSR Project site ranged from 1 to 14. In this instance, strata 1 would include grid squares containing 1 – 3 precincts; strata 2 would include grid squares containing 4 – 6 precincts, and strata 3 and 4 would contain grid squares containing 7, 8, & 10 and 11, 12, & 14 precincts respectively (no grid squares contained only 9 or 13 precincts). In the case where the categories of number of precincts/grid square is represented by an odd number, the strata will be demarcated by identifying 2 equally sized bins within each of the upper and lower even numbered categories and the median category will then be included in both of the middle strata (e.g., 13 categories will be divided in to 1-3; 4 - 7; 6 to 9; 10 to 13.

Within each mark-recapture survey plot long Sherman (or other suitable traps) will be placed at 20-m intervals with a total of 25 traps/ha plot. Each surveyor will monitor up to 4 plots (100 traps) conducting 2 trapping sessions each year at each plot, during 3 nights in April and 3 nights in August. Traps will be baited with parakeet seed (microwaved to prevent germination) and will be set at dusk and checked approximately 3 hours after they are opened. Individual giant kangaroo rats captured during these surveys will be marked with an ear tag and with a passive integrated transponder (PIT) tag so they can be identified during successive surveys

Blunt-nosed Leopard Lizard Avoidance and Minimization Measures for the CVSR Project

While no blunt-nosed leopard lizards have been detected on the CVSR site, the project proponent will take measures during the construction phase to detect any individuals that may move into the area and avoid impacts should they be detected.

- HPR II will have qualified biologists conduct protocol-level surveys prior to disturbance in any areas within the project's impact footprint that were not previously surveyed according to protocol. The survey area will also include a 500-foot-wide buffer around the construction footprint, as long as the HPR II has authorization from adjacent landowners to do so.

- Within impact areas that have been surveyed for BNLL according to protocol, preconstruction reconnaissance level surveys (minimum of three) will be conducted by a qualified biologist prior to construction or other groundbreaking in any given area. These surveys will entail having one or more qualified biologists walk 30- to 100-foot-interval transects through the area looking for individuals of this species.
- If no individuals are detected during the preconstruction surveys or protocol-level surveys, no further measures will be needed. If the species is detected during the preconstruction surveys or protocol-level surveys, the following avoidance and conservation measures will also be implemented:
  - The geographic coordinates of each blunt-nosed leopard lizard detected within 500 feet of the construction footprint, including offsite parcels where access in granted, shall be reported to California Natural Diversity Database (CNDDB).
  - The point location data shall be used to delineate buffers designed to encompass the home range of each individual blunt-nosed leopard lizard. A buffer will minimize the risk of direct or indirect take of blunt-nosed leopard lizard individuals in conjunction with avoidance and exclusion criteria. A buffer of any size does not guarantee that take will not occur but provides a high degree of certainty that each individual blunt-nosed leopard lizard will be adequately protected. Each buffer shall cover an area of at least 22 acres, which is the approximate size of the largest blunt-nosed leopard lizard home range size computed by Warrick et al. (1988). Each 22-acre buffer shall be delineated by the biologist using the recorded point location as the approximate center of the buffer area. Using habitat modeling based on the current knowledge base of the most important blunt-nosed leopard lizard habitat parameters, the final boundaries of the buffers shall be determined by the qualified biologist to encompass the 22-acre area of greatest habitat suitability.
  - To the extent feasible, the 22-acre buffer around the occupied blunt-nosed leopard lizard habitat will not be impacted, even temporarily, by project activities. No construction activities or vehicular traffic shall be allowed within the identified buffer, and all movement corridors shall be delineated with fencing and signage identifying the buffer as off-limits to construction personnel. The fencing around the buffer shall be elevated 24 inches off the ground surface to allow the passage of San Joaquin kit fox and other small mammals through the area. All fencing will be actively maintained and repaired as directed by biological monitors and removed upon completion of that portion of project construction. If complete avoidance of the occupied habitat and buffer is feasible, then no additional measures need to be implemented. If avoidance of the occupied habitat and buffer is not feasible, then impacts to the occupied habitat will be minimized, and the following measures will be implemented.
  - If, in the opinion of the qualified biologist, barrier fencing will help to prevent impacts to blunt-nosed leopard lizard without causing undue impact to this species' habitat, such fencing will be constructed around the worksite to prevent entry by lizards. The area where fencing will be constructed will be inspected prior to installation; then, 36-inch tall silt fencing will be installed around the work area, and buried to a depth of six inches. No monofilament plastic will be used for erosion

control in the vicinity of this species. Barrier fencing will be removed upon completion of work.

- If blunt-nosed leopard lizards are located during the preconstruction survey, the applicant shall hire a qualified biologist to monitor for this species, which could be harmed during construction. The monitor will be responsible for ensuring that impacts to blunt-nosed leopard lizards will be avoided. The biological monitor will have the authority to stop the work of the construction crews if the monitor believes the work may injure or kill blunt-nosed leopard lizard. If a blunt-nosed leopard lizard is observed during construction activities, work will only be allowed to resume when the lizard has departed the work area of its own volition or when the biologist has moved the lizard out of harm's way with prior authorization from the Service and CDFG.

Measures to Avoid and Minimize Effects to Critical Habitat for the Longhorn Fairy Shrimp and Vernal Pool Fairy Shrimp for the CVSR Project

- No ground disturbance will occur within 250 feet of the seasonal wetlands comprising branchiopod habitat in mapped critical habitat for the listed fairy shrimp.
- HPR II will implement BMPs to protect water quality, prevent contamination or sedimentation of runoff, and control erosion.
- HPR II will implement a Habitat Restoration and Revegetation Plan to restore all areas subject to temporary ground disturbances upland of seasonal wetlands.

San Joaquin Kit Fox Avoidance and Minimization Measures for the CVSR Project

- Preconstruction surveys will be conducted no fewer than 14 days and no more than 30 days prior to ground disturbance in any given area to ensure new San Joaquin kit fox dens are established in areas of disturbance. Surveys will be conducted by a qualified, Service-approved biologist.
- To prevent take of San Joaquin kit foxes during construction, all the construction requirements described in the *Service Standardized Recommendations for the Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance* (U.S. Fish and Wildlife Service 1999c) will be followed during Project implementation.
- Disturbance to all San Joaquin kit fox dens will be avoided to the maximum extent practicable. Protection provided by San Joaquin kit fox dens for use as shelter, escape, cover, and reproduction is vital to the survival of San Joaquin kit foxes. For kit foxes, the ecological value of potential, known, and natal/pupping dens differs, and therefore each den type requires the appropriate level of protection. Limited destruction of San Joaquin kit fox dens may occur, if avoidance is not practicable, provided the following procedures are observed.
  - Potential Dens: Potential dens will be monitored as if they were known dens. If any den is considered to be a potential den but is later determined during monitoring or destruction to be in use by San Joaquin kit fox (e.g., if San Joaquin kit fox sign is found inside), then the Service and CDFG will be notified immediately, and further activities involving such dens will occur as described below for known dens.

- Known Dens: Known dens occurring within the footprint of the activity will be monitored for three days with tracking medium or an infrared beam camera to determine the current use. If no San Joaquin kit fox activity is observed during this period, the den will be destroyed immediately to preclude subsequent use. If San Joaquin kit fox activity is observed at the den during this period, the den will be monitored for at least five consecutive days from the time of the observation to allow any resident animal to move to another den during its normal activity. Use of the den can be discouraged during this period by partially plugging its entrance(s) with soil in such a manner that any resident animal can escape easily. Only when the den is determined to be unoccupied may the den be excavated under the direction of a qualified biologist. If the animal is still present after five or more consecutive days of plugging and monitoring, the den may have to be excavated when, in the judgment of a qualified biologist, it is temporarily vacant (i.e., during the animal's normal foraging activities). The Service and CDFG encourage hand excavation, but realize that soil conditions may necessitate the use of excavating equipment. However, extreme caution will be exercised under these circumstances.
- Destruction of the den will be accomplished by careful excavation until it is certain that no San Joaquin kit fox are present. The den will be fully excavated, filled with dirt and compacted to ensure that kit foxes cannot reenter or use the den during the construction period. If at any point during excavation a San Joaquin kit fox is discovered inside the den, the excavation activity will cease immediately and monitoring of the den as described above will be resumed. Destruction of the den may be completed when, in the judgment of a qualified biologist, the animal has escaped from the partially destroyed den.
- Natal/pupping dens: Natal or pupping dens that are occupied will not be destroyed until the pups and adults have vacated and then only after consultation with the Service and CDFG. Project activities at these den sites will be postponed if deemed necessary to avoid disturbance.

- Exclusion zones would be delineated around San Joaquin kit fox dens. Construction and other project activities will be prohibited or greatly restricted within these exclusion zones. The configuration of exclusion zones around San Joaquin kit fox dens will have a radius measured outward from the entrance or cluster of entrances. The following radii are minimums, unless after contact with the Service and CDFG, alternative measures are approved:
  - Potential den – 100 feet
  - Known den – 100 feet
  - Natal/pupping den – Service must be contacted
  - Atypical den – 100 feet (occupied and unoccupied)

  Known den: To ensure protection, the exclusion zone will be demarcated by exclusion fencing that encircles each den at the appropriate distance and does not prevent access to the den by San Joaquin kit fox. Exclusion zone fencing will be maintained until all construction-related or operational disturbances have been terminated. At that time, all fencing will be removed to avoid attracting subsequent attention to the dens.

Potential and Atypical dens: Placement of four to five flagged stakes 100 feet from the den entrance(s) will suffice to identify the den location; fencing will not be required, but the exclusion zone must be observed.

All construction, vehicle operation, material storage, or any other type of surface-disturbing activity will be prohibited within the exclusion zones.

- Escape dens will be installed in areas between the arrays identified as "less permeable" to facilitate movement of individuals through these areas. The number and placement of these temporary shelters will be determined through technical coordination with the Service and CDFG as the project is developed and kit fox use patterns of developed areas are documented. Depending on local terrain and array layout, typically one escape den is installed every 1/4 mi along existing maintenance roads. Escape den entrances will measure eight inches across, be constructed of polyvinyl chloride (PVC) pipe, and with rebar installed to restrict the opening to six inches to prevent use by badgers or coyotes. The eight-in diameter PVC pipe will be at least 25-feet long, placed flat on the ground surface, and covered with soil for thermal protection.

Giant Kangaroo Rat Avoidance and Minimization Measures for the CVSR Project

- The array layouts, and the design of array foundations and supporting structures, are intended to minimize impacts to habitat supporting the giant kangaroo rat. For example, the areas supporting the majority of giant kangaroo rat precincts on the site will not be impacted by the Project, but rather will be preserved and managed for kangaroo rats.
- Occupied giant kangaroo rat precincts that are within the CVSR Project action area will be avoided wherever feasible during construction or other Project-related activities, particularly during placement of foundation piles, trenching, and operation of heavy equipment or vehicles. Where active precincts cannot be avoided, giant kangaroo rats will be relocated to on-site conservation land outside the Solar Generation Facility's direct and indirect impact areas as described in the *Relocation and Reintroduction of Populations of Giant Kangaroo Rat* (H. T. Harvey & Associates 2010).

Revegetation and Site Management Plans for the CVSR Project

HPR II will prepare and implement several management plans guiding revegetation of the temporary impact areas on the CVSR Project action area and management of the Solar Generation Facility site, including the on-site conservation areas and areas that will be subject to more regular disturbance associated with solar energy production. All plans described below shall be submitted to the Service for review and approval. These plans will have the goal of avoiding and minimizing impacts to species covered by this biological opinion and maximizing the potential use of the site by these species following installation of the solar arrays. These plans are as follows:

- HPR II will prepare and implement a Habitat Restoration and Revegetation Plan. Upon completion of the project, all areas subject to temporary ground disturbances, including storage and staging areas, temporary roads, pipeline corridors, etc. will be recontoured if necessary, and revegetated to pre-project conditions, according to the Habitat Restoration and Revegetation Plan. An area subject to "temporary" disturbance for purposes of the Habitat Restoration and Revegetation Plan means any area that is disturbed during the project, but that after project completion has the potential to be revegetated.

- HPR II will prepare and implement a Site Management Plan for the portions of the Solar Generation Facility and Generation Tie-Line that will be subject to ongoing disturbance by O&M activities, including the areas occupied by the solar arrays. This plan will focus on management for sensitive biological resources that will occur in these areas following installation of the arrays and other solar generation facilities. This plan will include a description of the process by which managed livestock grazing will be used to maintain low-height grassland vegetation on the site for the benefit of grassland-associated species. For example, cattle grazing similar to that currently occurring in the CVSR Project action area will be proposed for management of the conservation areas. This plan will also specify measures that will be implemented during O&M activities to avoid and minimize impacts to species covered by this biological opinion.
- HPR II will prepare and implement a Weed Control Plan for the site to prevent the introduction or spread of nonnative invasive plant. This Plan will address the Solar Generation Facility and Generation Tie-Line and may be integrated with another habitat management plan (e.g., the Site Management Plan). The Weed Control Plan will describe BMPs to avoid the unintentional introduction of invasive species to the site; describe monitoring measures to ensure that any invasions are detected before they become substantial; describe species-specific control measures that will be implemented if invasions occur; and describe the process by which the Plan will be implemented (e.g., the entity responsible for implementing it, funding mechanisms, and reporting procedures).

Conservation Measures for the PG&E Reconductoring Component

In the following sections, general avoidance and minimization measures will apply to all (or at least multiple) species covered by this biological opinion are listed first, followed by species-specific measures that will be implemented:

- An environmental awareness education program will be conducted by a qualified biologist for construction crews prior to initiating construction of the Proposed Action. The program will be conducted for new crew members throughout the duration of the project. The education program will include information about potentially occurring federally listed species, a review of conservation measures that are being implemented during project construction, and the consequences for noncompliance with environmental laws.
- A qualified biologist will monitor all ground-disturbing construction activity in sensitive areas and near designated resources within the PG&E Reconductoring action area. All monitors will be biologists with formal training. The resumes of all biological monitors will be submitted to the Service for approval. The qualified biological monitor will train an individual or individuals to act as work site construction monitor(s) to assist the qualified biological monitor with overseeing remaining work at work areas after ground-disturbing activities are completed. The biological monitor will have the ability to stop or redirect work activities to ensure protection of sensitive resources and compliance with all environmental permits and conditions of the Proposed Action. The biological monitor will complete a daily log summarizing activities and environmental

compliance, and will prepare a weekly report summarizing the monitoring activities and environmental compliance for the activities performed within the PG&E Reconductoring action area. This report will be submitted to the PG&E biologist. The biological monitor will also be the initial contact person for any employee who might inadvertently injure or kill a federally listed species or who finds a dead, injured, or entrapped individual. A communication protocol will be established between the biological monitor, PG&E, and the agencies. The monitor's name and number will be provided to the Service prior to the initiation of ground-disturbing activities.

- Vehicles will be restricted to established roadways and approved access routes and staging areas within the PG&E Reconductoring action area. Cross-country access routes will be clearly marked in the field with appropriate flagging and signs as necessary.
- A vehicle speed limit of 15 mph will be enforced on all non-public access roads.
- All vehicles will be brought into the work areas cleaned and free of weeds prior to entry.
- Staging areas will be set back at least 50 feet from streams, creeks, or other water bodies to avoid impacts on sensitive habitat. All fueling of vehicles will occur at least 100 feet from wetlands and other water bodies with secondary containment and appropriate clean up equipment onsite in case of a spill.
- If federally listed species are encountered during construction work, activities that could cause direct harm to the species, as determined by the biological monitor, will cease until the animal is allowed to leave the work site. The Service and CDFG will be notified within 24 hours of the encounter.
- Photographic documentation of preconstruction habitat conditions will occur at all major work areas, including staging areas, landing zones, and tension/pull sites, prior to the start of construction and immediately after construction activities are performed.
- Construction personnel will not bring firearms or pets to any project-related work areas and will not leave trash on the project site during construction.
- A litter control program will be instituted at each of the work areas. All workers will ensure that their food scraps, paper wrappers, food containers, cans, bottles, and other trash are deposited in covered or closed trash containers. The trash containers will be removed from the work areas at the end of each work day. After completion of the Proposed Action, all construction materials will be removed from each of the work areas.
- To prevent the inadvertent entrapment of federally listed species during the Proposed Action, all excavated, steep-walled holes and trenches more than six inches deep will be covered at the end of each work day by plywood or similar materials or escape ramps will be installed. In situations where the trenches or holes cannot be covered, earthen escape ramps will be dug into the sides of trenches. All holes and trenches will be thoroughly inspected at the start of each workday for trapped animals before they are filled. If at any time a trapped listed animal is discovered, escape ramps or other appropriate structures will be placed to allow the animal to escape. The Service will be notified of the incident by telephone and electronic mail within one working day.

- A set of BMPs will be developed to control erosion during construction and will be detailed in the project-specific Storm Water Pollution Prevention Plan (SWPPP). All temporarily disturbed areas will be restored as necessary. A project-specific Restoration Plan detailing specific revegetation plans, monitoring guidelines, and success criteria, will be developed as part of the Habitat Management Plan (see below). Together, the SWPPP and Restoration Plan will facilitate the restoration of construction areas and will contain information on site-specific implementation plans.
- Temporary construction disturbances and other types of project-related disturbances to federally listed species will be minimized to the maximum extent practicable and confined to designated work areas. To minimize temporary disturbances, all sensitive habitats will be delineated with highly visible flagging or fencing in order to prevent encroachment of construction personnel and equipment during work activities. At no time will equipment or personnel be allowed to adversely affect areas outside of project work areas, staging areas, or landing zones without authorization from the Service.
- PG&E will prepare and implement a Habitat Restoration Plan, which will contain management and mitigation plans for listed species (Kern mallow, blunt-nosed leopard lizard, giant kangaroo rat, Tipton kangaroo rat, California tiger salamander, and San Joaquin kit fox) as well as a restoration plan for sensitive habitats. The Habitat Restoration Plan will be submitted to the Service for review and approval prior to the start of construction. The purpose of the Habitat Restoration Plan is to provide more detailed information on the measures that PG&E will implement to restore areas temporarily affected by the proposed project. The Habitat Restoration Plan will include how restoration at the work areas will be completed and will include success criteria to ensure that restoration of the work areas is successful. Restoration of any temporarily disturbed areas as a result of PG&E Reconductoring activities will occur within one year of disturbance for all sites.

San Joaquin Kit Fox Avoidance and Minimization Measures for the PG&E Reconductoring

- A qualified biologist(s) holding a valid Service 10(a)(1(A) permit will conduct preconstruction den surveys no more than 14 days prior to the initiation of work activities in a given area, to ensure that potential kit fox dens are not disrupted by construction or operation activities. If potential dens are located within the survey area, the entrance of the dens will be monitored for three consecutive nights with tracking medium or an infrared beamed remote camera prior to the initiation of work activities to determine the status of the potential dens. If San Joaquin kit fox activity is observed at the den during this period, the den will be monitored for at least five consecutive days from the time of the observation to allow any resident kit fox to move to another den during its normal activity. Use of the den can be discouraged during this period by partially plugging its entrance(s) with soil in such a manner that any resident animals can escape easily. Only when the den is determined to be unoccupied may the den be excavated under the direction of a qualified biologist. If the animal is still present after five or more consecutive days of monitoring, the den may be excavated when, in the judgment of the qualified biologist, it is temporarily vacant (i.e., during the animal's normal foraging activities). The Service and CDFG encourage hand excavation, but realize that soil conditions may necessitate the use of excavating equipment. Extreme caution will be

exercised under these circumstances. Destruction of the den will be accomplished by careful excavation until it is certain that no San Joaquin kit fox or other animals are present. The den will be fully excavated, filled with dirt, and compacted to ensure that kit foxes cannot reenter or use the den during construction period. If at any point during the excavation a San Joaquin kit fox is discovered inside the den, the excavation will cease immediately and monitoring of the den described above will be resumed. Destruction of the den may be completed when, in the judgment of a qualified biologist, the animal has escaped from the partially destroyed den.

- Should it be determined that a den site within a work area is a natal den, destruction of the den will not be permitted until the pups and adults have vacated and then only after consultation with the Service and CDFG. Project activities at the location of the natal den will be postponed to avoid disturbance. Exclusion zones will be established around suitable dens and construction activities will be greatly restricted within these exclusion zones. The radius of these zones will follow current standards or will be as follows:
    - Potential den – 50 feet
    - Known den – 100 feet
    - Natal/pupping den – to be determined on a case-by-case basis in coordination with the Service and CDFG
    - Atypical den – 50 feet
- All trenches will be covered at the end of each work day, or escape ramps will be installed in the trench at regular intervals to allow San Joaquin kit fox and other animals that fall in the trench means of escape.
- PG&E will restore all areas identified as San Joaquin kit fox habitat that are temporarily disturbed by work activities to pre-project conditions within 12-18 months of completion of the Proposed Action, according to pre-defined vegetative success criteria. Success criteria and the methods used to attain them will be outlined as part of the Habitat Restoration Plan.

Giant Kangaroo Rat and Tipton Kangaroo Rat Avoidance and Minimization Measures for the PG&E Reconductoring

- To the extent feasible, areas providing suitable habitat for giant kangaroo rat and Tipton kangaroo rat will be avoided. During the habitat assessment, biologists identified certain tension/pull sites and landing zones that PG&E proposed that were in areas that could significantly affect giant kangaroo rats and Tipton kangaroo rats because (1) the kangaroo rats are known to occur or have a high probability of occurring in the work areas based on previous observations and CNDDB records; (2) the large number of burrows occurring within the proposed work areas; and (3) the relatively high density of the shrubs will have made it extremely difficult to see all suitable burrows. Biologists recommended that these work areas be moved. As a result, PG&E agreed to move these tension/pull sites and landing zones to areas with significantly fewer burrows and much less dense shrubs, thus allowing for greater avoidance of burrows.
- When construction vehicles must travel off existing access roads within suitable habitat, a qualified biologist will walk ahead and identify a route for the vehicles to follow that will

avoid burrows to the greatest extent practicable. To minimize direct mortality to giant kangaroo rats and Tipton kangaroo rats when working in suitable habitat, plywood boards will be placed to cover suitable burrows that occur along the vehicle access routes. These boards will be removed immediately after the construction vehicles have driven over them. To the greatest extent possible, the construction vehicles will avoid parking on burrows.

- If guard crossing poles need to be established within suitable giant kangaroo rat or Tipton kangaroo rat habitat, a qualified and Service approved biologist will work with construction crews to ensure that the poles are sited to avoid burrows. When removal of shrubs is necessary to allow vehicle access, it is recommended that the shrubs be removed by hand.
- If occupied or potentially occupied burrows cannot be avoided, a qualified biologist will stake and flag a work-exclusion zone of at least 30 feet around active burrows prior to covered activities at the job site and remain onsite as a biological monitor. If work must proceed in the exclusion zone, PG&E will pursue techniques to minimize direct mortality; which may include having approved biologists, holding a current section 10(a)(1)(A) handling permit for giant kangaroo rats and/or Tipton kangaroo rats, trap and hold species in captivity, and excavating and closing burrows. In areas that are temporarily disturbed, the approved biologist will release the kangaroo rats as soon as possible back into the areas where they were trapped.

Blunt-nosed Leopard Lizard Avoidance and Minimization Measures for the PG&E Reconductoring

- To the extent feasible, areas providing suitable habitat for blunt-nosed leopard lizards will be avoided. During the habitat assessment, biologists identified certain work areas for tension/pull sites and landing zones that PG&E proposed that were in areas that could significantly affect blunt-nosed leopard lizards because (1) the lizards are known to occur in the work areas based on previous observations or CNDDB records; (2) the large number of burrows occurring within the proposed work areas; and (3) the relatively high density of the shrubs will have made it extremely difficult to see all of the burrows. Biologists recommended that these work areas be moved. As a result, PG&E agreed to move these tension/pull sites and landing zones to areas with significantly fewer burrows and less dense shrubs, thus allowing for greater avoidance of burrows.
- When construction vehicles must travel off existing access roads located within suitable habitat, a qualified biologist will walk ahead of the vehicles and identify a route for the vehicles to follow that will avoid burrows to the greatest extent practicable. To minimize direct mortality to blunt nosed leopard lizards when working in suitable habitat, plywood boards will be placed to cover suitable burrows that occur along the vehicle access routes. These boards will be removed immediately after the construction vehicles have driven over them. To the greatest extent possible, the construction vehicles will avoid parking on burrows.
- If guard crossing poles need to be established within suitable blunt-nosed leopard lizard habitat, a biologist will work with construction crews to ensure that the poles are sited to avoid burrows. When removal of shrubs is necessary to allow vehicle access, it is recommended that the shrubs be removed by hand.

- If burrows occurring within the work area cannot be avoided, the work area will be fenced using material that blunt-nosed leopard lizards cannot climb. Focused surveys (involving 12 separate surveys) will be conducted to determine whether blunt-nosed leopard lizards occur within the fenced area. If blunt-nosed leopard lizards do occur, these active burrows will be avoided by a 50-foot buffer. If necessary, a CDFG or Service representative will be contacted to develop alternative measures.
- Surface-disturbing activities will be designed to minimize or eliminate effects to rodent burrows that may provide suitable hibernating and aestivation habitat. Areas with a high concentration of burrows will be avoided by surface-disturbing activities to the maximum extent practicable. In addition, when a concentration of burrows is present in a project site, the area will be staked or flagged to ensure that work crews are aware of their location and to facilitate avoidance of the area.
- A preconstruction survey will be conducted each day immediately preceding construction activity that occurs in designated blunt-nosed leopard lizard habitat or in advance of any activity that may result in take of this species. Vehicles will be inspected each morning before they are moved.
- All suitable habitats for blunt-nosed leopard lizard that are temporarily affected by project-related activities will be restored to pre-project conditions. Site-specific restoration measures and success criteria will be outlined in the Habitat Restoration Plan developed for the project.

California Tiger Salamander Avoidance and Minimization Measures for the PG&E Reconductoring

- At least 15 days prior to ground disturbance, the project proponent shall submit to the Service the names(s) and credentials of the biologists who will conduct the following measures.
- The Proposed Action will avoid suitable aquatic habitat.
- All excavated material shall be stored at a minimum of 150 feet from any culvert, wash, pond, vernal pool or stream crossing.
- Tightly woven fiber netting or similar material shall be used for erosion control or other purposes to ensure that California tiger salamander do not get trapped. Plastic monofilament netting shall not be used.
- Construction activities in suitable California tiger salamander upland habitat will be restricted to the dry season, April 15 through October 31, to the maximum extent feasible. If construction activities must occur within suitable California tiger salamander habitat during the wet season, when the species may be migrating overland to suitable breeding habitat, the perimeter of pull sites, staging areas, and/or landing zones will be fenced with exclusion fencing by October 15. Installation of exclusion fencing will occur under the supervision of the agency-approved biologist. The exclusion fencing will remain in place for the duration of construction and will be monitored during SWPPP

inspections and by the biological monitors. Where access is necessary, gates will be installed within the exclusion fence.

- As necessary, erosion control measures will be implemented in suitable California tiger salamander upland habitat to prevent any soil or other materials from entering any nearby aquatic habitat. Erosion control measures will be installed adjacent to suitable aquatic habitat to prevent soil from eroding or falling into these areas.

- Locations of erosion control measures will be specified in the SWPPP. Erosion control measures will be furnished, constructed, maintained, and later removed as shown on the plans, as specified in the special provisions, and as directed by the project engineer.
- The biological monitor and construction foreman will be responsible for checking the exclusion fencing around the work areas daily to ensure that they are intact and upright. Any necessary repairs will be immediately addressed. The biological monitor will document the results of the daily monitoring visits on construction monitoring log sheets.

- Surface-disturbing activities will be designed to minimize or eliminate effects to rodent burrows that may provide suitable upland habitat. Areas with a high concentration of burrows will be avoided by surface-disturbing activities, to the maximum extent feasible. In addition, when a concentration of burrows is present at a particular location, the area will be staked or flagged to ensure that work crews are aware of their location and to facilitate avoidance of the area.

- A preconstruction survey will be conducted each day immediately preceding construction activity that occurs in designated California tiger salamander suitable upland habitat between October 31st and April 15th, or in advance of any activity that may result in take of this species. Parked vehicles will be inspected each morning before they are moved. In work sites that occur within 300 feet of suitable aquatic habitat, the survey area will include a 150-foot buffer around the work area. The survey will include a careful inspection of all potential hiding spots, such as large downed woody debris, the perimeter of ponds, wetlands, and riparian areas.

- Any tiger salamanders found will be captured by an approved biologist, holding a current Act 10(a)(1)(A) handling permit, and relocated to a suitable burrow a minimum of 300 feet outside of the work area.

- Nets or bare hands may be used to capture California tiger salamanders. The Service-approved biologist will not use soaps, oils, creams, lotions, insect repellents, or solvents of any sort on their hands within two hours before handling tiger salamanders. Latex gloves will not be used. To avoid transferring diseases or pathogens between aquatic habitats during the course of surveys or handling, the biologists will follow the Declining Amphibian Task Force's "Code of Practice." For the brief period in captivity, individual California tiger salamanders will be kept in a cool, moist, aerated environment such as a bucket containing a damp sponge. Containers used for holding or transporting these species will be sanitized and will not contain any standing water.

- No construction activities in sensitive habitat areas will occur during rain events of greater than 0.25 inch within a 24-hour period. No construction activities will be

conducted in areas where California tiger salamanders may occur if there is a greater than 70 percent chance of rain based on the National Oceanic and Atmospheric Administration's National Weather Service forecast or within 48 hours following a rain event greater than 0.25 inch, unless approved by the monitor.

- Any California tiger salamander upland habitat temporarily affected by the Proposed Action will be restored to pre-project conditions. Site-specific restoration measures and success criteria will be outlined in the Habitat Restoration Plan, developed for the PG&E Reconductoring. A monitoring report will be due to the Service and CDFG annually that will include photo-documentation with pre- and post-project photos, and other information as specified in the Habitat Restoration Plan.

Kern Mallow Avoidance and Minimization Measures for the PG&E Reconductoring

- To the extent feasible, habitat occupied by the Kern mallow will be avoided. Biologists identified Kern mallow in and around Tower and Road Crossing 109, at Distribution Line 113, and between Tower 127 and Tower 128 (ICF International 2010). Some of these locations were previously known; however, the surveys in 2010 and 2011 (Brandon Liddell, pers. comm. 2011) reported increased densities at some locations compared with previous reports, as well as additional locations not previously known. Biologists recommended that these work areas be moved to areas without known populations of Kern mallow. As a result, PG&E agreed to move work at Tower 109 and between Towers 127 and 128 to areas without known populations of Kern mallow.

- Some of the work areas were not previously surveyed for the presence of Kern mallow. Surveys for the presence of Kern mallow, according to the most recent agency protocols, will be conducted prior to any construction activities occurring in work areas that were not previously surveyed for Kern mallow. Global positioning system (GPS) coordinates will be taken of newly discovered populations within work areas.

- If populations of Kern mallow are located within work areas, these populations will be avoided to the greatest extent feasible. Populations that can be avoided will be flagged for avoidance prior to the start of construction and a biological monitor will be present to ensure compliance with off-limit areas. Indirect impacts to Kern mallow populations will be minimized by creation of a buffer zone around known populations. The buffer zone will be determined by a qualified biologist in consultation with the Service and will be of sufficient size to eliminate potential disturbance that may negatively affect the population.

- If habitat occupied by Kern mallow will be temporarily impacted, the upper four inches of topsoil will be stockpiled separately during excavations or scraping, so that it can be used to re-seed the affected areas during restoration according to the Habitat Restoration Plan.

CVSR Conservation Strategy and Measures

Some of the species covered by this biological opinion, such as the San Joaquin kit fox and giant kangaroo rat may continue to use the areas occupied by the solar arrays and within a 100-foot-buffer of the solar arrays after installation, however, habitat beneath the solar array areas and buffers are considered in this biological opinion to be affected acreage for which conservation

measures will be provided elsewhere and lands within the solar array and buffer boundaries would not be considered to provide conservation habitat.

The primary focus of the conservation measures would be placed on the permanent conservation of lands (through fee title acquisition, conservation easement, management plan implementation, etc.) that provide high value habitat for listed species. These lands would provide a significant contribution to regional preservation efforts by preserving and restoring lands that currently provide very low value in key areas within a regional context. All such lands would be managed to optimize suitability to the appropriate listed species. The conservation lands would be acquired, and placed in a permanent protection status, and a management plan that addresses each property would be developed. Implementation of such management plans will be funded in perpetuity prior to ground breaking. All conservation lands and related management plans would be subject to Service approval.

Lands would be protected with a Service approved easement, endowment and management plan commensurate with a phased implementation approach. The Solar Generation Facility will be constructed sequentially in overlapping phases over an approximate two and a half year period starting in summer 2011. The Solar Generation Facility is expected to begin generating electricity as early as the first quarter of 2012 and be fully online by the end of 2013. Prior to the start of construction, HPR II will define and submit to the Service an initial construction phase comprised of various project elements (e.g., substation, array, O&M facility, access roads, etc.). The following conservation actions will be completed within 120 days of the initial ground disturbance associated with the first phase and within 120 days of the initial ground disturbance for each subsequently defined phase:

> 1) A Service approved conservation easement to meet the compensatory conservation measures will be recorded on on-site and/ or off-site conservation land.
> 2) A management plan for these conservation lands will be approved by the Service.
> 3) An analysis of the management costs and endowments required to fund the plan will be approved by the Service.
> 4) The endowment for the plan will be fully funded.

Initial ground disturbance associated with subsequent phases will not begin until conditions 1 through 4 have been completed for the prior phase.

The guiding conservation ratios are as follows:

- San Joaquin kit fox habitat permanently lost to facilities and under the solar arrays and within the 100-foot array buffer will be compensated at a ratio of not less than 5:1 (conservation lands: impacted lands) for all such habitat acreage. All such lands would be managed to optimize suitability to the appropriate listed species.
- Permanent loss of giant kangaroo rat habitat to facilities and the presence of solar arrays will be compensated at a ratio of not less than 4:1 for all permanently impacted acreage

of habitat. The 4:1 ratio will comprise 3:1 of preserved occupied habitat and 1:1 of created or restored habitat that is contiguous with or biologically connected to occupied suitable habitat.

The same lands can be used to compensate for habitat impacts to multiple species and their critical habitat as long as those lands support all those species and the critical habitat.

The following measures will be implemented to conserve federally listed species:

- Avoidance and minimization of impacts to individuals of these species and their designated critical habitat (as described in the previous avoidance and minimization sections), both to minimize take of individuals and to retain individuals on and near the CVSR Project site as a source of colonists for preserved and enhanced on-site and off-site habitats, and to protect and maintain the conservation function of critical habitat.

- The layout of the Solar Generation Facility has been designed to maximize avoidance, preservation, and management of the on-site habitat for listed species. The design will result in the preservation and management of approximately 3,006 acres (~2,946 acres suitable for San Joaquin kit fox and ~2,606 acres suitable for giant kangaroo rat) for listed species in perpetuity through fee title or conservation easement acquisition. This habitat will be managed to provide suitable habitat for listed species. The project has avoided, and will preserve and enhance, areas containing approximately 91 percent of the giant kangaroo rat precincts that have been identified in the CVSR action area. The majority of the 3,006 acres of on-site conservation areas currently provide and will be managed to maintain suitable habitat for the giant kangaroo rat. Preservation and management of these lands for the giant kangaroo rat will benefit not only this species but also the San Joaquin kit fox (which preys upon the kangaroo rat) and other grassland-associated species, such as the mountain plover.

- Preservation and management of off-site habitat. Commensurate with the proposed Phased build and acquisition schedule, HPR II will acquire off-site preservation habitat and preserve and manage the off-site conservation areas in perpetuity for the listed species covered by this biological opinion within areas of regional importance for the species and approved by the Service. These conservation areas will comprise habitat that is occupied by the listed species impacted by the Proposed Action or that is suitable but unoccupied and can be restored to ensure occupancy (through targeted management) by populations of these species. Through land use changes and targeted management for these species (e.g., by removing active discing, reseeding, and/ or introducing managed grazing), habitat quality for listed species will be improved considerably. For the San Joaquin kit fox and giant kangaroo rat, we anticipate the natural colonization of these improved and enhanced conservation lands because of their proximity to occupied habitat. Potential conservation acreages for giant kangaroo rat, San Joaquin kit fox, and vernal pool fairy shrimp and longhorn fairy shrimp Critical Habitat are presented below:

    - Approximately 3,280 acres of occupied potential conservation habitat for giant kangaroo rat has been identified north of the CPNM. Over 2,000 acres of additional habitat capable of being restored or enhanced has also been identified north of the CPNM in the vicinity of the CVSR Project action area. Lastly, over

2,600 acres of suitable, but currently unoccupied giant kangaroo rat habitat has been identified as conservation lands that will contribute to the recovery of the species by maintaining the lands in a state compatible with re-colonization.

- Protocol surveys for San Joaquin kit fox on potential off-site conservation lands were not conducted. However, reconnaissance-level surveys of suitable conservation lands documented evidence of the species through observation of fresh scat, tracks, and suitable and occupied kit fox dens. The habitat suitability for kit fox as mapped by South Coast Wildlands (2010) within potential off-site conservation lands is included in the biological assessment. The potential off-site conservation lands within the Carrizo Plain north of the CPNM are mostly agricultural lands, which are currently dry-land farmed or were previously dry-land farmed and are currently grazed. Approximately 3,500 acres of occupied grassland and shrubland kit fox habitat will be conserved and managed for kit fox within this area. An additional 1,700 acres of dry-land farmed or periodically tilled land will be restored to grassland habitat and managed for kit fox within the Carrizo Plain north of the CPNM. These lands are within the kit fox corridor identified by South Coast Wildlands (2010) and contribute to the preservation and enhancement of the corridor in this area by restoring habitat degraded by agricultural practices, preserving substantial areas between the Proposed Action and other actions, and reducing the likelihood of future threats from solar development by limiting interconnection access to the Morro Bay to Midway PG&E line.

- More than 2,000 acres of conservation lands comprising in-holdings within the CPNM have been identified for the purpose of preserving occupied kit fox habitat within this core population critical to the long-term survival of the species (U.S. Fish and Wildlife Service 1998). Previous or current land uses on or in the vicinity of these in-holdings comprise dry-land farming, livestock grazing, minor oil and gas extraction, or recreational uses such as hunting, camping, hiking, equestrian use, and auto touring. An additional 472-acre parcel comprising potential conservation land benefiting kit fox has been identified within the Lokern area of Kern County. Prime San Joaquin kit fox habitat in the Lokern area has been destroyed by oil and gas development, agriculture, overgrazing, competition with non-native plants, telecommunication and electrical line construction, and off-road vehicle use. Few large private parcels supporting kit fox and giant kangaroo rat remain in the region. Oil and gas development and grazing currently occurs on this parcel and protection and management of the remainder of the parcel will contribute to the preservation of core habitat within an important population linkage for kit fox.

- Finally, approximately 271 acres of vernal pool fairy shrimp and longhorn fairy shrimp Critical Habitat on the CVSR Project action area and approximately 820 acres of Critical Habitat off-site will be protected and managed in perpetuity. Two of the off-site conservation lands within designated Critical Habitat support longhorn fairy shrimp and one supports the vernal pool fairy shrimp.

The conservation strategy for CVSR Project will result in permanent protection of suitable habitat for all of the listed species, including San Joaquin kit fox, giant kangaroo rat, and vernal pool crustaceans, that occur on the Solar Generation Facility, Generation Tie-Line, Caliente Switching Station, and Twisselman Aggregate Mine sites, on lands where these habitats are currently vulnerable to conversion to incompatible land uses such as dry-land farming or viticulture. On-site and off-site conservation will also involve the restoration of habitat on otherwise physically suitable lands for San Joaquin kit fox and giant kangaroo rats. The preservation and enhancement of degraded, at risk habitat for giant kangaroo rat will provide a number of substantial benefits. For example, giant kangaroo rats are a keystone species, and re-establishment or population growth in areas where they have been extirpated or exist in low numbers will benefit numerous other species including the San Joaquin kit fox, American badger (*Taxidea taxus*), and burrowing owl (*Athene cunicularia*), which rely on them as prey, as well as San Joaquin antelope squirrels and potentially blunt-nosed leopard lizards, which rely on giant kangaroo rat burrows for shelter.

CVSR Preservation and Management of Conservation Lands

For both on-site and off-site conservation areas, HPR II will develop and implement a Habitat Mitigation and Monitoring Plan, approved by the Service, for the conservation lands and approved by the Service according to the phased construction schedule. That plan will include, at a minimum, the following information:

- A summary of habitat impacts and the proposed conservation measures
- A description of the location and boundaries of the conservation site and description of existing site conditions
- A description of measures to be undertaken to enhance (e.g., through focused management) the conservation site for special-status species
- A description of management and maintenance measures (e.g., managed grazing, fencing maintenance, etc.)
- A description of habitat and species monitoring measures on the conservation site, including specific, objective final and performance criteria, monitoring methods, data analysis, reporting requirements, monitoring schedule, etc.
- A contingency plan for conservation elements that do not meet performance or final success criteria within five years; this plan will include specific triggers for remediation if performance criteria are not being met and a description of the process by which remediation of problems with the conservation site (e.g., presence of noxious weeds) will occur.

The permanent protection and management of conservation lands shall be ensured through an appropriate mechanism, such as a conservation easement or fee title purchase, acceptable to the Service. The conservation easement could be held by the CDFG or an approved land management entity and shall be recorded within a time frame agreed upon by the Service and CDFG.

An endowment will be established for the management of the conservation lands in perpetuity. A Property Analysis Record (PAR) analysis will be conducted to determine the average annualized cost of site management and monitoring, and the endowment will be adequate for the interest on the endowment's principal to pay for annual management and monitoring according to the phased construction schedule.

PG&E Conservation Measures

PG&E will provide compensation for species effects through a variety of mechanisms. These mechanisms may be combined in various configurations, including purchase of compensation lands, purchase of mitigation credits from existing mitigation banks, placement of conservation easements on PG&E lands, and purchase of conservation easements. An emphasis is placed on purchase of compensation lands, purchase of credits from mitigation banks, and placement of conservation easements on PG&E lands.

Pre-activity surveys will verify the suitable habitat assumptions made in this biological opinion at each of the work areas. Post-construction surveys will be conducted to determine the actual area of disturbances that occurred at each of the work areas. Compensation will be based on these post-construction acreages. For the reconductoring portion of the proposed action, all permanent losses to suitable habitat for giant kangaroo rat, San Joaquin kit fox, Tipton kangaroo rat, blunt-nosed leopard lizard, and Kern mallow will be compensated for at a 3:1 ratio and temporary losses of suitable habitat will be mitigated at a 1:1 ratio and all losses to suitable habitat for California tiger salamander will be compensated at a 3:1 ratio consistent with the phasing of construction schedule.

The primary goal of the PG&E Reconductoring's conservation strategy is to ensure that the proposed project has no net adverse effect to populations of the federally listed species that will be affected by the PG&E Reconductoring. This goal will be accomplished through the following:

- PG&E will acquire habitat in the Carrizo Plain for temporary and permanent impacts to habitat for giant kangaroo rat and San Joaquin kit fox in San Luis Obispo County. This is additive to and contiguous with the conservation lands for the CVSR Project.
- HPR II has reserved up to 88 acres of habitat for PG&E with known populations of San Joaquin kit fox and giant kangaroo rat available for minimizing impacts to these species. This habitat is adjacent to over 2,900 acres of similar habitat that will be protected under a permanent conservation easement and managed specifically for the benefit of these species. The site will also be adjacent to a very large area of open rangeland providing connectivity, and the other benefits discussed in the Effects of the Conservation Proposal section, to habitat occupied by these species on the CPNM and in the western portion of the San Joaquin Valley.
- Consistent with the phasing schedule 40 acres of California annual grassland, suitable for San Joaquin kit fox will be acquired by PG&E as compensation property adjacent to land that may be put into conservation easements for other actions. For project-related temporary impacts to Tipton kangaroo rat, PG&E will purchase 1.14 acres of credits at the Kern Water Bank (which is approved for Tipton kangaroo rat) for 1.14 acres of temporary impacts at the project site.

- For project-related impacts to California tiger salamander, and consistent with the phasing schedule, PG&E will purchase 44.25 acres of credit at a Service approved mitigation bank. Bank credits will be purchased prior to PG&E working in areas that will affect California tiger salamander.
- For project-related impacts to Kern mallow, and consistent with the phasing schedule, PG&E will purchase 0.11 acres of credits from the Kern Water Bank.
- For project impacts to blunt-nosed leopard lizard, PG&E will purchase 14 acres of credits at a Service approved bank consistent with the phasing schedule.

Action Area

The action area is defined as all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action (50 CFR 402.02). The action area for this biological opinion encompasses all areas that may be directly or indirectly affected as a result of construction and operation activities for the Proposed Action, and the broader area that, while outside and adjacent to the construction zone, may be directly or indirectly affected by vibrations, noise, dust, or movement associated with the Proposed Action. The action area also includes areas that may be affected by the implementation of conservation measures.

The action area for the solar generation facility portion of the Proposed Action includes the area in between, underneath, and adjacent (within 100 feet) to the array panels, and associated infrastructure.

The action area for the reconductoring portion of the project includes the area underneath, overhead, along and immediately adjacent to the 35 miles of existing transmission line between the PG&E Solar Switching Station and the Midway Substation in Kern County and the ROW (75 to 128 feet wide) for the transmission line.

The action area for the Twissleman aggregate mine includes the area previously excavated (12 acres) and the areas that would be excavated (11 acres) for the ongoing activities.

The action area for the Proposed Action consists of:

- the approximate 4,691-acre Solar Generation Facility the Generation Tie-Line south and north of SR 58,
- the approximate 14-acre PG&E Caliente Switching Station and access road to the switching station (to connect the solar power plant to the existing 230 kV Morro Bay-Midway transmission lines),
- the approximate 23-acre Twisselman Aggregate mine,
- the roadway that will be used for transportation of quarried rock from the Twisselman Aggregate Mine to the rest of the CVSR Project site,
- the approximate 53 acres underneath and along the 35-mile right-of-way (ROW) Carrizo to Midway 230kV transmission line, and

- the approximate 11,000 acres of conservation lands in the Carrizo Plain and the Lokern area of Kern County.

Analytical Framework for the Jeopardy and Adverse Modification Analyses

Jeopardy Determination

In accordance with policy and regulation, the jeopardy analyses in this biological opinion rely upon on four components: (1) *Status of the Species*, which evaluates the San Joaquin kit fox, giant kangaroo ray, Tipton kangaroo rat, blunt nosed-leopard lizard, California tiger salamander, and Kern mallow range-wide conditions, the factors responsible for each species' condition, and each species' survival and recovery needs; (2) the *Environmental Baseline*, which evaluates the condition of these above listed species in the action area, the factors responsible for each species' condition, and the role of the action area in these above listed species' survival and recovery; (3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the these above listed species and (4) *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on these above listed species.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed Federal action in the context of these above listed species current status, taking into account any cumulative effects, to determine if implementation of the Proposed Action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of these above listed species in the wild.

The jeopardy analyses in this biological opinion place an emphasis on consideration of the range-wide survival and recovery needs of these above listed species and the role of the action area in survival and recovery of these species as the context for evaluating the significance of the effects of the proposed Federal action, taken together with cumulative effects, for purposes of making the jeopardy determinations.

Adverse Modification Determination

This biological opinion does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 CFR 402.02. Instead, we have relied upon the statutory provisions of the ESA to complete the following analysis with respect to critical habitat.

In accordance with policy and regulation, the adverse modification analyses in this biological opinion rely on four components: (1) the *Status of Critical Habitat*, which evaluates the range-wide condition of designated critical habitat for the vernal pool fairy shrimp and the longhorn fairy shrimp in terms of primary constituent elements (PCEs), the factors responsible for that condition, and the intended recovery function of the critical habitat overall; (2) the *Environmental Baseline*, which evaluates the condition of the critical habitat in the action area, the factors responsible for that condition, and the recovery role of the critical habitat in the action area; (3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the

PCEs and how that will influence the recovery role of affected critical habitat units; and (4) *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on the PCEs and how that will influence the recovery role of affected critical habitat units.

For purposes of the adverse modification determinations, the effects of the proposed Federal action on vernal pool fairy shrimp and longhorn fairy shrimp critical habitat are evaluated in the context of the range-wide condition of the critical habitat, taking into account any cumulative effects, to determine if the critical habitat range-wide will remain functional (or will retain the current ability for the PCEs to be functionally established in areas of currently unsuitable but capable habitat) to serve the intended recovery role for these species.

The analyses in this biological opinion place an emphasis on using the intended range-wide recovery function of vernal pool fairy shrimp and longhorn fairy shrimp critical habitat and the role of the action area relative to that intended function as the context for evaluating the significance of the effects of the proposed Federal action, taken together with cumulative effects, for purposes of making the adverse modification determinations.

Status of the Species and Critical Habitat

A thorough discussion of the status of giant kangaroo rat, Tipton kangaroo rat, blunt-nosed leopard lizard, San Joaquin kit fox, Kern mallow and California tiger salamander can be found in the listing rules (52FR283, 53FR25608, 32FR4001, 55FR29361, and 69FR47212); the five-year reviews for the species (U.S. Fish and Wildlife Service 2010) except for Kern mallow and California tiger salamander; and in the Service's Recovery Plan for Upland Species of the San Joaquin Valley, California (U.S. Fish and Wildlife Service 1998). The California tiger salamander is not included in any recovery plan. A thorough discussion of the status of designated vernal pool fairy shrimp and longhorn fairy shrimp critical habitat is found in our August 11, 2005 and February 10, 2006 final rules designating critical habitat (70FR46924 and 71FR7118, respectively). The following discussions on the species are largely taken from these sources and are included in the file for this biological opinion.

San Joaquin Kit Fox

The San Joaquin kit fox was listed as an endangered species on March 11, 1967 (U.S. Fish and Wildlife Service 1967) and was listed by the State of California as a threatened species on June 27, 1971. This is the umbrella species for the Recovery Plan for Upland Species of the San Joaquin Valley, California (U.S. Fish and Wildlife Service 1998).

The kit fox is the smallest canid species in North America and the San Joaquin kit fox is the largest subspecies in skeletal measurements, body size, and weight. Adult males average 80.5 centimeters (31.7 inches) in total length, and adult females average 76.9 centimeters (30.3 inches in total length (Grinnell et al. 1937). Kit foxes have long slender legs and are approximately 30 centimeters (12 inches) high at the shoulder. The average weight of adult males is 2.3 kilograms (5.0 pounds), and the average of adult females is 2.1 kilograms (4.6 pounds) (Morrell 1972). General physical characteristics of kit foxes include a small, slim body, relatively large ears set close together, narrow nose, and a long, bushy tail tapering slightly toward the tip. The tail is typically carried low and straight.

Color and texture of the fur coat of kit foxes varies geographically and seasonally. The most commonly described colorations are buff, tan, grizzled, or yellowish-gray dorsal coats (McGrew 1979). Two distinctive coats develop each year: a tan summer coat and a silver-gray winter coat (Morrell 1972). The ear pinna (external ear flap) is dark on the back side, with a thick border of white hairs on the forward-inner edge and inner base. The tail is distinctly black-tipped.

In the San Joaquin Valley before 1930, the range of the San Joaquin kit fox extended from southern Kern County north to Tracy, San Joaquin County, on the west side, and near La Grange, Stanislaus County, on the east side (Grinnell et al. 1937; U.S. Fish and Wildlife Service 1998). Historically, this species occurred in several San Joaquin Valley native plant communities. In the southernmost portion of the range, these communities included Valley Sink Scrub, Valley Saltbush Scrub, Upper Sonoran Subshrub Scrub, and Annual Grassland.

Kit foxes currently inhabit some areas of suitable habitat on the San Joaquin Valley floor and in the surrounding foothills of the coastal ranges, Sierra Nevada, and Tehachapi Mountains, from southern Kern County north to Contra Costa, Alameda, and San Joaquin counties on the west, and near La Grange, Stanislaus County on the east side of the Valley, and some of the larger scattered islands of natural land on the Valley floor in Kern, Tulare, Kings, Fresno, Madera, and Merced counties.

The largest extant populations of kit foxes are in western Kern County on and around the Elk Hills and Buena Vista Valley, Kern County, and in the Carrizo Plain Natural Area, San Luis Obispo County. Though monitoring has not been continuous in the central and northern portions of the range, populations were recorded in the late 1980s at San Luis Reservoir, Merced County (Briden et al. 1987); North Grasslands and Kesterson National Wildlife Refuge (NWR) area on the Valley floor, Merced County (Paveglio and Clifton 1988); and in the Los Vaqueros watershed, Contra Costa County in the early 1990s (U.S. Fish and Wildlife Service 1998). Smaller populations are also known from other parts of the San Joaquin Valley floor, including Madera County and eastern Stanislaus County (Williams 1990). Kit foxes occur at varying densities in the areas between the core populations (e.g., Kettleman Hills), providing linkages between core populations, and also probably with smaller, more isolated populations in adjacent valleys and in the Kreynhagen Hills and Anticline Ridge around Coalinga and Avenal.

Kit foxes prefer loose-textured soils (Grinnell et al. 1937; Hall 1946; Egoscue 1962; Morrell 1972), but are found on virtually every soil type. Dens appear to be scarce in areas with shallow soils because of the proximity to bedrock (O'Farrell and Gilbertson 1979; O'Farrell et al. 1980), high water tables (McCue et al. 1981), or impenetrable hardpan layers (Morrell 1972). However, kit foxes will occupy soils with high clay content, such as in the Altamont Pass area in Alameda County, where they modify burrows dug by other animals (Orloff et al. 1986). Sites that may not provide suitable denning habitat may be suitable for feeding or providing cover.

Kit foxes are adapted to arid environments, typically occurring in deserts throughout North America (Cypher 2003). Accordingly, in the San Joaquin Valley, optimal habitats for San Joaquin kit foxes generally are those in which conditions are more desert-like. These include arid shrublands and grasslands (U.S. Fish and Wildlife Service 1998). These areas are characterized by sparse or no shrub cover, sparse ground cover with patches of bare ground,

short vegetative structure (herbaceous vegetation < 18 inches tall), and sandy to sandy-loam soils.

Tall and/or dense vegetation generally is less optimal for foxes (Smith et al. 2005). Such conditions make it difficult for foxes to detect approaching predators or capture prey. Kit foxes also tend to avoid rugged, steep terrain. Predation risk apparently is higher for foxes under such topographic conditions (Warrick and Cypher 1998). In general, flat terrain or slopes under 5 percent are optimal, slopes of 5-15 percent are suitable, and slopes greater than 15 percent are unsuitable. For this reason, the foothills of the Coast Ranges generally are considered to demark the western boundary for suitable kit fox habitat. Finally, kit foxes appear to be strongly linked ecologically to kangaroo rats. Kit foxes are especially well adapted for preying on kangaroo rats, and consequently, kit fox abundance and population stability are highest in areas where kangaroo rats are abundant (U.S. Fish and Wildlife Service 1998; Cypher 2003). Kangaroo rats also are adapted to arid environments, and thus, reach their greatest densities in the San Joaquin Valley in arid habitats.

Certain types of agricultural lands inherently present challenges for kit foxes. Ground disturbance is frequent (e.g., tilling, maintenance, harvesting), which can destroy dens. Also, most agricultural lands in the San Joaquin Valley are irrigated, which can flood and collapse dens. Agricultural lands also are subject to intensive chemical applications, including fertilizers, pesticides, and defoliants. Use of rodenticides is common in some agricultural environments and is particularly problematic for kit foxes due to the potential for secondary poisoning. Finally, all of the factors above in addition to the relative sterility of most agricultural fields (e.g., weed suppression) result in a lack of prey availability for kit foxes.

Another detrimental attribute of agricultural lands is the presence of coyotes and non-native red foxes. Coyotes are the primary cause of mortality for kit foxes in most areas (Cypher et al. 2003). The threat to kit foxes from red foxes is still being evaluated, but the potential for both interference and exploitative competition is high (Cypher et al. 2001). These highly adaptable species are able to persist in agricultural lands. They are not dependent on dens for cover, they are highly mobile which facilitates avoiding dangers and locating food, and they are highly omnivorous. Also, kit foxes are more vulnerable to predation in agricultural areas due to the relative scarcity of den sites, as described previously. Thus, agricultural lands are generally not suitable for long-term occupation by kit foxes, although lands adjacent to natural habitats may be used for occasional foraging (Warrick et al. 2007).

The diet of the San Joaquin kit fox varies geographically, seasonally, and annually, based on temporal and spatial variation in abundance of potential prey. In the southern portion of their range, kangaroo rats, pocket mice, white-footed mice (*Peromyscus* spp.), and other nocturnal rodents comprise about one-third or more of their diets. Kit foxes are also known to prey on California ground squirrel (*Otospermophilus beecheyi*), black-tailed hares, San Joaquin antelope squirrels, desert cottontails, ground nesting birds, and insects (Scrivner et al. 1987a). Known prey species of the kit fox include white-footed mice (*Peromyscus* spp.), insects, California ground squirrels, kangaroo rats (*Dipodomys* spp.), San Joaquin antelope squirrels, black-tailed hares (*Lepus californicus*), and chukar (*Alectoris chukar*) (Jensen 1972; Archon 1992), listed in approximate proportion of occurrence in fecal samples. Kit foxes also prey on desert cottontails (*Sylvilagus audubonii*), ground-nesting birds, and pocket mice (*Perognathus* spp.).

Adult San Joaquin kit foxes are usually solitary during late summer and fall. In September and October, adult females begin to excavate and enlarge natal dens (Morrell 1972). Typically, pups are born between February and late March following a gestation period of 49 to 55 days (Egoscue 1962; Morrell 1972). Mean litter sizes reported for San Joaquin kit fox range from 2.0 (White and Ralls 1993) to 3.8 individuals at the Naval Petroleum Reserve (Spencer et al. 1992; Spiegel and Tom 1996; Cypher et al. 2000). Pups appear above ground at about age three to four weeks, and are weaned at age six to eight weeks.

Estimates of fox density vary greatly throughout its range, and have been reported as high as 1.2 animals per square kilometer in optimal habitats in good years (U.S. Fish and Wildlife Service 1998). At the Elk Hills in Kern County, density estimates varied from 0.7 animals per square kilometer in the early 1980s to 0.01 animals per square kilometer in 1991 (U.S. Fish and Wildlife Service 1998). Kit fox home ranges vary in size from approximately 2.6 square kilometers to 3.2 square kilometers (Spiegel and Tom 1996; U.S. Fish and Wildlife Service 1998). Knapp (1979) estimated that a home range in agricultural areas is approximately 2.5 square kilometers. Individual home ranges overlap considerably, at least outside the core activity areas (Morrell 1972; Spiegel 1996).

Although most young kit foxes disperse less than eight kilometers (Scrivner et al. 1987b), dispersal distances of up to 122 kilometers have been documented for the San Joaquin kit fox (Scrivner et al. 1993; U.S. Fish and Wildlife Service 1998). Dispersal can be through disturbed habitats, including agricultural fields, and across highways and aqueducts. The age at dispersal ranges from four to 32 months (Cypher 2000). Among juvenile kit foxes surviving to July 1 at the Naval Petroleum Reserve, 49 percent of the males dispersed from natal home ranges while 24 percent of the females dispersed (Koopman et al. 2000). Among dispersing kit foxes, 87 percent did so during their first year of age. Some kit foxes delay dispersal and may inherit their natal home range.

San Joaquin kit foxes are primarily nocturnal, although individuals are occasionally observed resting or playing (mostly pups) near their dens during the day (Grinnell et al. 1937). A mated pair of kit foxes and their current litter of pups usually occupy each home range. Other adults, usually offspring from previous litters, also may be present (Koopman et al. 2000), but individuals often move independently within their home range (Cypher 2000). Average distances traveled each night range from 9.3 to 14.6 kilometers and are greatest during the breeding season (Cypher 2000).

Kit foxes maintain core home range areas that are exclusive to mated pairs and their offspring (White and Ralls 1993; Spiegel 1996; White and Garrott 1997). This territorial spacing behavior eventually limits the number of foxes that can inhabit an area owing to shortages of available space and per capita prey. Hence, as habitat is fragmented or destroyed, the carrying capacity of an area is reduced and a larger proportion of the population is forced to disperse. Increased dispersal generally leads to lower survival rates and, in turn, decreased abundance because greater than 65 percent of dispersing juvenile foxes die within 10 days of leaving their natal range (Koopman et al. 2000).

The San Joaquin kit fox seems to prefer more gentle terrain and decreases in abundance as terrain ruggedness increases (Grinnell et al. 1937; Morrell 1972; Warrick and Cypher 1998).

The kit fox is often associated with open grasslands, which form large contiguous blocks within the eastern portions of the range of the animal. San Joaquin kit foxes also exhibit a capacity to utilize habitats that have been altered by humans. San Joaquin kit foxes can utilize some types of agriculture (e.g. orchards and alfalfa), although the long-term suitability of these habitats is unknown (Jensen 1972; U.S. Fish and Wildlife Service 1998). Orchards sometimes support prey species if the grounds are not manicured; however, denning potential is typically low and kit foxes can be more susceptible to predation by coyotes within the orchards (Orloff 2002). Alfalfa fields provide an easily accessible prey base (Woodbridge 1998; Young 1989), and berms adjacent to alfalfa fields sometimes provide good denning habitat (Orloff 2002).

Kit foxes use some types of agricultural land where uncultivated land is maintained, allowing for denning sites and a suitable prey base (Knapp 1978; Hansen 1988; Warrick et al. 2007). In the Lost Hills area, radio collared kit foxes predominantly used natural habitat remaining in the California Aqueduct right-of-way (Warrick et al. 2007), even though this habitat had lower availability relative to other habitats. Orchards were the second most frequently used habitats, followed by row crops and other habitats (residential, grassland, and fallow fields). Kit foxes were documented to travel a maximum distance of 1.5 kilometers into orchards and 1.1 kilometers into row crops (Warrick et al. 2007). No dens were observed in the agricultural areas. Kit foxes appear reluctant to cross these lands due to insufficient refugia from predators (Cypher et al. 2005). The lack of kit fox occupancy in farmland is in contrast to observations of the closely related swift fox in western Kansas (Jackson and Choate 2000; Matlack et al. 2000). Differences in habitat use between the species may be due to differences in farming practices (Warrick et al. 2007). Farmland in the San Joaquin Valley is more heavily disturbed. The farmlands are irrigated, and fields are not left fallow for as long as a duration as the farmlands in Kansas. These practices in California likely result in a sparse prey base and unsuitable habitat for denning, discouraging the kit fox from occupying agricultural lands.

Dens are used by kit foxes for temperature regulation, shelter from adverse environmental conditions, and escape from predators. Kit foxes are reputed to be poor diggers, and their dens are usually located in areas with loose-textured, friable soils (Morrell 1972; O'Farrell 1984). However, the depth and complexity of their dens suggest that they possess good digging abilities, and kit fox dens have been observed on a variety of soil types (U.S. Fish and Wildlife Service 1998). Some studies have suggested that where hardpan layers predominate, kit foxes create their dens by enlarging the burrows of California ground squirrels or badgers (*Taxidea taxus*) (Jensen 1972; Morrell 1972; Orloff et al. 1986). In parts of their range, particularly in the foothills, kit foxes often use ground squirrel burrows for dens (Orloff et al. 1986). Kit fox dens are commonly located on flat terrain or on the lower slopes of hills. About 77 percent of all kit fox dens are at or below midslope (O'Farrell 1984), with the average slope at den sites ranging from 0 to 22 degrees (CDFG 1980; O'Farrell 1984; Orloff et al. 1986). Natal and pupping dens are generally found in flatter terrain. Common locations for dens include washes, drainages, and roadside berms. Kit foxes also commonly den in human-made structures such as culverts and pipes (O'Farrell 1984; Spiegel and Tom 1996).

A kit fox can use more than 100 dens throughout its home range, although on average, an animal will use approximately 12 dens a year for shelter and escape cover (Cypher et al. 2001). Kit foxes typically use individual dens for only brief periods, often for only one day before moving to another den (Ralls et al. 1990). Possible reasons for changing dens include infestation by

ectoparasites, local depletion of prey, or avoidance of coyotes. Kit foxes tend to use dens that are located in the same general area, and clusters of dens can be surrounded by hundreds of hectares of similar habitat devoid of other dens (Egoscue 1962). In the southern San Joaquin Valley, kit foxes were found to use up to 39 dens within a denning range of 129 to 195 hectares (Morrell 1972). An average den density of one den per 28 to 37 hectares was reported by O'Farrell (1984) in the southern San Joaquin Valley.

The distribution and abundance of the kit fox have decreased since its listing in 1967. This trend is reasonably certain to continue into the foreseeable future unless measures to protect, sustain, and restore suitable habitats, and alleviate other threats to their survival and recovery, are implemented. Threats that are seriously affecting kit foxes are described in further detail in the following paragraphs.

Less than 20 percent of the habitat within the historical range of the kit fox remained when the subspecies was listed as endangered in 1967, and there has been a substantial net loss of habitat since that time. Historically, San Joaquin kit foxes occurred throughout California's Central Valley and adjacent foothills. Extensive land conversions in the Central Valley began as early as the mid-1800s with the Arkansas Reclamation Act. By the 1930s, the range of the kit fox had been reduced to the southern and western parts of the San Joaquin Valley (Grinnell et al. 1937). The primary factor contributing to this restricted distribution was the conversion of native habitat to irrigated cropland, industrial uses (e.g., hydrocarbon extraction), and urbanization (Laughrin 1970; Jensen 1972; Morrell 1972; 1975). Approximately one-half of the natural communities in the San Joaquin Valley were tilled or developed by 1958 (U.S. Fish and Wildlife Service 1980).

This rate of loss accelerated following the completion of the CVP and the State Water Project, which diverted and imported new water supplies for irrigated agriculture (U.S. Fish and Wildlife Service 1995). Approximately 7,972 square kilometers of habitat, or about 267 square kilometers per year, were converted in the San Joaquin region between 1950 and 1980 (CDFG 1988). The counties specifically noted as having the highest wildland conversion rates included Kern, Tulare, Kings and Fresno, all of which are occupied by kit foxes. From 1959 to 1969 alone, an estimated 34 percent of natural lands were lost within the then-known kit fox range (Laughrin 1970).

The majority of the documented loss of habitat has been the result of conversion to irrigated agriculture. In 1979, approximately 369,915 acres out of a total of approximately 8,500,391 acres on the San Joaquin Valley floor remained as undeveloped land (Williams 1985; U.S. Fish and Wildlife Service 1980a). During 1990 to 1996, a gross total of approximately 71,500 acres of habitat were converted to farmland in 30 counties (total area 23.1 million acres) within the Conservation Program Focus area of the CVP. During the same time period, approximately 101,700 acres were converted to urban land use within the Conservation Program Focus area (California Department of Conservation [CDC] 1994, 1996, 1998). Because these assessments included a substantial portion of the Central Valley and adjacent foothills, they provide the best scientific and commercial information currently available regarding the patterns and trends of land conversion within the kit fox's geographic range.

More than one million acres of suitable habitat for kit foxes have been converted to agricultural, municipal, or industrial uses since the listing of the kit fox in 1967. In contrast, less than

500,000 acres have been preserved or are subject to community-level conservation efforts designed, at least in part, to further the conservation of the kit fox (U.S. Fish and Wildlife Service 1998).

Land conversions contribute to declines in kit fox abundance through direct and indirect mortalities, displacement, reduction of prey populations and denning sites, changes in the distribution and abundance of larger canids that compete with kit foxes for resources, and reductions in carrying capacity. Kit foxes may be buried in their dens during land conversion activities (C. Van Horn Job, pers. comm. 2000), or permanently displaced from areas where structures are erected or the land is intensively irrigated (Jensen 1972; Morrell 1975).

Dens are essential for the survival and reproduction of kit foxes that use them year-round for shelter and escape and in the spring for rearing young. Kit foxes generally have dozens of dens scattered throughout their territories. However, land conversion reduces the number of typical earthen dens available to kit foxes. Denning opportunities on land converted to agriculture are limited due to agricultural practices, such as cultivation, irrigation, chemical treatments, and other disturbances. The loss of denning habitat can impede successful migration of kit fox across agricultural lands because of greater vulnerability to predation resulting from a lack of possible escapes.

Kit foxes use some types of agricultural land where uncultivated land is maintained, allowing for denning sites and a suitable prey base (Jensen 1972; Knapp 1979; Hansen 1988). Kit foxes also den on small parcels of native habitat surrounded by intensively maintained agricultural lands (Knapp 1979), and adjacent to dry-land farms (Jensen 1972; Kato 1986; Orloff et al. 1986).

Extensive habitat destruction and fragmentation have contributed to smaller, more isolated populations of kit foxes. Small populations have a higher probability of extinction than large populations because their low abundance renders them susceptible to stochastic (i.e., random) events such as high variability in age and sex ratios, and catastrophes such as floods, droughts, or disease epidemics (Lande 1988; Frankham and Ralls 1998; Saccheri et al. 1998). Similarly, isolated populations are more susceptible to extirpation by accidental or natural catastrophes because the likelihood of recolonization has been diminished. These chance events can adversely affect small, isolated populations with devastating results. Extirpation can even occur when the members of a small population are healthy, because whether the population increases or decreases in size is less dependent on the age-specific probabilities of survival and reproduction than on chance (sampling probabilities). Owing to the probabilistic nature of extinction, many small populations will eventually go extinct when faced with these stochastic risks (Caughley and Gunn 1996).

Vehicles appear to be the primary cause of mortality for urban kit foxes, and most strikes occur on arterial roads, which have higher traffic volumes and speed limits (Bjurlin et al. 2005; Cypher et al. 2005). Two-lane roads may not be as dangerous for kit foxes as are major arterial roads (Cypher et al. 2005). Kit foxes are more frequently struck near intersections between major roads and other linear rights-of-way (e.g., railroads, canals, other roads), which most likely function as movement corridors for kit foxes, and the foxes do not appear to avoid roads for denning sites (Bjurlin et al. 2005).

Several species prey upon San Joaquin kit foxes. Predators (such as coyotes, bobcats, non-native red foxes, badgers, and golden eagles (*Aquila chrysaetos*)) will kill kit foxes. Badgers, coyotes, and red foxes also may compete for den sites (U.S. Fish and Wildlife Service 1998). The diets and habitats selected by coyotes and kit foxes living in the same areas are often quite similar (Cypher and Spencer 1998). Hence, the potential for resource competition between these species may be quite high when prey resources are scarce such as during droughts (which are quite common in semi-arid, central California). Land conversions and associated human activities have led to changes in the distribution and abundance of coyotes, which compete with kit foxes for resources.

Coyotes occur in most areas with abundant populations of kit foxes and, during the past few decades, coyote abundance has increased in many areas owing to a decrease in ranching operations, favorable landscape changes, and reduced control efforts (Orloff et al. 1986; Cypher and Scrivner 1992; White and Ralls 1993; White et al. 1995). Although coyotes are common in both natural and agricultural landscapes, they pose a greater predation threat to the kit fox on agricultural lands because of the decreased availability or absence of escape dens and vegetative cover (Cypher et al. 2005). Coyotes may kill kit foxes in an attempt to reduce resource competition. Coyote-related injuries accounted for 50 to 87 percent of the mortalities of radio collared kit foxes at Camp Roberts, the Carrizo Plain Natural Area, the Lokern Natural Area, and the Naval Petroleum Reserves (Cypher and Scrivner 1992; Standley et al. 1992; Ralls and White 1995; Spiegel 1996).

Coyote-related deaths of adult foxes appear to be largely additive (i.e., in addition to deaths caused by other mortality factors such as disease and starvation) rather than compensatory (i.e., tending to replace deaths due to other mortality factors; White and Garrott 1997). The survival rates of adult foxes decrease significantly as the proportion of mortalities caused by coyotes increase (Cypher and Spencer 1998; White and Garrott 1997), and increases in coyote abundance may contribute to significant declines in kit fox abundance (Cypher and Scrivner 1992; Ralls and White 1995; White et al. 1996). There is some evidence that the proportion of juvenile foxes killed by coyotes increases as fox density increases (White and Garrott 1999). This density-dependent relationship will provide a feedback mechanism that reduces the amplitude of kit fox population dynamics and keeps foxes at lower densities than they might otherwise attain. In other words, coyote-related mortalities may prevent fox population growth, and may instead prolong population declines.

Land-use changes have also contributed to the expansion of nonnative red foxes into areas inhabited by kit foxes. Historically, the geographic range of the red fox did not overlap with that of the San Joaquin kit fox. By the 1970s, however, introduced and escaped red foxes had established breeding populations in many areas inhabited by San Joaquin kit foxes (Lewis et al. 1993). Red foxes are rarely observed in natural settings, and are much more abundant on agricultural lands. They appear to be dependent on the presence of water (Cypher et al. 2001), a resource readily available on irrigated farmlands, while kit foxes do not drink free water (Golightly and Ohrnart 1983). The larger and more aggressive red foxes are known to kill kit foxes (Ralls and White 1995), and could displace them, as has been observed in the arctic when red foxes expanded into the ranges of smaller arctic foxes (Hersteinsson and Macdonald 1982). The increased abundance and distribution of nonnative red foxes is perhaps a greater threat to kit foxes than coyotes because red foxes and kit foxes have not evolved in the presence of each

other, are closer morphologically and taxonomically, and will likely have higher dietary overlap, potentially resulting in more intense competition for resources.

Wildlife diseases do not appear to be a primary mortality factor that consistently limits kit fox populations throughout their range (McCue and O'Farrell 1988; Standley and McCue 1992). However, central California has a high incidence of wildlife rabies cases (Schultz and Barrett 1991), and high seroprevalences of canine distemper virus and canine parvovirus indicate that kit fox populations have been exposed to these diseases (McCue and O'Farrell 1988; Standley and McCue 1992). Hence, disease outbreaks could potentially cause substantial mortality or contribute to reduced fertility in seropositive females, as was noted in closely-related swift foxes (*Vulpes velox*).

For example, there are some indications that rabies virus may have contributed to a catastrophic decrease in kit fox abundance at Camp Roberts, San Luis Obispo County, California, during the early 1990s. San Luis Obispo County had the highest incidence of wildlife rabies cases in California during 1989 to 1991, and striped skunks (*Mephitis mephitis*) were the primary vector (Barrett 1990; Schultz and Barrett 1991; Reilly and Mangiamele 1992). A rabid skunk was trapped at Camp Roberts during 1989 and two foxes were found dead due to rabies in 1990 (Standley et al. 1992). Captures of kit foxes during annual live trapping sessions at Camp Roberts decreased from 103 to 20 individuals during 1988 to 1991. Captures of kit foxes were positively correlated with captures of skunks during 1988 to 1997, suggesting that some factor(s) such as rabies virus was contributing to concurrent decreases in the abundances of these species. Also, captures of kit foxes at Camp Roberts were negatively correlated with the proportion of skunks that were rabid when trapped by County Public Health Department personnel two years previously. These data suggest that a rabies outbreak may have occurred in the skunk population and spread into the fox population. A similar time lag in disease transmission and subsequent population reductions was observed in Ontario, Canada, although in this instance the transmission was from red foxes to striped skunks (Macdonald and Voigt 1985).

Some methods of pest and rodent control pose a threat to kit foxes through direct or secondary poisoning, and these threats are often encountered in agricultural settings. Kit foxes may be killed if they ingest rodenticide in a bait application, or if they eat a rodent that has consumed the bait. Even sublethal doses of rodenticides may lead to the death of these animals by impairing their ability to escape predators or find food. Pesticides and rodenticides may also indirectly affect the survival of kit foxes by reducing the abundances of their staple prey species. For example, the California ground squirrel, which is the staple prey of kit foxes in the northern portion of their range and on agricultural lands, was thought to have been eliminated from Contra Costa County in 1975, after extensive rodent eradication programs. Field observations indicated that the long-term use of ground squirrel poisons in this county severely reduced kit fox abundance through secondary poisoning and the suppression of populations of its staple prey (Orloff et al. 1986).

Historically, kit foxes may have existed in a metapopulation structure of core and satellite populations, some of which periodically experienced local extinctions and recolonization (U.S. Fish and Wildlife Service 1998). Today's populations exist in an environment drastically different from the historic one, however, and extensive habitat fragmentation will result in geographic isolation, smaller population sizes, and reduced genetic exchange among populations,

thereby increasing the vulnerability of kit fox populations to extirpation. Populations of kit foxes are extremely susceptible to the risks associated with small population size and isolation because they are characterized by marked instability in population density. For example, the relative abundance of kit foxes at the Naval Petroleum Reserves, California, decreased ten-fold during 1981 to 1983, increased seven-fold during 1991 to 1994, and then decreased two-fold during 1995 (Cypher and Scrivner 1992; Cypher and Spencer 1998).

Many populations of kit fox are at risk of chance extinction owing to small population size and isolation. This risk has been prominently illustrated during recent, drastic declines in the populations of kit foxes at Camp Roberts and Fort Hunter Liggett. Captures of kit foxes during annual live trapping sessions at Camp Roberts decreased from 103 to 20 individuals during 1988 to 1991. This decrease continued through 1997 when only three kit foxes were captured (White et al. 2000). A similar decrease in kit fox abundance occurred at nearby Fort Hunter Liggett, and only two kit foxes have been observed on this installation since 1995 (L. Clark, pers. comm.; February 15, 2000). It is unlikely that the current numbers of kit foxes at Camp Roberts and Fort Hunter Liggett will increase substantially in the near future because there is limited potential for recruitment. The chance of substantial immigration is low because the nearest core population on the Carrizo Plain is distant (greater than 25.7 kilometers) and separated from these installations by barriers to kit fox movement such as roads, developments, and irrigated agricultural areas. Also, there is a relatively high abundance of sympatric predators and competitors on these installations that contribute to low survival rates for kit foxes and, as a result, may limit population growth (White et al. 2000). These populations may therefore be on the verge of extinction.

The destruction and fragmentation of habitat could also eventually lead to reduced genetic variation in populations of kit foxes that are small and geographically isolated. Genetic assessments indicate that historic gene flow among populations was quite high, and that gene flow between populations is still occurring (Schwartz et al. 2005). Kit fox dispersal likely still maintains genetic variation throughout the range of the kit fox. Disruption of kit fox dispersal abilities through habitat loss, however, could result in an increase in inbreeding and a loss of genetic variation. These factors could increase the extinction risk for small, isolated populations of kit foxes by interacting with demography to reduce fecundity, juvenile survival, and lifespan (Lande 1988; Frankham and Ralls 1998; Saccheri et al. 1998).

The impacts of genetic isolation may already be apparent in the Camp Roberts and Panoche populations. Genetic data revealed low allelic diversity at these locations. The population in the Camp Roberts region may have been historically small, as evidenced by the lack of historical occurrences. Relatively low allelic diversity could be the result of a few individuals recolonizing the Camp Roberts area (founder event), and a subsequent low number of migrants contributing to genetic diversity. The Panoche population is located in a small, relatively isolated valley, and also appears to be experiencing a low number of migrants into the population (Schwartz et al. 2005).

Arid systems are characterized by unpredictable fluctuations in precipitation, which lead to high frequency, high amplitude fluctuations in the abundance of mammalian prey for kit foxes (Goldingay et al. 1997; White and Garrott 1999). Because the reproductive and neonatal survival rates of kit foxes are strongly depressed at low prey densities (White and Ralls 1993;

White and Garrott 1997, 1999), periods of prey scarcity owing to drought or excessive rain events can contribute to population crashes and marked instability in the abundance and distribution of kit foxes (White and Garrott 1999). Frequent, rapid decreases in kit fox density can increase the extinction risk for small, isolated populations.

The Recovery Plan for Upland Species of the San Joaquin Valley, California included the kit fox, (U.S. Fish and Wildlife Service 1998). The primary goal of the recovery strategy for kit foxes identified in the Recovery Plan is to establish a complex of interconnected core and satellite populations throughout the species' range. The long-term viability of each of these core and satellite populations depends partly upon periodic dispersal and genetic flow between them. Therefore, kit fox movement corridors between these populations must be preserved and maintained. The core populations are the Ciervo Panoche area, the Carrizo Plain area, and the western Kern County population. Satellite populations are found in the urban Bakersfield area, Porterville/Lake Success area, Creighton Ranch, Pixley Wildlife Refuge, Allensworth Ecological Reserve, Semitropic/Kern NWR, Antelope Plain, eastern Kern grasslands, Pleasant Valley, western Madera County, Santa Nella, Kesterson NWR, and Contra Costa County. Major corridors connecting these population areas are on the east and west side of the San Joaquin Valley, around the bottom of the Valley, and cross-valley corridors in Kern, Fresno, and Merced counties.

Kit fox subpopulations in the western Kern County and Carrizo Plains core areas appear to be most robust, but fluctuate greatly in abundance on an inter-annual basis, depending on climatic conditions. Population modeling using long-term monitoring data has indicated these subpopulations are at risk of extirpation in 3 or 4 years under poor conditions that reduce prey populations. In these core areas, new development, including expanded oil and gas development and the construction of solar farms, threaten suitable habitat for kit fox.

Although the Service and cooperating public, non-profit, and private stakeholders are working to conserve habitat through the establishment of preserves, conservation banks, and conservation easements, the species is a wide-ranging predator and insufficient protected habitat currently exists to adequately sustain kit fox for the foreseeable future. Without further progress in these efforts, the kit fox remains vulnerable to extinction through continued and ongoing loss of kit fox habitat to agricultural and urban development, the continued threats from pesticide exposure, competitive exclusion by other canids, the highly fluctuating population dynamic of most kit fox populations, the isolation and loss of small subpopulations due to stochastic events and habitat fragmentation, vehicle strikes, and loss of prey.

Giant kangaroo rat

The giant kangaroo rat is the largest of more than 20 species in the genus *Dipodomys*, which is in the family Heteromyidae. This family includes kangaroo rats, kangaroo mice and pocket mice. Adult giant kangaroo rats weigh from 131 to 180 grams (4.6 to 6.4 ounces). They are 311 to 348 millimeters (12.2 to 13.7) inches long and adapted for two-footed (bipedal) hopping like a kangaroo. The hind limbs are large compared to the size of the forelimbs. The head is large and flattened, and the neck is short. The tail is longer than the length of the head and body combined. The tail has a crest of long hairs, terminating in a large tuft. Large, fur-lined cheek pouches open on each side of the mouth. The pouches extend as deep pockets of skin along the sides if the head.

Giant kangaroo rats are distinguished from the similar San Joaquin kangaroo rats (*D. nitratoides*) by the number of toes on their hind feet. Giant kangaroo rats have five toes; San Joaquin kangaroo rats have four. San Joaquin kangaroo rats include 1) the Fresno kangaroo rat (*D.n. exilis*), 2) the Tipton kangaroo rat (*D. n. nitratoides*), and 3) the short-nosed kangaroo rat (*D. n. brevinasus*).

Giant kangaroo rats are primarily seed eaters. However, they also eat green plants and insects. They cache ripening seed heads in small surface pits or large stacks on the surface over their burrow system. After curing for several weeks, seeds are transported to underground larders. Giant kangaroo rats forage on the surface from around sunset to near sunrise, with most activity taking place in the first two hours after dark. Foraging activity is greatest in the spring as seeds of annual plants ripen. Commonly consumed seeds include peppergrass (*Lepidium* spp.), filaree (*Erodium cicutarium*), Arabian grass (*Schismus arabicus*) and brome grasses (*Bromus* spp.) (Williams).

Giant kangaroo rats develop burrow systems with one to five or more separate openings. There are two types of burrow: 1) a vertical shaft with a circular opening and no dirt apron, and 2) a larger, more horizontally-opening shaft, usually wider than high with a well-worn path leading from the opening.

The giant kangaroo rat was federally listed as endangered on January 5, 1987 (52 FR 283) and was listed by the State of California as endangered on October 2, 1980. The Recovery Plan for Upland Species of the San Joaquin Valley (US Fish and Wildlife Service 1998) includes the giant kangaroo rat. The giant kangaroo rat was distributed historically from southern Merced County, south through the San Joaquin Valley, to southwestern Kern County and northern Santa Barbara County. Significant populations survive only in a few areas of remaining habitat, including the Panoche Hills, Cuyama Valley, Carrizo and Elkhorn Plains, and the Lokern area.

The preferred habitat of giant kangaroo rats is annual grassland on gentle slopes of generally less than 10 percent, with friable, sandy-loam soils. However, most remaining populations are on poorer and marginal habitats which include shrub communities on a variety of soil types and on slopes up to about 22 percent.

Up until the 1950s, colonies of giant kangaroo rats were spread over hundreds of thousands of acres of continuous habitat in the western San Joaquin Valley, Carrizo Plain, and Cuyama Valley (Grinnell 1932a; Shaw 1934; Hawbecker 1944, 1951). The decline of giant kangaroo rats is attributed primarily to habitat loss from the conversion of native scrub and grasslands to agriculture (U.S. Fish and Wildlife Service 1998); specific causes of decline of the giant kangaroo rat are similar to those discussed above for the kit fox. An estimated 1.8 percent of the giant kangaroo rat's historical habitat remains extant (Williams 1992). Habitat destruction resulting from the development of small cities and towns along the western edge of the San Joaquin Valley between Coalinga and Maricopa, as well as development of the infrastructures for petroleum and mineral exploration and extraction, roads and highways, energy and communications infrastructures, and agriculturally related industrial developments collectively have contributed to the endangerment of the giant kangaroo rat. Widespread use of rodenticides and rodenticide-treated grain to control ground squirrels and kangaroo rats may also have contributed to the decline of giant kangaroo rats in some areas.

The decline in kangaroo rat abundance and distribution has been well documented in the southern San Joaquin Valley (Single et al. 1996). In the Lokern area, the decline in giant kangaroo rats may have been caused by the combination of an extremely hot fire that occurred in spring 1997 that burned approximately 5800 acres, and several years of heavier than normal precipitation. Because of the small, isolated nature of many remaining populations, their lack of genetic diversity, and low dispersal capability, giant kangaroo rats are especially vulnerable to local extirpation from random environmental events such as fires, flooding, or unpredictable land use changes.

Urban and industrial developments, roads, petroleum and mineral exploration and extraction, new energy and water conveyance facilities, and construction of communication and transportation infrastructures continue to destroy habitat for giant kangaroo rats and increase the threats to the species by reducing and further fragmenting populations. Rodent control programs have also contributed to the species' decline. Habitat degradation due to lack of appropriate habitat management on conservation lands, especially lack of grazing or fire to control density of vegetation (including shrubs) may be an additional threat to giant kangaroo rats (Williams and Germano 1993). Though many recent and future habitat losses will be mitigated or compensated for through the protection of suitable habitat elsewhere, mitigation or compensation for habitat loss must include habitat restoration or enhancement to avoid a net loss of habitat for this species and further habitat fragmentation.

Populations within remaining habitat fluctuate widely in response to changing weather patterns (Williams 1992, U.S. Fish and Wildlife Service 1998). Since listing as endangered, conversion of habitat for giant kangaroo rats has slowed substantially, because most tillable land has already been brought into cultivation, and because of a lack of water for additional irrigated acres. However, during and following the 1994-1995 winter, biologists noted a decline in abundance of kangaroo rats in the southern San Joaquin Valley. Decreased sign of activity and lower than expected trapping results were observed at several dispersed sites. Dramatic declines were noted for short-nosed, Tipton, and Heermann's kangaroo rats, although only modest reductions were noted for giant kangaroo rat populations on the valley floor (Single et al. 1996).

The BLM, in cooperation with species experts, has initiated giant kangaroo rat population monitoring studies in the Lokern and Carrizo Plains Natural Areas. Results have also reported significant declines in giant kangaroo rat numbers in response to both drought and above average rainfall conditions, and overall wide and drastic population fluctuations over time. Wildfire and prescribed burn monitoring has indicated that this species responds positively to fire (Germano and Saslaw, 1999, unpublished data).

In 1995, the most recent year in which substantial information is available, the giant kangaroo rat was believed to be present in only a few remaining isolated populations: Cuyama Valley, San Juan Creek Valley, and the Carrizo Plain in San Luis Obispo County; the Panoche Hills on the Fresno-San Benito County line; in the Kettleman Hills of Kings County; and in western Kern County, as shown on Figure 39 of the Recovery Plan.

The five-year review of giant kangaroo rats reported that monitoring studies on Elkhorn Plain (ESRP unpubl. data, Kelly et al. 2004, Williams and Germano 1994), the Lokern area (Germano et. al. 2005, Saslaw unpubl. data), and the Elk Hills (NPR-1) (Quad Knopf 2006) indicate that

the populations in the Carrizo Plain, Elkhorn Plain, and western Kern County are currently stable or even increasing after several years of drought. The range of this species has increased by 40 percent on the Carrizo and Elkhorn Plains since 2001. In addition, surveys of active precincts in the Cuyama Valley show that since 2001 the range of giant kangaroo rat there has doubled. The status of giant kangaroo rat in the San Juan Creek Valley, and in Kettleman Hills has yet to be monitored, and, therefore, remains unknown.

However, based on the restriction of giant kangaroo rats to less than 5 percent of their historical range on highly fragmented, suboptimal habitat; the continuation of threats from oil and gas extraction; urban and residential development; large solar power plants; genetic isolation of populations in the Tumey Hills and Ciervo Hills; lack of protection of the populations in the Panoche Valley; and protection of less than 20 percent of populations in western Kern County, we concluded in the five-year review that the giant kangaroo rat continues to meet the definition of endangered, and is in danger of extinction throughout its known range (U.S. Fish and Wildlife Service 2010).

Tipton Kangaroo Rat

The Tipton kangaroo rat was federally listed as endangered on August 8, 1988 (U.S. Fish and Wildlife Service 1988), and was listed by the State of California as endangered on June 11, 1989. The Service completed a five-year review of the status of the species in 2010, and recommended the species remain listed as endangered. The Recovery Plan for Upland Species of San Joaquin Valley includes the Tipton kangaroo rat (U.S. Fish and Wildlife Service 1998) and calls for (1) research to determine how to manage natural lands to reduce the frequency and severity of population crashes, and (2) consolidation and protection of blocks of suitable habitat to minimize the effects of random catastrophic events on their populations.

The Tipton kangaroo rat (Family Heteromyidae) is one of three subspecies of the San Joaquin kangaroo rat (*Dipodomys nitratoides* ssp.), morphologically distinguished by being larger than the Fresno kangaroo rat (*Dipodomys nitratoides exilis*) and smaller than the short-nosed kangaroo rat (*Dipodomys nitratoides brevinasus*; Best 1991). On average, adults weigh about 35-38 grams (1.2-1.3 ounces); have a head-body length of about 100-110 millimeters (3.9-4.3 inches), and a tail length of about 125-130 millimeters (4.9-5.1 inches; Williams 1985). Kangaroo rat adaptations for two-footed hopping include elongated hind limbs and a long, tufted tail for balance (Grinnell 1920, 1921; Merriam 1894). Tipton kangaroo rats eat mostly seeds. Burrow systems, normally less than about 250 millimeters (10 inches) deep, are usually in open areas (Germano and Rhodehamel 1995).

The historical geographic range of Tipton kangaroo rats was over 1.7 million acres. Its distribution was limited to arid-land communities occupying the valley floor of the Tulare Basin in level or nearly level terrain. By 1985, the inhabited area had been reduced, primarily by cultivation and urbanization, to about 60,000 acres. In 1997, the Service estimated that Tipton kangaroo rats inhabited approximately 4 percent of their historic range (U.S. Fish and Wildlife Service 1998). Current occurrences are limited to scattered, isolated areas. In the southern San Joaquin Valley, this includes the Kern National Wildlife Refuge, Delano, and other scattered areas within Kern County.

Tipton kangaroo rats inhabit saltbush scrub and alkali sink scrub communities in the southern San Joaquin Valley. The preferred location for Tipton kangaroo rat burrows typically involves alluvial fans and flood plains and includes fine, highly alkaline sands and, to a lesser degree, alkaline sandy barns. Burrow systems are usually in open areas but may occur in areas of thick scrub. They are typically simple, but may include interconnecting tunnels. Most are less than 10 inches deep. They are commonly in slightly elevated mounds, the berms of roads, canal embankments, railroad beds, and bases of shrubs and fences where wind-blown soils accumulate above the level of surrounding terrain. Terrain not subject to flooding is essential for permanent occupancy by Tipton kangaroo rats.

The construction of dams and canals made a dependable supply of water available and allowed the cultivation of the suitable habitat and was principally responsible for the decline and endangerment of the Tipton kangaroo rat. Widespread, unrestricted use of rodenticides to control California ground squirrels probably contributed to the decline or extirpation of small populations. Urban and industrial development and petroleum extraction all have contributed to habitat destruction. Except for small, isolated populations, predation is unlikely to threaten Tipton kangaroo rats. The increasing fragmentation of the range of Tipton kangaroo rats, however, increases the vulnerability of small populations to predation. Current threats of habitat destruction or modifications come primarily from industrial and agriculturally related developments, cultivation, and urbanization, and secondarily from flooding.

The causes of decline of the Tipton kangaroo rat are similar to those discussed for the giant kangaroo rat and for the kit fox. Conversion of native habitats to agricultural production is considered the primary reason for the Tipton kangaroo rat's population decline (53 FR 25608). Construction of canals, roads, highways, railroads, and buildings and the use of rodenticides have probably also accelerated this subspecies' population decline. Because of the small, isolated nature of many remaining populations, their lack of genetic diversity, and low powers of dispersal, Tipton kangaroo rats are especially vulnerable to local extirpation from random environmental events such as flooding or unpredictable land use changes.

In 1995, the most recent year in which sufficient information is available, the Tipton kangaroo rat was believed to be present in only about 63,000 acres, or 3.7 percent of the historical range. Tipton kangaroo rats are found in Tulare County both east and west of State Route 99, in Kings County in the Tulare Lake Bed and Allensworth, and in Kern County in scattered populations across the valley floor from the California Aqueduct to several locations east of Bakersfield, as shown on Figure 45 of the Recovery Plan.

The populations of Tipton kangaroo rats in general are decreasing or unstable throughout their range. Furthermore, several sites that previously supported the Tipton kangaroo rat apparently either are no longer occupied by that subspecies or else have extremely small populations. Information for many sites suggests that Tipton kangaroo rat populations are not stable or increasing, and may be extirpated at some sites.

Based on the highly restricted range of the Tipton kangaroo rat, the continuation of habitat loss/conversion, the continuation of threats and the identification of new threats, the current protection of only a small portion of Tipton kangaroo rat habitat, and the distribution of small populations in highly isolated fragments, we concluded in the five year status review that the

Tipton kangaroo rat continues to meet the definition of endangered (U.S. Fish and Wildlife Service 2010).

Blunt-nosed Leopard Lizard

The blunt-nosed leopard lizard was federally listed as endangered on March 11, 1967 (U.S. Fish and Wildlife Service 1967) and was listed by the State of California as endangered on June 27, 1971. A recovery plan for the blunt-nosed leopard lizard was first prepared in 1980, revised in 1985, and then superseded by the Recovery Plan for Upland Species of the San Joaquin Valley (U.S. Fish and Wildlife Service 1998). The recovery strategy requires that the Service (1) determine appropriate habitat management and compatible land uses for the blunt-nosed leopard lizard; (2) protect additional habitat for them in key portions of their range; and (3) gather additional data on population responses to environmental variation at representative sites in their existing geographic range (U.S. Fish and Wildlife Service 1998).

The species is a relatively large lizard in the Iguanidae family with a long, regenerative tail; long, powerful hind limbs; and a short, blunt snout (Smith 1946; Stebbins 1985). Though their under surface is uniformly white, the species exhibits tremendous variation in color and pattern on the back (Tanner and Banta 1963; Montanucci 1965, 1970), ranging from yellowish or light gray-brown to dark brown. Males are typically larger and weigh more than females; adults range in size from 86.4 to 119.4 millimeters (3.4 to 4.7 inches) (Tollestrup 1982) and weigh between 22.7 and 42.5 grams (0.8 and 1.5 ounces; Uptain et al. 1985). Blunt-nosed leopard lizards use small rodent burrows for shelter from predators and temperature extremes (Tollestrup 1979b).

The historic range of the blunt-nosed leopard lizard extended from the San Joaquin Valley and adjacent foothills from Stanislaus County southward to Kern County and the extreme northeast tip of Santa Barbara County (Williams and Germano 1992). Due to the expansion of agriculture and grazing, oil extraction, and urban development, the species is restricted to less than 15 percent of its historic range (Williams and Germano 1992, Jennings 1995). Loss and modification of habitat due to agricultural conversion and urban development is currently the greatest threat to the blunt-nosed leopard lizard (U.S. Fish and Wildlife Service 2010b)

Adult lizards often seek safety in burrows, while immature lizards use rock piles, trash piles, and brush. The lizards use burrows constructed by mammals, such as kangaroo rats, for overwintering and aestivation. Adult lizards hibernate during the colder months of winter, and are less active in the hotter months of late summer. Adults are active above ground from about March or April through September. Hatchlings are active until mid-October or November, depending on weather. Lizard habitat has been significantly reduced, degraded, and fragmented by roads, agricultural development, petroleum and mineral extraction, livestock grazing, pesticide application, and off-road vehicle use.

Habitat disturbance, destruction, and fragmentation continue as the greatest threats to blunt-nosed leopard lizard populations. Disturbances and modifications of habitats within areas of mineral and petroleum development pose lesser, but continuing threats as they degrade the habitat. Direct mortality occurs when animals are killed in their burrows during construction, killed by vehicle traffic, drowned in oil, or fall into excavated areas from which they are unable to escape. Vibrations from seismic exploration are expected to have no effect on hibernating

blunt-nosed lizards (Cypher 2008). Displaced lizards may be unable to survive in adjacent habitat if it is already occupied or unsuitable for colonization.

Livestock grazing can result in removal of herbaceous vegetation and shrub cover and destruction of rodent burrows used by lizards for shelter. Unlike cultivation of row crops, which precludes use by leopard lizards, light or moderate grazing may be beneficial. The use of pesticides may directly and indirectly affect blunt-nosed leopard lizards. The insecticide Malathion has been used since 1969 to control the beet leafhopper, and its use may reduce insect prey populations. Fumigants such as methyl bromide are used to control ground squirrels. Because leopard lizards often inhabit ground squirrel burrows, they may be inadvertently poisoned.

Extant populations of blunt-nosed leopard lizards are known from the Carrizo Plain, Elk Hills, around Taft, and at various other locations in the vicinity of the project area (U.S. Fish and Wildlife Service 1998). There has never been a comprehensive survey of the entire historical range of the blunt-nosed leopard lizard, and therefore less is known about this animal's distribution than giant and Tipton kangaroo rats (U.S. Fish and Wildlife Service 1998). The currently known occupied range of the blunt-nosed leopard lizard is in scattered parcels of undeveloped land and margins of developed land on the Valley floor, and in the foothills of the Coast Range. Blunt-nosed leopard lizards occur from Merced and Madera counties in the north, through Fresno, Kings, Tulare, and Kern Counties to San Luis Obispo, Santa Barbara, and Ventura counties in the south, as shown on Figure 49 of the Recovery Plan (U.S. Fish and Wildlife Service 1998).

The five-year review for the species recommended the species remain listed as endangered, based on habitat loss, fragmented populations, and current threats (U.S. Fish and Wildlife Service 2010).

California Tiger Salamander

The Central California population of the California tiger salamander was federally-listed as threatened throughout its range on August 4, 2004 (69 FR 47212; U.S. Fish and Wildlife Service 2004). Critical habitat for the Central California population of the California tiger salamander was designated on August 23, 2005 (70 FR 49380; USFWS 2005b).

The California tiger salamander is a large, stocky, terrestrial salamander with a broad, rounded snout. Adults may reach a total length of 8.2 inches (Petranka 1998; Stebbins 2003). California tiger salamander exhibit sexual dimorphism (e.g., males tend to be larger than females). As adults, California tiger salamander tend to have creamy yellow to white spotting on the sides that becomes much reduced on the dorsal surface of the animal, whereas other tiger salamander species have brighter yellow spotting that is heaviest on the dorsum.

Historically, the California tiger salamander inhabited low elevation grassland and oak savannah in the Central Valley, adjacent foothills, and inner Coast Ranges in California (Storer 1925; Shaffer et al. 1993; Jennings and Hayes 1994). The species occurs from near sea level up to approximately 3,900 feet in the Coast Ranges and up to approximately 1,600 feet in the Sierra Nevada foothills (Shaffer et al. 2004). Along the Coast Ranges, the species occurred from the vicinity of Santa Rosa in Sonoma County to near Buellton in Santa Barbara County. In the

Central Valley and surrounding foothills, the species occurred from northern Yolo County southward to northeastern Kern County and northern Tulare County. In Kern County, California tiger salamanders occur in the upper northwestern corner, contiguous with the population occurring in most of northern San Luis Obispo County (Zeiner et al. 1988-1990).

The California tiger salamander has an obligate biphasic life cycle (Shaffer et al. 2004). Although breeding, egg-laying, and development of the larval salamanders occur in vernal pools and other ponds, the species otherwise spends most of its post-metamorphic life in widely-dispersed, underground retreats (Trenham et al. 2001; Shaffer et al. 2004). Sub-adult and adult California tiger salamander spend the dry summer and fall months of the year in the burrows of small mammals (e.g., California ground squirrel [*Otospermophilus beecheyi*] and Botta's pocket gopher [*Thomomys bottae*]) (Storer 1925; Loredo and Van Vuren 1996; Petranka 1998; Trenham 1998a). These burrows provide protection from the sun and dry winds that are associated with the dry California climate. Given that California tiger salamander utilize burrows created by other species (rather than dig their own burrows) and these burrows typically collapse within 18 months if not maintained, an active population of burrowing mammals is necessary to sustain sufficient underground refugia for the species (Loredo et al. 1996).

The burrows inhabited by California tiger salamander are not estivation sites. Recent studies have demonstrated that individuals move, feed, and remain active in their burrows during the summer months (Trenham 2001; van Hatten 2004). Individuals may even move between closely located burrows (Trenham 2001). In addition, researchers have long inferred that individuals are feeding while underground since they arrive at breeding ponds in good condition and are heavier when entering the pond than when leaving the pond.

Once the fall or winter rains begin, individuals emerge from their burrow (typically on rainy nights) to feed and migrate to the breeding ponds (Shaffer et al. 1993). Historically, the California tiger salamander utilized vernal pools as breeding ponds. However, many current breeding sites also include stock ponds. After breeding, adults leave the pond and return to the small mammal burrows (Loredo et al. 1996; Trenham 1998a) where they may continue to exit the burrows nightly for the next few weeks to feed (Shaffer et al. 1993). It should be noted that in drought years the seasonal ponds may not fill and adults do not breed (Barry and Shaffer 1994).

California tiger salamander eggs hatch in 10 to 14 days with newly hatched larvae ranging from 0.45 to 0.56 inches in total length (Petranka 1998). The larvae are entirely aquatic, and the larval stage of the California tiger salamander usually lasts three to six months as most seasonal ponds dry completely during the summer months (Petranka 1998). In the late spring or early summer, before the ponds dry completely, metamorphosed juveniles leave the ponds and move into the upland habitat. This emigration occurs in both wet and dry conditions (Loredo and Van Vuren 1996; Loredo et al. 1996). Unlike during their winter migrations, the wet conditions that California tiger salamander prefer do not generally occur during the months when their breeding ponds begin to dry. As a result, juveniles may be forced to leave their ponds on rainless nights. Under these conditions, they may move only short distances to find suitable upland refugia (including leaf litter, desiccation cracks in the soil, and beneath boards or rocks in addition to small mammal burrows). These latter refugia are typically used temporarily and only until more suitable refugia can be found (i.e., small mammal burrows). Upon arrival of the next winter's

rains individuals may then move further within the upland habitat. Once juvenile California tiger salamanders leave their breeding ponds, they may not return to breed for four to five years. However, they remain active in the upland habitat and come to the surface during rainfall events to disperse or forage.

Lifetime reproductive success for California tiger salamander is low. Trenham et al. (2000) found that the average female bred 1.4 times and produced 8.5 young that survived to metamorphosis per reproductive effort. This resulted in approximately 11 metamorphic offspring over the lifetime of the female. While individuals may survive for more than 10 years, many breed only once, and in some populations, less than 5 percent of marked juveniles survive to become breeding adults (Trenham 1998b). With such low recruitment, isolated populations are susceptible to unusual, randomly occurring natural events as well as from human caused factors that reduce breeding success and individual survival. Factors that repeatedly lower breeding success in isolated ponds can quickly extirpate a population.

Dispersal and migration movements made by adult California tiger salamander can be grouped into three categories: (1) post-metamorphosis dispersal; (2) breeding migration; and (3) inter-pond dispersal. After metamorphosis, juveniles move away from breeding ponds into the surrounding upland habitat where they live continuously for several years. At a study in Monterey County, it was found that upon reaching sexual maturity, most individuals returned to their natal (i.e., birth) pond to breed. However, 20 percent of the individuals dispersed to other ponds where they breed (Trenham et al. 2001). Following breeding, adult California tiger salamander return to the upland habitat where they may live for one or more years before breeding again (Trenham et al. 2000).

California tiger salamanders are known to travel relatively long distances from the breeding ponds into the surrounding upland habitat (given the size of the species). Maximum distances moved are difficult to establish for the species, but an individual in Santa Barbara County was found approximately 1.3 miles from the nearest known breeding pond (Sweet 1998) suggesting that the species may be able to move up to distances of this magnitude. California tiger salamanders are known to travel between breeding ponds. One study found that 20 to 25 percent of the individuals captured at one pond were later captured at other ponds approximately 1,900 and 2,200 feet away (Trenham et al. 2001). In addition to traveling long distances during breeding migrations or inter-pond dispersals, California tiger salamander may reside in burrows that are far from known breeding ponds. At one site in Contra Costa County, hundreds of California tiger salamanders were captured three years in a row in upland habitat approximately 0.75 miles from the nearest known breeding pond (Orloff 2003).

Once California tiger salamanders have moved into the surrounding upland habitat most individuals do not remain in a single burrow. Most individuals use several successive burrows at increasingly greater distances from the pond. Although the studies discussed above provide an approximation of the distances that California tiger salamander move from their breeding ponds, movement in the upland habitat is believed to be driven by the local habitat features. Trenham (2001) found that radio-telemetered adults favored grassland with scattered large oaks over more densely wooded areas. A drift fence survey at a pond in Santa Barbara County found that many emigrating juveniles moved towards an adjacent strawberry field. However, no adults were captured returning to the pond from this direction. Nor, did many California tiger salamander

return to the pond from the direction of adjacent sandhill or eucalyptus habitats found in other quadrants. Most of the California tiger salamander returning to the pond were captured coming from a nearby, extensive heavily-grazed grassy flat (Steve Sykes, pers. comm. 2005). Furthermore, based on studies of radio-telemetered individuals, California tiger salamanders do not appear to favor specific corridors for movement in the upland habitat (Trenham 2001). At two ponds completely encircled by drift fence and pit fall traps, captures of arriving adults and dispersing juveniles were distributed randomly around the ponds. Therefore, it appears that dispersal into the surrounding upland habitat occurs randomly with respect to direction and habitat types.

The California tiger salamander is imperiled throughout its range by a variety of human activities (U.S. Fish and Wildlife Service 2004). Current threats to California tiger salamander include continued degradation and loss of habitat due to agriculture and urbanization, hybridization with non-native eastern tiger salamanders (*Ambystoma tigrinum*) (Riley et al. 2003; Fitzpatrick and Shaffer 2004), and introduced aquatic predators (e.g., American bullfrog [*Lithobates catesbeianus*], mosquito fish [*Gambusia affinis*], and gamefish). Other threats include predation and competition from introduced, exotic species; disease; various chemical contaminants; road-crossing mortality; and certain unrestrictive mosquito and rodent control programs. Furthermore, the various primary and secondary threats are not currently being offset by existing Federal, State, or local regulatory mechanisms. The California tiger salamander is also vulnerable to chance environmental or demographic events (particularly small populations which are especially vulnerable).

Although most populations are likely threatened by more than one factor, conversion of natural habitat to modified habitat for urban and agricultural uses (U.S. Fish and Wildlife Service 2003b, 2004; Shaffer et al. 1993), and fragmentation of existing habitat represent the most significant current threats to the California tiger salamander. Agricultural activities that threaten California tiger salamander survival include disking and deep-ripping, as well as the cultivation, planting, and maintenance of row crops, orchards, and vineyards. Historically, California supported approximately 15.59 million acres of valley and coastal grasslands, blue oak/foothill pine, valley oak, or mixed hardwood lands (Kuchler 1988). Urbanization and intensive agriculture have eliminated virtually all valley grassland and oak savanna habitat from the Central Valley floor. Currently there are about 1.1 million acres of such habitat where the California tiger salamander is still potentially extant.

The relative loss of native habitat has been even more extreme with respect to vernal pools, the historic breeding habitat of the California tiger salamander. Remaining vernal pool complexes are now fragmented and reduced in area. Where vernal pools remain, they are often disturbed and degraded by drainage modification, heavy grazing, off road vehicles use, non-native plant invasion, trash dumping, road construction, and urban development (Jones and Stokes Associates 1987).

In addition to direct loss of habitat, the widespread conversion of undisturbed land to residential and agricultural uses has fragmented habitat throughout the range of the California tiger salamander and has isolated several remaining populations (Shaffer et al. 1993). Isolation and fragmentation of habitats within many watersheds have precluded dispersal between subpopulations and jeopardized the viability of metapopulations (i.e., adjacent subpopulations

that occasionally exchange individuals (and genes) through dispersal and that are capable of colonizing new habitat patches or recolonizing habitat from which a population was extirpated).

A number of non-native species have adversely affected the California tiger salamander through predation and competition. A strong negative correlation exists between bullfrog presence and California tiger salamander presence (Shaffer et al. 1993, Seymour and Westphal 1994). Morey and Guinn (1992) documented a shift in amphibian community composition at a vernal pool complex, with California tiger salamander becoming proportionally less abundant as bullfrogs increased in number. Mosquito fish likely have also adversely affected California tiger salamander via predation and competition. Loredo-Prendeville et al. (1994) failed to find any California tiger salamander inhabiting ponds containing mosquito fish.

A number of other non-native species have been directly implicated in predation of California tiger salamander or appear to have the potential to do so. Introductions of non-native fish likely eliminated tiger salamanders from several breeding sites in Santa Barbara County (U.S. Fish and Wildlife Service 2004).

Like most amphibians, California tiger salamanders inhabit both aquatic and terrestrial habitats at different stages in their life cycle. They are exposed, therefore, to both aquatic and terrestrial pollutants, such as pesticides, due to their highly permeable skin (Blaustein and Wake 1990). Some pesticides, such malathion, are cholinesterase inhibitors. Reduced cholinesterase activity has been linked to uncoordinated swimming, increased vulnerability to predation, depressed growth, and increased mortality in larvae (Rosenbaum et al. 1988, Bridges 1997, Berrill et al. 1998, Sparling et al. 2001). Even when toxic or detectable amounts of pesticides are not found in breeding ponds or groundwater, California tiger salamander may still be affected, particularly by chemicals applied during the migration and dispersal seasons. Sparling et al. (2001) examined pesticide usage and amphibian (*Rana* and *Bufo* spp.) population declines in California and provided evidence that pesticides are instrumental in the declines of these species.

Widespread control of ground squirrels and pocket gophers may also pose a significant threat to the California tiger salamander. Ground squirrel control is conducted by trapping, shooting, fumigation, toxic (including anticoagulant) baits, and habitat modification (including deep-ripping of burrow areas) (UCIPM Internet website, January 2003). Ground squirrel and pocket gopher control may have the indirect effect of reducing the number of upland burrows available to specific California tiger salamander populations (Loredo-Prendeville et al. 1994).

Light-to-moderate livestock grazing by cattle, sheep, and horses is generally thought to be compatible with continued successful use of rangelands by the California tiger salamander, provided the grazed areas do not also have intensive burrowing rodent control efforts (Shaffer et al. 1993). By maintaining shorter vegetation, grazing may make areas more suitable for ground squirrels whose burrows are essential to California tiger salamander.

Conservation of the California tiger salamander requires a five-pronged approach: (1) maintaining the current genetic structure across the species' range; (2) maintaining the current geographic, elevational, and ecological distribution; (3) protecting the hydrology and water quality of breeding pools and ponds; (4) retaining or providing for connectivity between breeding locations for genetic exchange and recolonization; and (5) protecting sufficient barrier-

free upland habitat around each breeding location to allow for sufficient survival and recruitment to maintain a breeding population over the long term. Specific actions that help meet these goals include, but are not limited to (1) protection, restoration, and management of large blocks of contiguous aquatic and terrestrial habitat; (2) management of stock ponds to eliminate or reduce populations of non-native predators; (3) elimination of non-native tiger salamanders and their hybrids; and (4) reduced exposure to contaminants, particularly in the vulnerable larval stages (U.S. Fish and Wildlife Service 2004, 2005b).

Kern Mallow

Kern mallow was federally listed as endangered in 1990 (U.S. Fish and Wildlife Service 1990). Critical habitat for this species has not been designated.

A detailed description of the species, current distribution and historical range, reasons for decline, and threats was prepared by the Endangered Species Recovery Program at California State University-Stanislaus (ESRP 2006) and is incorporated by reference.

Kern mallow is an annual herbaceous plant only known to occur at the eastern base of the Temblor Range from the vicinity of McKittrick to near Buttonwillow in Kern County (Taylor and Davilla 1986). Typical habitat consists of herbaceous understory within saltbush scrub stands, valley sink scrub, and valley and foothill grassland on sandy clay-loam soils at elevations of 315 to 900 feet (U.S. Fish and Wildlife Service 1998).

Kern mallow is restricted to the finer-textured soils (Kimberlina sandy loam, Kimberlina fine sandy loam, and Panoche clay loam). Depending on seasonal rainfall, its growth form can vary from single-stemmed to multiple-stemmed plants with stem lengths ranging from 2.54 to 50.8 centimeters (1 to 20 inches). As with many arid-land annuals, the density, phenology (timing of different stages in the life cycle), reproduction, and population size of Kern mallow vary widely. This species typically grows under and around spiny and common saltbushes (*A. confertifolia* and *A. polycarpa*) in areas where shrub cover is less than 25 percent and herbaceous cover ranges from 48 to 80 percent. Kern mallow has occasionally re-established disturbed sites from existing populations remaining in adjacent areas.

Germination of Kern mallow seeds typically occurs in January and February, the plants flower beginning in March, and begin fruiting within a few days after flowers appear. Flowering and fruit production may continue into May as long as there is sufficient moisture. The seeds fall from the fruits immediately after maturation. Seeds are capable of germinating in the following growing season, although some seeds may remain ungerminated, and the duration of seed viability in the soil is unknown. Seed dispersal agents are unknown but probably include animals and wind, and insects likely facilitate pollination of the plants (Taylor and Davilla 1986, Mazer et al. 1993). Population size of Kern mallow varies with rainfall, and the plants may not germinate in years of below-average rainfall (Twisselman 1956, Bates 1992).

The Recovery Plan for Upland Species of the San Joaquin Valley, California (U.S. Fish and Wildlife Service 1998) discusses a recovery strategy and provides summary tables describing downlisting and delisting criteria with a step-down narrative. However, because of the previous misidentification of the morphologically similar and more widespread desert mallow (*Eremalche exilis*) as Kern mallow (Andreasen et al. 2002, Cypher 2002a), the current distribution of Kern mallow is only 72 percent (9,760 acres) of the 13,600 acres identified in the Recovery Plan

(Cypher 2004). Therefore, Kern mallow is more narrowly endemic than previously thought. The Recovery Plan states the long-term prospects for survival of Kern mallow will be enhanced if more than one metapopulation was protected (each 259 hectares [640 acres]), but phytogenetic studies (Cypher 2002a, Andreasen 2005, Andreasen et al. 2002) determined that only one metapopulation exists. One of the delisting criteria in the Recovery Plan is the protection of two or more distinct populations outside of the Lokern Natural Area, but no known populations of Kern mallow exist outside of the Lokern Natural Area to protect.
The current distribution of Kern mallow is actually restricted to a narrow band within 5.5 kilometers (3.4 miles) north and 2.5 kilometers (1.55 miles) south of Lokern Road in western Kern County. The species ranges across roughly 3,950 hectares (9,760 acres) and is restricted to the Lokern area of western Kern County. This range is based on estimates of 1,748 hectares (4,320 acres) of "known" Kern mallow habitat and 2,201 hectares (5,440 acres) of "predicted" Kern mallow habitat. Estimates of "known" Kern mallow habitat are based on the number of 64.7-hectare (160-acre) quarter sections in which reported occurrences of Eremalche species were positively identified as *E. kernensis*. Estimates of "predicted" Kern mallow habitat are based on the number of 64.7-hectare (160-acre) quarter sections in the Lokern area in which occurrences of Eremalche spp. were reported, and the presence of *E. kernensis* was predicted based on soil type (Cypher 2004).

Research has shown positive facilitation of this species by the co-occurrence of the giant kangaroo rat (Cypher and Cypher 2004). Generally, giant kangaroo rat precincts average 6.1 meters (20 feet) in diameter (CDFG 2004). Kern mallow was found to be twice as abundant on these precincts, especially toward the precinct center; Kern mallow plants were noticeably larger in size (by approximately two-fold) on precinct edges than compared to off precinct occurrences. This research provides additional evidence for the keystone role of giant kangaroo rats in the Valley Saltbush Scrub ecosystem. Therefore, conservation strategies targeted for giant kangaroo rats in the Lokern area should be beneficial to Kern mallow. However, the Bakersfield Office of the BLM currently uses cattle grazing as a habitat management tool to control nonnative annual grasses that are believed to contribute to the decline of giant kangaroo rats during wet years. The results of the impacts of cattle grazing on Kern mallow were inconclusive in a 1997-2005 annual Lokern grazing study (Germano et al. 2005). Cypher (2005), however, warns of the potential harmful effects of excessive grazing on Kern mallow survival and reproductive rates, particularly in burned areas.

The Recovery Plan identified the loss of pollinators through the spraying of Malathion and other pesticides (55 FR 29361) as an additional threat to Kern mallow. Habitat loss and fragmentation is considered a serious ongoing threat to this species. Though not addressed in the Recovery Plan, another threat to Kern mallow is elevated atmospheric nitrogen (N) deposition; elevated atmospheric N deposition is particularly harmful to N-limited ecosystems such as the arid southern San Joaquin Valley, especially where it leads to increases in nonnative annual grasses which outcompete the native flora (Fenn et al. 2003). A potential threat to Kern mallow associated with photochemical smog is ozone (tri-atomic oxygen, O3); numerous studies have documented the negative effects of ozone on plants, such as pronounced foliar injury and growth reduction (e.g., Miller 1992, Grantz and Yang 1996, Bytnerowicz 2002), but no studies have been performed on Kern mallow. An additional potential threat to the Kern mallow is excessive dust. Dust may affect photosynthesis, respiration, and transpiration and allow the penetration of phytotoxic gaseous pollutants (Farmer 1993).

Threats to the Kern mallow identified in the 1990 final listing rule (55 FR 29361) include habitat destruction for oil and gas development, agriculture, overgrazing, competition with non-native plants, telecommunication and electrical line construction, and off-road vehicle use (U.S. Fish and Wildlife Service 1990).

The endangered status of this species is likely to continue for years due to its highly restricted range, the loss of historic habitat, and the continuation of threats from conversion of native habitat into irrigated agricultural fields, hazardous waste disposal facilities, oil and gas extraction activities, installation of pipelines and transmission lines, off-road vehicle use, loss of pollinators, competition from nonnative annual grasses, and issues from over- and under-grazing relative to this species by domestic livestock.

Vernal Pool Fairy Shrimp and Longhorn Fairy Shrimp Critical Habitat

Critical habitat for vernal pool fairy shrimp and longhorn fairy shrimp is described in the August 11, 2005, Final Rule and the February 10, 2006, Final Rule; administrative revisions (70**FR**46924 and 71**FR**7118 respectively). Overall, there are 13,557 acres of critical habitat designated for the longhorn fairy shrimp and 597,821 acres of critical habitat designated for the vernal pool fairy shrimp. The action area for the Proposed Action is within Critical Habitat Unit 3 for longhorn fairy shrimp in San Luis Obispo County and is within Unit 30 for vernal pool fairy shrimp in San Luis Obispo County. Units 3 and 30 are the same overlapping configuration on the landscape and are 9,601 acres in size.

In determining which areas to designate as critical habitat, the Service considers those physical or biological features (focusing on the primary constituent elements) that are essential to the conservation of the species, and that may require special management considerations or protection (50 CFR § 424.14). The primary constituent elements of critical habitat for vernal pool fairy shrimp and longhorn fairy shrimp are the habitat components that provide: (i) Topographic features characterized by mounds and swales, and depressions within a matrix of surrounding uplands that result in complexes of continuously, or intermittently, flowing surface water in the swales connecting the pools described below in (ii), providing for dispersal and promoting hydroperiods of adequate length in the pools; (ii) Depressional features including isolated vernal pools with underlying restrictive soil layers that become inundated during winter rains and that continuously hold water for a minimum of 18 days, in all but the driest years; thereby providing adequate water for incubation, maturation, and reproduction. As these features are inundated on a seasonal basis, they do not promote the development of obligate wetland vegetation habitats typical of permanently flooded emergent wetlands; (iii) Sources of food, expected to be detritus occurring in the pools, contributed by overland flow from the pools' watershed, or the results of biological processes within the pools themselves, such as single-celled bacteria, algae, and dead organic matter, to provide for feeding; and (iv) Structure within the pools described above in (ii), consisting of organic and inorganic materials, such as living and dead plants from plant species adapted to seasonally inundated environments, rocks, and other inorganic debris that may be washed, blown, or otherwise transported into the pools, that provide shelter. Existing manmade features and structures, such as buildings, roads, railroads, airports, runways, other paved areas, lawns, and other urban landscaped areas do not contain one or more of the primary constituent elements and are excluded from consideration.

Unit 3 for the longhorn fairy shrimp plays a more important relative role in the survival and recovery of the species based on the fewer acres designated for the species (13,557 acres versus 597,821 acres) and is one of only 3 units. Unit 3 is the largest and southernmost in location of the 3 units, again emphasizing its importance to the longhorn fairy shrimp. Longhorn fairy shrimp are reliably found on the Carrizo Plain when suitable rainfall conditions occur and each unit individually plays a larger role in the viability of the species than compared to vernal pool fairy shrimp.
Unit 30 plays a less important role in the overall conservation of the vernal pool fairy shrimp based on the relative greater abundance of the species and its designated critical habitat. The species is found reliably on the Carrizo Plain when suitable rainfall conditions occur. Unit 30 is the third most southern unit.

The causes for the decline of the species and its habitat are primarily habitat loss due to agriculture urban/industrial development. On the Carrizo Plain these threats are less exigent as reliable water is not available and annual rainfall is very low (around 9 inches).

Environmental Baseline

The following information was largely taken from the information provided by the action agency and their consultants (H.T. Harvey and Associates 2010; ICF International 2010 and ICF International 2011). There are no previous section 7 consultations or existing section 10 habitat conservation plans within the action area.

San Joaquin kit fox
The San Joaquin kit fox is a relatively common resident of the Carrizo Plain and portions of the lower San Joaquin Valley, and over 50 percent of kit foxes occur within this geographic area (Morrell 1975). The CPNM contains one of three main core populations in the San Joaquin Valley area, and this population is considered to be the largest single population (U.S. Fish and Wildlife Service 1998). The kit fox population that occurs in the CVSR Project action area is likely a continuum of the CPNM core population, given their proximity to each other (< five miles). The other two core populations occur in western Kern County, approximately 30-50 miles east of the CPNM, and in the Ciervo-Panoche Natural Area in western Fresno and eastern San Benito counties approximately 100 miles to the north. These three core populations are connected to smaller satellite populations through movement of kit foxes via habitat linkages, creating a range-wide metapopulation (U.S. Fish and Wildlife Service 1998). A population viability analysis indicated that the species' recovery will be improved if a core population is maintained in the Ciervo-Panoche region, and that the Carrizo Plain and western Kern County core populations are both critical to the long-term survival of the species. The analysis also indicated that the risk of extinction increases dramatically if either the Carrizo Plain or western Kern County population were eliminated (U.S. Fish and Wildlife Service 1998).

The 1998 Recovery Plan includes strategies for habitat protection that will maintain population interchange between areas adjacent to the action area. Connecting corridors for movement of kit foxes around the western edge of the Pleasant Valley and Coalinga in Fresno County should be maintained and enhanced. Existing natural lands in the Mendota area should be expanded and connected with the Ciervo-Panoche area, through restoration of habitat on retired, drainage-problem farmland. Natural lands that would provide a connection are scarce, because the land

between these two populations is dominated by agriculture. Although kit fox will move up to 1.5 kilometers (approximately 1 mile) into farmland, they appear reluctant to cross large expanses of agricultural land due to the lack of escapes from predators (Cypher et al. 2005). Six occurrences of kit fox in the lands connecting these populations were recorded in 1920; there have been no subsequent recorded observations in the agricultural lands connecting Ciervo-Panoche and the Mendota area. Retired agricultural lands may provide important stepping stones to maintain connectivity of interconnected core and satellite populations throughout the species' range and the CVSR Project action area.

Grassland and scrub vegetation within the CVSR Project action area (Solar Generation Facility, Generation Tie-Line, PG&E Caliente Switching Station, and Twisselman Aggregate Mine) provides habitat for giant kangaroo rats, San Joaquin antelope squirrels, California ground squirrels, and other potential kit fox prey, and few impediments to dispersal (e.g. State Route 58, steep slopes, and aggregate and gypsum mines) are present. Thus, the majority of the CVSR Project action area is suitable foraging, breeding, and/ or dispersal habitat for the San Joaquin kit fox. This species does not typically den within wetlands, so the seasonal wetlands in the southwestern part of the Solar Generation Facility site, the alkali sink on the south side of SR 58 northeast of Array 6, and the seep within the Generation Tie-Line corridor are not suitable denning habitat; however, kit fox likely forage in these wetlands to some extent, at least during the dry season.

Surveys for San Joaquin kit foxes were repeatedly conducted throughout different portions of the Solar Generation Facility, Generation Tie-Line, PG&E Caliente Switching Station, and Twisselman Aggregate Mine sites by URS and H. T. Harvey & Associates biologists between June 3, 2009 and 30 October 2010. Complete details of the survey methodologies are described in the California Valley Solar Ranch Project Revised Biological Resources Assessment Report (URS and H. T. Harvey & Associates 2009, San Luis Obispo County 2011). Survey methodology generally followed the northern range protocol for San Joaquin kit foxes (U.S. Fish and Wildlife Service 1999a), with modifications that were coordinated with the Service and CDFG (Althouse and Meade, Inc., and URS Corporation 2009, CDFG 2009b). Biologists with demonstrable experience with San Joaquin kit fox biology, identification, and survey techniques conducted ground surveys for San Joaquin kit fox dens throughout the CVSR Project area by walking transect lines at 100-meter intervals. Four URS surveyors conducted surveys for potential kit fox dens across a 2,963-acre portion of the CVSR Project action area, which included the majority of the proposed impact areas, in June and July 2009. H. T. Harvey & Associates biologists conducted surveys throughout all areas of CVSR Project action area except the Martin parcel and the alternative switching station locations, in November and December 2009.

In addition, URS conducted night-time spotlighting surveys and camera station surveys for San Joaquin kit foxes in the Solar Generation Facility and Generation Tie-Line areas. The CDFG did not recommend the use of scent stations (CDFG 2009b); so this survey methodology was not used. The CDFG-approved, modified San Joaquin kit fox spotlighting protocol included five nights of spotlighting surveys during June and July 2009. An initial survey was conducted on June 3 to 4, 2009. During each of the four subsequent surveys, spotlighting was conducted by a total of six people, three people in each of two vehicles, as recommended by CDFG in a letter of concurrence dated 24 June 2009 (CDFG 2009b). The camera station survey protocol included

the use of two remote sensor cameras in 2009. Initially, a single camera was stationed at one location for 16 days. Subsequently, two cameras were deployed concurrently at separate locations, and these were moved to new locations on 10 different dates.

The initial surveys confirmed the presence of San Joaquin kit fox on the site. Five natal dens, three of which were confirmed to be active, were recorded within the CVSR Project action area south of SR 58 in 2009, verifying use of the site by family groups, and individuals. Active natal dens were located within the Solar Generation Facility portion of the action area in 2010 and 2011 (H. T. Harvey & Associates 2011) documenting continued use of the site by family groups and individuals. Numerous non-natal dens, and "potential dens" (i.e., dens having the appropriate size for use by kit fox) were also found distributed throughout most of the site in 2009, 2010, and 2011.

In June 2010, H. T. Harvey & Associates conducted additional surveys of the revised CVSR Project footprint, including the newly acquired 320-acre Martin parcel (where Array 11 is proposed) and along the two alternative switching station locations and alignments. Surveys consisted of walking transects spaced ~50 meters apart to assess habitat suitability for, and look for evidence of, special-status species such as kit fox and their dens. These surveys resulted in finding five potential kit fox dens within the footprint of the alternative switching station areas and one potential den on the 320-acre Martin parcel. Although kit fox activity was not confirmed at any of these dens, all were the appropriate size (approximately four to five inches in diameter) and shape ("keyhole" shape) for kit fox dens. The identified kit fox dens were too small to be used by coyotes, and there were no California ground squirrels, a species that may make similar sized dens on occasion, in the area. These dens were likely used as escape dens by foraging or dispersing individuals. On July 7, 2010, H. T. Harvey & Associates biologists observed two kit foxes, which appeared to be dispersing juveniles, just east of the natal den complex located north of Array 7.

In September and October 2010 the entire CVSR Project action area was again surveyed and all potential San Joaquin kit fox dens, latrines, scat, or other sign was investigated, identified, and the locations were recorded. During these surveys, three active natal dens were again recorded on the CVSR Project action area south of SR 58 suggesting the continued use of the site by at least three family groups. Fifty potential non-natal dens were also found distributed throughout the site. On September 28, 2010, H. T. Harvey & Associates biologists observed two kit foxes in the area south of SR 58 near the San Andreas fault scarp.

Between 24 March and 8 April 2011, H. T. Harvey & Associates biologists conducted pre-construction surveys for future geotechnical explorations with surveys extending a minimum of 500-feet from proposed survey points and alignments. Two active San Joaquin kit fox natal dens were detected during this effort; one within the southwest portion of the project site in Array 8, and the second within Array 11 on the Martin parcel.

The abundance of San Joaquin kit fox within a particular area varies widely depending on a number of physical and biotic factors. Based on documented San Joaquin kit fox abundance at locations east (Naval Petroleum Reserves) and west (Camp Roberts) of the site, the CVSR Project action area (approximately seven square miles) could support 2-31 San Joaquin kit fox

depending on conditions that affect the species' carrying capacity in the area (Cypher et al. 2000, Berry and Standley 1992, White et al. 1996). Estimates of San Joaquin kit fox densities from the Carrizo Plain during drought conditions have ranged from 0.39-0.62 kit fox per square mile (White et al. 1996). At these densities, three to five individuals could occur within the CVSR Project action area during drought conditions.

There are several factors that have been documented through the various surveys that provide insight into the minimum number of San Joaquin kit fox that are resident or utilize habitats within the CVSR Project action area and surrounding areas. Biologists from URS reported that San Joaquin kit fox pups were observed at three den sites, suggesting that a minimum of three pairs of adults occurred on the action area in 2009; and a total of five natal dens located during the 2009 surveys suggest that as many as 10 adults could have been resident in 2009. On average, nine San Joaquin kit fox were seen during spotlight surveys, with a range of four to 13 individuals observed during single surveys. Surveys conducted in 2010, revealed the location of three natal dens supporting the conclusion that at least six resident adult kit foxes were likely present on the site.

The results of the 2010 surveys substantiate conclusions drawn from the results of earlier surveys and indicate there are three resident pairs on the site, and likely additional individuals that may be resident of adjacent lands but include the CVSR Project action area within their home range. The overall presence of kit fox on the action area does not appear to have substantially increased or decreased over the past year, and kit fox use of habitats on the CVSR Project action area appears to have remained relatively consistent between the two years.

Protocol surveys for kit fox on potential off-site conservation lands within the Carrizo Plain north of the CPNM, within the CPNM, and near Lokern were not conducted. However, reconnaissance-level surveys of suitable conservation lands documented evidence of the species through observation of fresh scat, tracks and suitable and occupied kit fox dens.

South Coast Wildlands (2010) mapped suitable kit fox habitat within potential off-site conservation lands. The off-site conservation lands within the Carrizo Plain north of the CPNM are mostly agricultural lands, which are currently dry-land farmed or were previously dry-land farmed and are currently grazed. Approximately 3,500 acres of occupied grassland and shrubland kit fox habitat will be conserved and managed for kit fox within this area. An additional 1,700 acres of dry-land farmed or periodically tilled land will be restored to grassland habitat and managed for kit fox within the Carrizo Plain north of the CPNM. These lands are within the kit fox corridor identified by South Coast Wildlands (2010).

More than 2,000 acres of potential conservation lands comprising in-holdings within the CPNM have been identified for the purpose of preserving occupied kit fox habitat within this core population critical to the long-term survival of the species (U.S. Fish and Wildlife Service 1998). Previous or current land uses on or in the vicinity of these in-holdings comprise dry-land farming, livestock grazing, minor oil and gas extraction, or recreational uses such as hunting, camping, hiking, equestrian use, and auto touring. An additional 472-acre parcel comprising potential conservation land benefiting kit fox has been identified within the Lokern area of Kern County. Prime San Joaquin kit fox habitat in the Lokern area has been destroyed by oil and gas

development, agriculture, overgrazing, competition with non-native plants, telecommunication and electrical line construction, and off-road vehicle use. Few large private parcels supporting kit fox and giant kangaroo rat remain in the region. Oil and gas development and grazing currently occurs on this parcel.

Protocol surveys for San Joaquin kit foxes were not conducted within the PG&E Reconductoring action area, but suitable habitat occurs between the Solar Switching Station on the western end of the project east to the proposed Caliente Switching Station and between Tower 072 and Tower 140. Several San Joaquin kit fox occurrences are within 10 miles of the PG&E Reconductoring action area (CNDDB 2010). Biologists from ICF International observed one San Joaquin kit fox just south of SR 58 in the Carrizo Plain during surveys in March 2010 (ICF International 2010).

Threats to the San Joaquin kit in the Proposed Action area include ongoing farming operations, conversion of native habitat and rangeland to farmland and large-scale solar energy facilities. Threats also include the use of rodenticides and habitat fragmentation from oil and gas development, roads and transmission lines.

Overall the kit fox present within the action area are a part of the Carrizo core population (1 of 3). Maintenance and enhancement of the core populations are very important and the animals that occur in the action area are important to the genetic diversity and viability of the core population. The Recovery Plan indicates the private land that can be restored and/or protected and managed for these species will be important to maintain the metapopulation in Carrizo area (Service 1998).

Giant Kangaroo Rat

Prior to the initiation of the CVSR project, the nearest publicly documented location of a giant kangaroo rat to the CVSR Project action area was reported in 1985 just east of the southeast corner of the Solar Generation Facility (CNDDB 2010). No giant kangaroo rats were captured during small mammal trapping surveys conducted in the CVSR Project action area during July 2008. However, giant kangaroo rat presence was confirmed in the CVSR Project action area when one was observed during kit fox spotlight surveys in June 2009. Complete details of the survey methodologies and results are described in the California Valley Solar Ranch Project Revised Biological Resources Assessment Report (URS and HTH 2009) and Focused Surveys of Giant Kangaroo Rats, California Valley Solar Ranch Project Site 2009-2010 (H. T. Harvey & Associates 2010), and are summarized below.

Focused diurnal surveys for giant kangaroo rat in November and December 2009 and June 2010 were conducted on 5,346 acres, which includes the entire CVSR Project action area. Of the acreage surveyed, 665 acres (15 percent), contained evidence of giant kangaroo rat occupancy, of which 538 acres contained active burrow precincts and 127 acres contained inactive precincts. Of the active precincts, 61 acres (approximately 138 precincts) were located within the footprint of the solar arrays. Of the inactive precincts, 98 acres (approximately 173 precincts) are located within the footprint of the solar arrays. An estimated 1,124 to 1,246 active precincts, and 266 to 295 inactive precincts, were in the CVSR Project action area. The greatest concentrations of active precincts were in the proposed on-site conservation area between Arrays 2 and 4; a previous Solar Generation Facility layout was modified to avoid impacting the majority (approximately 88 percent) of precincts. Active precincts were also found throughout much of

the rest of the CVSR Project action area, although they were sparse throughout the relatively steep slopes of the hilly area north of Array 8, and in the flats between the slopes in that area. There were no active precincts in the hummocky area in the extreme southwest corner of the CVSR Project action area within Array 9, and they were absent from gypsum quarries and alkali sinks. There were precincts north of SR 58, yet most were inactive, and giant kangaroo rats were absent from the hills along the north edge of the Solar Generation Facility site and from most of the Generation Tie-Line, PG&E Switching Station areas, and the Twisselman Aggregate Mine.

The relatively large number of inactive burrow precincts may reflect the impact of several years of drought on the population prior to the 2009-2010 wet season. Although areas containing inactive precincts are not currently occupied, they comprise suitable habitat that would likely be occupied during consecutive productive years of normal or above-normal rainfall. Giant kangaroo rat populations fluctuate substantially in response to annual fluctuations in the amount of rainfall (Williams et al. 1995, Cypher 2001). Rainfall over the winter of 2009-2010 was nearly double the typical annual rainfall for the Carrizo Plain. In September 2010, H. T. Harvey & Associates again surveyed the CVSR Project action area (H. T. Harvey & Associates 2010b). Surveys conducted in 2010 followed the methods used in the 2009 survey.

The results of the 2010 survey indicate the population within the CVSR Project action area had increased to 1,876 individuals since the November 2009 survey, with a mean density of precincts within the 50 meter by 50 meter grid squares where giant kangaroo rats were detected of 2.59. The 2009 focused survey for giant kangaroo rats did not include the Martin property as this parcel was not part of the project at that time. In 2010, 92 of the 1,876 precincts located were on grasslands within the eastern portion of the Martin parcel.

In 2010, although the population within the CVSR Project action area had increased substantially, the occupied acreage decreased to 426.1 acres. The Solar Generation Facility site had not been grazed during the late spring and summer of 2010 to facilitate rare plant surveys, and as a result the boundaries of individual precincts were readily demarcated by the contrast created by cropped plants around the precinct and the relatively dense grassland vegetation. Many of the precincts identified as inactive in 2009 were either occupied in 2010 or, if they remained inactive, were not readily detectable due to the dense grass.

Rainfall during the winter of 2009-2010 was substantially higher than the typical annual rainfall for the Carrizo Plain. In the past, giant kangaroo rat populations have fluctuated substantially during wet periods and subsequent years (Cypher 2001, Williams et al. 1995), and the difference in rainfall between 2009 and 2010 likely influenced the increase in abundance of giant kangaroo rat precincts from 2009 to 2010.

Even though the current distribution of giant kangaroo rats is uneven, 4,409 acres of the CVSR Project action area consists of flat or gently sloping terrain (<11 percent slope), consisting mostly of annual grasslands which provide suitable habitat for giant kangaroo rats (U.S. Fish and Wildlife Service 2010*c*). Unsuitable habitat in the CVSR Project action area includes 48 acres of slopes greater than 22 percent (U.S. Fish and Wildlife Service 2010*c*), the highly disturbed former gypsum quarries in the southwestern and south-central portions of the CVSR Project action area (192.5 acres), the currently active and disturbed portions of the Twisselman Aggregate Mine (11.8 acres), portions of SR 58 that pass through the site (11.7 acres), and 58.2

acres of alkali sink in the northeastern part of the CVSR Project action area. In addition, 152 acres of the CVSR Project action area contains slopes between 11 and 22 percent; these areas are considered suboptimal habitat but may be utilized (H. T. Harvey & Associates 2010).

The five-year status review for the giant kangaroo rat reported that 78,000 acres of suitable and occupied habitat exist in the Carrizo Plain, of which 68,000 acres is protected within the CPNM or by private conservation easements. The remaining 10,000 acres was identified as suitable but unprotected habitat (U.S. Fish and Wildlife Service 2010*c*). H. T. Harvey & Associates' preliminary analysis of aerial imagery, geomorphology, soil types, and vegetation indicates several thousand acres of suitable and densely occupied habitat occur on private lands adjacent to the eastern edge of the CPNM, which encompass portions of the Carrizo and Elkhorn valley. The CVSR Project action area encompasses approximately 4,285 acres of suitable habitat, some of which is occupied at a relatively high density and some of which is not occupied or is occupied by relatively few individuals. Occupied habitat also exists within the California Valley Subdivision and within larger pieces of private land in the central portion of the plain, which comprise suitable, occupied, and unprotected habitat (U.S. Fish and Wildlife Service 2010c).

The distribution of giant kangaroo rats on the Carrizo Plain is currently concentrated within the southern portion of the plain, predominantly within the CPNM. The relative scarcity or absence of giant kangaroo rats in the northern portion of the plain is hypothesized to be dependent on a number of factors. The expansion of agriculture in the San Joaquin Valley is widely recognized as a critical factor in the decline of giant kangaroo rats throughout most of their former range (U.S. Fish and Wildlife Service 2010*c*) and dry-land farming throughout much of the northern portion of the Carrizo Plain would have had the same effect. There is also some evidence that precipitation in the northern part of the range may be a limiting factor for giant kangaroo rats. Grinnell (1932), Shaw (1934), and Hawbecker (1951) concluded that giant kangaroo rats occurred in areas with less than five inches of annual precipitation. However giant kangaroo rats that currently exist within the central portion of the Carrizo Plain occur in areas which appear to have much higher precipitation levels. For example, the CVSR Project action area falls within an area where the 60-year average rainfall may have exceeded 11 inches. Likewise, an extant colony of giant kangaroo rats located near Soda Lake Road, south of SR 58, falls within an area where the 60-year mean annual rainfall may have exceeded 13 inches.

Williams (1992), reported giant kangaroo rats from locations within the far northern portion of the Carrizo Plain, which included historic records from 1947 but also included observations by U.S. Fish and Wildlife Service biologists; which although not dated were apparently from the early 1990s. Although the distribution of giant kangaroo rats in the northern portion of the Carrizo Plain could be limited during periods of high precipitation rates, the species appears to at least occupy the northern portions of the plain during drier periods. This may be an important consideration in light of uncertainty associated with climate change. The genus *Dipodomys* has been extant in the western portion of North America since the middle Miocene (~14 million years ago; Alexander and Riddle 2005) and historic records from the early part of the 1900s show that giant kangaroo rats occurred throughout the southern portion of the San Joaquin Valley (Grinnell 1932). The distribution of a species with this geologic and geographic range would not be expected to be exclusively restricted geographically from nearby areas of similar habitat, latitude, and topography; but would more likely utilize these areas when conditions were suitable and would be infrequent in these areas when conditions were not suitable.

Ground disturbance associated with agricultural operations is widely recognized as an important factor limiting the distribution of giant kangaroo rats throughout most of the historic range in the San Joaquin Valley (U.S. Fish and Wildlife Service 2010c) and this appears to have been an important limiting factor affecting the distribution of giant kangaroo rats on the Carrizo Plain. Good et al. (1997) estimated, based on previous studies, that grain farming reduced giant kangaroo habitat in the Carrizo Plain by 20 to 40 percent and much of this reduction appears to have occurred in the northern portion of the plain. Current and historical aerial photographs of the Carrizo Plain north of the CPNM reveal evidence of extensive cultivation, which was ground verified by H. T. Harvey & Associates biologists. The extensive cultivation spanned the valley floor, with few exceptions, and extended into surrounding areas with slopes exceeding 10 percent.

Giant kangaroo rats have occupied northern portions of the Carrizo Plain in the past (Williams 1992) and currently occupy portions of the central Carrizo Plain well north of the widespread populations that now occur throughout the southern portion of the plain. In the past this species appears to have occupied portions of the northern Carrizo Plain and whether their apparent current absence from these areas is an artifact of sampling, or is in fact the result of climate or incompatible land use is undetermined. It is however evident that land use and habitat changes resulting from changing land use may have created a significant barrier limiting expansion of extant populations in the southern portion of the plain into the northern regions.

Large areas of the valley to the west and east of Soda Lake Road, and north and south of SR 58 are currently, or were recently, tilled for dry-land agriculture. In addition, on the 18,400-acre California Valley Subdivision that was subdivided during the late 1960s, developers installed roads and sold all of the 2.5-acre parcels, but little development of the parcels followed. Most of these parcels are now owned by absentee owners, and most of the vegetation is dominated by dense scrub habitat or tall introduced grasses generally unsuitable for giant kangaroo rats. Only remnant populations of giant kangaroo rats persist within the California Valley Subdivision, primarily along the dry east side of the valley and along the graded roads where grasses still dominate apparently as a result of disturbance associated with ongoing road maintenance.

A lack of connectivity between the large populations in the southern portion of the Carrizo Plain and the northern portions of the plain may also have been a factor in the continued exclusion of giant kangaroo rats from previously occupied habitats north of State Route 58. For example, portions of the CVSR Project action area were farmed as recently as the early 1990's. Aerial imagery from 1994 reveals that the central area of the Solar Generation Facility site was recently tilled, and there appear to be few giant kangaroo rat precincts present. Dr. David Germano, who visited the site in August 2009, also concluded that the site had been farmed and then subsequently re-colonized by giant kangaroo rats in recent years, based on the lack of mounded soils around the existing precincts. It appears that even with the proximity of the CVSR Project action area to extant giant kangaroo rat populations on the California Valley Subdivision it took more than a decade for giant kangaroo rats to recolonize the site.
The history and pattern of land use on the CVSR Project action area likely reflects the history and pattern of land use on the large privately held parcels in the northern portion of the valley. The longtime owner of much of the CVSR Project action area also owns thousands of acres of land in the northern portion of the valley that are currently farmed or have been farmed in the recent past. It also appears likely that, following cessation of ground disturbance associated with

agricultural operations, the CVSR Project site was re-colonized by giant kangaroo rats emigrating from residual populations of giant kangaroo rats on the California Valley Subdivision or large populations on the CPNM along patches and corridors of suitable habitat through the subdivision that provided a connection between extant populations and the CVSR Project action area.

Suitable habitat in the northern portion of the valley, where giant kangaroo rats may have been extirpated, lacks connectivity and is isolated from populations in the southern region by incompatible land use and unsuitable habitat. Along the western edge of the valley (west of Soda Lake Road), there is some potential for connectivity between populations on the CPNM and areas to the north, although there is a far higher density of houses in this area than in other areas of the valley and habitat suitability may be limited by human activities (e.g., use of biocides and traps around houses, predation by domestic pets, and removal of livestock).

Alternatively, along the eastern edge of the valley extending north from the CPNM, there are relatively few houses in the California Valley Subdivision and most of the habitat north of the subdivision consists of annual grasslands grazed by cattle. This corridor of habitat suitable for giant kangaroo rats, however, is constrained by the steep slopes of the Temblor Mountains and land that is currently or was recently farmed.

The center of the valley extending from the CPNM to near State Route 58 in the vicinity of Soda Creek is also likely a significant barrier to connectivity because it is considerably lower in elevation than the edges of the valley and throughout much of this area there is evidence that the ground is periodically saturated, at least during the winter months. Soils are heavy and cracked when dry, vegetation is much denser than in the surrounding uplands, and there is ample evidence of vernal pools. Although giant kangaroo rats could potentially disperse through this area during dry times of the year, they would not be expected to persist through winter as their burrows would likely be flooded. This low center of the valley immediately north of the CPNM may function as a population sink if giant kangaroo rats occupy these lowlands during dry months.

In summary, the current distribution of giant kangaroo rats in the Carrizo Plain is concentrated towards the southern end, with most of the population occurring on the CPNM and other BLM lands, and on the privately held lands proposed for conservation. Relatively small populations extend north along the eastern side of the valley but connectivity to the northwestern portion of the valley appears to be limited by topography, habitat, and incompatible land use. This lack of habitat connectivity appears to have prevented or limited re-colonization of suitable habitat in the north end of the valley. Finally, giant kangaroo rats apparently have been extirpated from large areas in the northern portion of the valley, yet there is a substantial amount of habitat and significant potential for restoring giant kangaroo rat populations to formerly farmed areas.

Reconnaissance level surveys for giant kangaroo rat were conducted on potential off-site conservation lands. Approximately 3,280 acres of occupied potential conservation habitat has been identified north of the CPNM. Over 2,000 acres of additional habitat capable of being restored or enhanced has also been identified north of the CPNM in the vicinity of the CVSR Project action area. Lastly, over 2,600 acres of suitable, but currently unoccupied giant kangaroo

rat habitat has been identified as potential conservation lands that may contribute to the recovery of the species by maintaining the lands in a state compatible with re-colonization.

South of the California Valley Subdivision, over 1,900 acres of occupied habitat contiguous with the CPNM have been identified as potential conservation lands. An additional 425 acres of occupied habitat have been identified within the Lokern area for potential conservation. Few large parcels of private land occupied by giant kangaroo rats exist within the valley floor in the Lokern area, increasing the conservation value of such lands.

Protocol surveys for giant kangaroo rats were not conducted for the PG&E Reconductoring component of the Proposed Action. Several records exist for giant kangaroo rat within 10 miles of the PG&E Reconductoring action area (CNDDB 2010). Many of the proposed tension/pull sites, landing zones, and areas for crossing guards between Tower 073 and Tower 138 are located within suitable habitat. Potential giant kangaroo burrows were observed in the Lokern Preserve between Tower 128 and Tower 130 during a habitat assessment in February and March 2010 (ICF International 2010).

Threats to the giant kangaroo rat in the Proposed Action area include conversion of native habitats to farmland; solar energy facilities; the use of rodenticides; and fragmentation of habitat from oil and gas development, roads, transmission lines, and other linear facilities.

The Carrizo Plain population of the giant kangaroo rat is 1 of 3 core populations. This population is relatively healthy and shows seasonal and cyclic fluctuations typical of a rodent species. Overall the habitat occupied by and potentially suitable for the giant kangaroo rat that will be impacted within the action area by the Proposed Action is small relative to the species distribution within the Carrizo Plain.

Tipton Kangaroo Rat

The Tipton kangaroo rat is not known to occur on the CVSR component of the Proposed Action. Surveys for Tipton kangaroo rats were not conducted for the CVSR proposed off-site conservation lands, however, those lands have potential Tipton kangaroo rat habitat, and conservation of these lands for giant kangaroo rat and San Joaquin kit fox may also benefit the species as they will be managed to encourage their use. Protocol surveys for Tipton kangaroo rats were not conducted for the PG&E Reconductoring component of the Proposed Action. However, four Tipton kangaroo rat occurrences are within 10 miles of the PG&E Reconductoring action area (CNDDB 2010). One record is located approximately 0.70 mile south of Tower 139. The proposed tension/pull sites between Tower 138 and Tower 139 and the road crossing at Tower 162 are located within suitable habitat for Tipton kangaroo rats.

Threats to the Tipton kangaroo rat are similar to kit fox and giant kangaroo rat and includes conversion of native habitats to farmland, use of rodenticides, and habitat fragmentation from oil and gas development, construction of roads, highways, transmission lines, and other linear facilities. Because of the small, isolated nature of many remaining populations of Tipton kangaroo rats, their lack of genetic diversity, and low powers of dispersal, the Tipton kangaroo rats is especially vulnerable to local extirpation from random environmental events such as flooding or unpredictable land use changes.

The Tipton kangaroo rats and their habitat that occur within the action area and will be affected by the Proposed Action are a very small portion of the overall species population.

Blunt-nosed leopard lizard

The blunt-nosed leopard lizard is not known to occur on the CVSR component of the Proposed Action. Surveys for blunt-nosed leopard lizard were not conducted for the CVSR proposed off-site conservation lands, however, those lands within the south Carrizo Plain have potential blunt-nosed leopard lizard habitat, and conservation of these land for giant kangaroo rat and San Joaquin kit fox could also benefit the species as they will be managed to encourage their use. For the PG&E Reconductoring component of the Proposed Action, protocol surveys for blunt-nosed leopard lizards were not conducted. However, blunt-nosed leopard lizards were observed in the Lokern Preserve between Tower 109 and Tower 143 (ICF International 2010). Several records for blunt-nosed leopard lizards occur within 10 miles of the PG&E Reconductoring action area (CNDDB 2010). Many of the proposed tension/pull sites, landing zones, and areas for crossing guards between Tower 090 and Tower 138 are located within suitable habitat for blunt-nosed leopard lizards, thus the blunt-nosed leopard lizard is expected and assumed to be present within the reconductoring section of the project.

Threats to blunt-nosed leopard lizard include conversion of native habitat to agricultural uses, the use of rodenticides which affect rodent populations that provide burrows for their shelter, disking for weed control, oil and gas development, and degradation of habitat from invasive nonnative vegetation.

The individuals and the habitat that will be affected in the action area are a very small part of the overall population of blunt-nosed leopard lizard.

California Tiger Salamander

The California tiger salamander is not known to occur on the CVSR portion of the Proposed Action. On March 31 and April 28, 2011 a pond approximately 0.75 miles north of the Twisselman Aggregate Mine was surveyed for California tiger salamander. Brine shrimp (*Artemia* sp.) and several species of aquatic insects were observed in this pond, but no evidence of amphibian breeding was detected, and the pond seemed an inhospitable environment for amphibians. During the March 31 and April 28 surveys, the salinity of the pond was determined to be 14.2 percent and 16.9 percent, respectively. A dead Sierran treefrog (*Pseudacris sierra*) was observed in the water during the March 31 survey, and one dead western toad (*Anaxyrus boreas*) was observed in the water during the April 28 survey, each apparently killed by desiccation or poisoning. In contrast, salinity levels measured during the same surveys were ≤

0.2 percent at two ponds 20 miles north of the action area in which California tiger salamanders had been previously documented in the California Natural Diversity Data Base. (Norman R. Sisk, pers. comm. 2011).

The closest CNDDB record for the species occurs 19 miles northwest of the PG&E Reconductoring and the extent of the species range is 15 miles to the northwest of the reconductoring. There are no records south of the Proposed Action, except for the population in Santa Barbara County, which is geographically isolated from those populations in the Central Coast Range and Central Valley.

In March 2010, during reconnaissance surveys within the PG&E Reconductoring portion of the action area, ICF wildlife biologist Will Kohn observed a pond near Tower 072 and conducted an initial habitat assessment of the pond at that time. The CNDDB and California Wildlife Habitat Relationships (CWHR) range map for California tiger salamander were reviewed to determine the species' range in relation to the pond and project work areas. Given that the closest CNDDB record occurs 19 miles northwest of the project area and that the extent of the species' range is 15 miles to the northwest of the project work areas, Mr. Kohn determined that California tiger salamander would not occur within the project area (ICF International 2011).

On January 25, 2011, CDFG biologist David Hacker requested that larval surveys be conducted within the pond that occurs near the work areas at Tower 071 and Tower 073. The first survey was conducted on April 1, 2011, and possible salamander eggs and an embryo were observed. Photographs of the embryo were taken and sent to two species experts. Both experts were of the opinion that the embryo photographed is that of a California tiger salamander. No California tiger salamander larvae were observed during a second survey conducted on April 22, 2011. However, based on the identification by the species experts, the presence of California tiger salamander is assumed (ICF International 2011). Suitable habitat for the California tiger salamander only occurs within the PG&E Reconductoring portion of the Proposed Action.

In total, there are 11 ponds within 1.24-miles of the PG&E Reconductoring. Four ponds occur within 1.24 miles of the work areas at Tower 071 and 073, including one pond which occurs at approximately 1,600 feet elevation. Three ponds are within 1.24 miles of Landing Zone 048. These ponds are above 3,500 feet in elevation and the upland habitat is California juniper woodland. Three ponds are within 1.24 miles of Tension Pull Site 065. These ponds are above 3,000 feet in elevation and upland habitat is oak woodland and California juniper woodland. One pond is located 0.35 mile from Tension Pull Site 090. Upland habitat near this pond and at Tension Pull Site 090 is grassland/saltbush scrub. As these ponds were not sampled, it is possible that the ponds could support California tiger salamander (ICF International 2011).

Threats to California tiger salamander within the vicinity of the Proposed Action include conversion of native habitat to agricultural sues, the use of rodenticides which affect rodent populations that provide burrows for salamander shelter, disking for weed control, and degradation of habitat from invasive nonnative vegetation. Further, the use of pesticides in mosquito abatement may reduce the availability of prey. Automobiles and off-road vehicles kill a significant number of migrating California tiger salamanders. The introduced barred salamander (*Ambystoma tigrinum mavortium*) may out-compete the California tiger salamanders, or interbreed with them to create hybrids that may be less adapted to the California climate or are not reproductively viable past the first or second generations. Finally, non-native fish and bullfrogs prey on adult or larval salamanders.

A typical salamander breeding population in a pond can drop to less than 20 breeding adults and/or recruiting juveniles in some years, making such populations prone to extinction. California tiger salamander therefore require large contiguous areas of vernal pool complexes or other complexes containing multiple breeding ponds to ensure re-colonization of individual ponds.

As California tiger salamander have not previously been detected in the vicinity of the Proposed Action, the potential detection at the pond near the work areas at Tower 071 and 073 would be a range extension for the species. The closest recorded detection of the species is approximately 19 miles to the northwest of the Proposed Action, thus, this population of California tiger salamander would be isolated from other populations, therefore making the population prone to extinction. It is not unusual to detect a species outside of the listed range as additional information is gathered from surveys. The importance of this range extension is unknown at this time.

Kern Mallow

Kern mallow is known to occur in saltbush scrub habitat within the PG&E Reconductoring action area. Kern mallow was detected in and around Tower 109 and between Tower 127 and Tower 128 (ICF International 2010). Some of these locations were previously known; however, the surveys in 2010 and 2011 (Brandon Liddell, pers. comm. 2011) reported increased densities at some locations compared with previous reports, as well as additional locations, including at Road Crossing 113, not previously known.

The potential off-site conservation land within Lokern was not surveyed for Kern mallow; however, the detection of Kern mallow in and around Tower 109 is approximately 1.25 miles to the east of the parcel. Therefore, the potential exists for Kern mallow to occur on this potential conservation land.

Habitat loss and degradation is the major reason for decline in Kern Mallow. Petroleum production and off-road vehicle use are two major causes of habitat loss and degradation and increased production could pose a threat to the portion of the metapopulation that remains by further fragmenting and isolating localized colonies.

Vernal Pool Fairy Shrimp and Longhorn Fairy Shrimp Critical Habitat

Critical Habitat for the longhorn fairy shrimp and vernal pool fairy shrimp was designated August 6, 2003 and revised on August 11, 2005 in the Federal Register. The 9,601-acre Critical Habitat Unit 3 for longhorn fairy shrimp is the same (overlaps) as Critical Habitat Unit 30 for vernal pool fairy shrimp. These Units partially extend into the southwestern part of the Solar Generation Facility on the CVSR (796 acres (8.3 percent) of these Units) and span west of the CVSR to partially encompass two properties proposed for off-site conservation lands; both of which support the longhorn fairy shrimp and one supports the vernal pool fairy shrimp (Kelly Hardwicke, pers. comm. 2011).

Of the 13,557 acres of Critical Habitat designated for longhorn fairy shrimp range wide, approximately 796 acres (5.9 percent) lies within the CVSR boundaries. Of the 597,821 acres designated Critical Habitat for vernal pool fairy shrimp, approximately 0.1 percent, lies within the boundaries of the CVSR Project. Of those 796 acres of Critical Habitat, approximately 271.1 acres on the CVSR and 347 acres of Critical Habitat off-site will be protected and managed in perpetuity. An additional 122 acres of suitable and occupied vernal pool complexes contiguous with designated Critical Habitat would be permanently protected and managed for these species.

The Proposed Action affects only the upland elements of critical habitat. The habitat is in moderate to high quality condition based on limited past activities which includes grazing and

dry-land farming. Currently, livestock grazing is the primary land use on critical habitat on the CVSR and on both of the proposed off-site properties located within critical habitat.

Effects of the Proposed Action

Based on all available information, the federally-listed species and designated critical habitat discussed in this biological opinion (San Joaquin kit fox, giant kangaroo rat, Tipton kangaroo rat, blunt-nosed leopard lizard, vernal pool fairy shrimp and longhorn fairy shrimp Critical Habitat, Kern mallow, and California tiger salamander) are reasonably certain to occur in the action area. The Service determines that each of the species discussed will be adversely affected from various components of the Proposed Action and from both direct and indirect effects of the action. Critical habitat for the vernal pool fairy shrimp and the longhorn fairy shrimp occurs with the action area and we have determined the Proposed Action will adversely affect these species' critical habitat.

General Discussion on Effects

The effects analysis for the proposed construction of the solar arrays, reconductoring and associated infrastructure is unique in that grassland habitat potentially suitable for the species will still be present around and under the solar arrays and most areas of the transmission lines post-construction. Since no rigorous scientific studies have been completed on the effects to breeding, feeding, and sheltering, especially of the kit fox and giant kangaroo rat from construction of this type of facility, and based on information included in the biological assessment, we use the precautionary principle and postulate these "unnatural" structures will alter the habitat in such a way that the species may not use the habitat in the same way, or at all, as prior to the project. Although, for the purposes of our analysis, we are assuming that the habitat beneath the solar arrays will not be used by San Joaquin kit fox or giant kangaroo rat after construction, the question remains as to whether the solar arrays will result in a shading and temperature change that will negatively affect the habitat in such a way, that the species will alter their behavior and/or use of the area. A thorough discussion of the potential effects of shading and microclimate change is presented in the biological assessment and we summarize here.

Shading: The array tracker rows are laid out north-south and parallel to one another to create an array, with space in-between each row to avoid one row shading the next. Their single-axis allows them to tilt ± 45 degrees and track the sun as it arcs east to west across the sky (SunPower 2010a). In the morning and evening hours when the sun is low, the panels rotate to a horizontal position in order to avoid the eastern or western-most panels casting shadows across the array.

Then as the sun rises above the array's plane, the panels tilt and track the sun until sunset. This process, known as "backtracking," allows the panels to change direction to avoid shading other panels and maximizes solar input (Chris Baker, pers. comm. 2010).

Preliminary calculations suggest that approximately 60-80 percent of the array footprint will be shaded, but all areas will receive some sun during parts of the day. The solar panels, facing upward at noon, will shade approximately 40 percent of the array area with maximum shading occurring in the early morning and late evening hours (Chris Baker, pers. comm. 2010).

Concerns have been raised regarding potential impacts that the shading could have on the composition and structure of the annual grassland and how these impacts may affect wildlife. Studies have shown that shading can enhance the production of herbaceous vegetation (Frost and McDougald 1989), cause a shift from small to large seeded grasses and legume species (Amatangelo et al. 2008), and suppress native perennial grasses (Dyer and Rice 1999). Other research indicates that light availability is not as important in structuring grassland communities as other factors such as litter input (Lamb 2008) and precipitation (St. Clair et al. 2009). Several factors influence plant community composition including climate, biotic interactions (e.g., competition, herbivory), resource availability (e.g., light, nutrients), and disturbance. One or more of these factors may have a greater influence on community composition and structure than others. By understanding current site conditions, we can predict which factors are most important in determining the composition of the annual grasslands at the proposed site and thus, how the community might be altered if one or more of these conditions change.

Many abiotic factors have a significant influence on the existing grassland's composition and structure. The project site receives limited precipitation with 8 to 10 inches of annual rainfall on average (Natural Resource Conservation Service [NRCS] 2003) and extreme year-to-year variability. In addition, the soils at the site are low in nutrients, have very low water holding capacity, are compacted from livestock grazing and agricultural practices, and in many places, saline. The potential evaporation rate of the grassland is likely very high, in excess of 100 inches per year; the soil reflectance value is high, and the wind is almost constant. The annual grassland even in the deepest drainages with relatively shaded north-facing slopes are dominated by annual grassland species such as ripgut grass, yellow star thistle, and fescue just as they are in areas of full sun. Thus, observations suggest that the Solar Generation Facility site experiences a wide range of environmental conditions and significant abiotic stressors that are likely the predominant factors that influence the grassland species composition and structure with light/shade only being a single factor.

Germination of plant species is driven more by changes in light quality (i.e., ratio of red to infrared) than it is by quantity, and we do not anticipate changes in light quality. Light scatter is relatively high at the site due to its high soil reflectance and abundance of suspended particulates in the air. Even if a plant is situated beneath a panel, solar input should be sufficient to drive photosynthesis. The minor drop in soil surface temperatures during the winter and spring months will likely have minimal impacts since the majority of the plant species only grow for a few months, germinating with the first rains and then completing their life cycle by late April. The density of non-native weeds may increase slightly; however, the shading will probably cause a shift in plant stature, chlorophyll concentration, leaf size and etiolation. Reduced evapotranspiration and water stress from partial shading and water input from panel washing (one gallon per panel per year) would likely result in increased dominance (taller and denser stands) of non-native grasses. It is reasonable to assume, however, that the species composition will shift slightly to a larger percentage of shade-tolerant species. As a result, we would expect an increase in the abundance of wild oats, ripgut grass and clovers and less mustard, bindweed, and soft brome in response to increased shade, but the overall composition and structure would be slightly changed to that of existing conditions.

Thus, a modest shift in composition to a greater percentage of shade-tolerant plants is expected, even though the numerous abiotic factors present have a greater influence on species

composition within the grasslands on-site than light. From solely a vegetation perspective, the grassland community on the Solar Generation Facility site should remain suitable for the wildlife species of concern, such as San Joaquin kit fox and giant kangaroo rat, especially with a focused grazing management regime to maintain a suitable vegetative structure; however use by these species may not occur.

The area of the project site that will be disturbed by construction will be revegetated and will take into account the post-construction site conditions (i.e., shadier). The species mix will be composed of native species that occur in the vicinity of the project site and will also be compatible with the special-status wildlife species of concern. The precise species mix would be developed based upon a more in-depth analysis of the revegetation approach and adaptively managed over the life of the project to maintain the best composition of vegetation for listed species.

In summary, the increased ground shading caused by the installed solar panels may change the species composition and structure of the annual grassland vegetation at the Solar Generation Facility site. The composition will shift slightly towards the more shade-tolerant species that are already present in the annual grasslands.

Microclimate: SunPower (2010b) evaluated the potential effects of the solar arrays on vegetation and wildlife resulting from microclimatic changes within the arrays. The amount of energy reflected from an area is dependent on the solar energy impacting that area and the property of the material or surface receiving that incoming energy. Very dark materials like coal will reflect less energy than very bright surfaces such as snow. The solar energy that is not reflected is absorbed and stored as heat, and then dissipated within a day. Within the grasslands of the Proposed Action site, the typical amount of solar energy impacting the ground is 21.0 MWh/acre/day (SunPower 2010b). Twenty nine percent of that energy is typically reflected resulting in 14.9 MWh/acre/day converted to heat and dissipated.

Within the solar arrays of the Proposed Action, up to 40 percent of the total solar energy will impact the ground, with the remainder impacting the panels. For a SunPower 305W panel, approximately 74 percent of solar energy impacting the panel is converted to heat, while the remainder is either reflected or converted to electrical energy. The absorptive nature of the panels combined with the energy impacting the area between the panels will have a net effect of reducing the energy reflected by 2 percent, a decrease from 29 percent to 27 percent. This increases the amount of solar energy absorbed as heat from 14.9 MWh/acre/day to 15.3 MWh/acre/day.

While the change in reflectance and absorption is minor it is important to consider if phenomenon of a heat island might occur, as described by Bornstein (1968) for urban areas. The Urban Heat Island is a phenomenon whereby a developed area is significantly warmer than the surrounding rural area. Bornstein showed that the Urban Heat Island is caused by three factors: (1) waste heat from energy usage, such as engines that run on electricity, natural gas, and oil, (2) use of massive materials which store more heat and dissipate heat slowly, and (3) use of materials which absorb more solar radiation. Waste heat emitted by the inverters and other equipment (tracker motors, for example) is equivalent to less than 0.21 MWh/acre/day, about 1

percent of total solar energy impacting the Project site. Waste heat from energy loads, therefore, is not a significant source of heating in a photovoltaic array.

With regard to the absorption of solar radiation, as described above, the arrays will absorb slightly more (0.4 MWh/acre/day) solar radiation than a grassland with no panels. To evaluate the magnitude of this effect, the rate at which that heat is dissipated must be considered. Because the amount of heat retained by a material is related to the mass of the material and solar panels are thin and lightweight, photovoltaic panels dissipate heat quicker than the ground. While photovoltaic panels can reach operating temperatures of 120°F, panels are able to cool to air temperature shortly after the sun sets. Therefore, the minor increase in absorption combined with an increased rate of dissipation will produce no net gain in heat.

Considering these factors, we anticipate the area under, above, and around the solar field may experience subtle heating and cooling changes, but are not expected to be substantially different from current conditions. However, for the purposes of our analysis we are assuming the species will not use these areas for most of their needs.

San Joaquin kit fox

Virtually the entire Proposed Action area contains suitable habitat for the San Joaquin kit fox. Surveys were conducted and the results are discussed in the biological assessment. Individual kit foxes occur on the project site and are breeding, feeding, and sheltering on the project site.

Direct Effects

Direct effects on the San Joaquin kit fox from the Proposed Action are as follows:

- Construction of the Proposed Action would result in the direct loss and/or permanent modification of 1,707 acres of suitable San Joaquin kit fox habitat. This includes approximately 1,685 acres within the Solar Generation Facility (of which 1,657 acres is within the solar arrays plus a 100-foot-buffer around the solar arrays) and Generation Tie-Line, approximately 7-8 acres within the Twisselman Aggregate Mine, approximately 6.8 acres within the PG&E Caliente Switching Station, and 8.58 acres as part of the reconductoring.

- An additional 97 acres of suitable San Joaquin kit fox habitat on the Proposed Action area will be temporarily impacted by construction, grading, staging areas, temporary access roads along tracker rows, trenching, and reconductoring. These areas will be stabilized and re-vegetated following grading.

- Mortality, injury, and harassment of San Joaquin kit foxes by vehicles, heavy equipment, excavation, and grading could occur during construction activities. Construction traffic will last for a period of up to three years.

- Direct destruction of a den or disturbance of a den in or near construction areas could result in the loss or abandonment of active San Joaquin kit fox dens. None of the five natal dens observed in the Proposed Action area are located within the proposed solar arrays, but the array footprint does include other types of den sites (e.g., shelter dens). Active natal or shelter dens may also be abandoned if covered by solar arrays.

- Mortality or injury of kit foxes could occur due to vehicle strikes from traffic in the action area during O&M activities. The potential for vehicle strikes will be greatest during nighttime activities such as security patrols.

- Crews washing the solar panels will likely encounter and could disturb San Joaquin kit fox dens or pups. Each panel will be washed approximately two times per year during daytime hours.

- Injury or mortality of individual San Joaquin kit foxes could occur as a result of predation by or competition with species such as the red fox, coyote, or domestic dogs that might be attracted to the Proposed Action area by trash discarded by personnel during construction, and O&M activities, or if Proposed Action activities cause an increase in prey availability for these species.

- Injury or mortality of individual San Joaquin kit foxes could occur as a result of predation or harassment by domestic pets associated with the temporary construction trailer park residents.

- Injury, mortality, or harassment of individual San Joaquin kit foxes could occur as a result of recreational use of the Proposed Action area by CVSR personnel, particularly residents of the temporary construction trailer park.

- Accidental spillage or leakage of industrial chemicals, fuels, and lubricants could result in poisoning of San Joaquin kit foxes and contamination of their habitat. Rodent species poisoned by industrial chemicals and ingested by kit foxes may result in secondary poisoning.

Indirect Effects

The indirect effects of construction of the solar generation facility and associated infrastructure includes:

- The solar arrays could alter San Joaquin kit fox habitat to the extent that it may exclude or reduce the species' use of the 1,657-acre area, which includes the solar array plus an area around the arrays footprint, due to changes from an open grassland habitat to one with more shading and less long range visibility. Kit foxes are known to frequent areas with existing structures, such as orchards, active oil field operations, and the fringes of urban development. Based on the amount of light that will still penetrate below the solar arrays, the ground is expected to continue to be vegetated, and small mammal prey may remain within the solar arrays.

- Changing the grazing regime could affect the abundance of San Joaquin kit fox. Under the current land use in the Proposed Action area, intensive livestock (cattle) grazing constrains vegetation height, density, and composition. The on-site conservation areas will continue to be grazed by cattle and will be managed specifically for species such as giant kangaroo rats and San Joaquin kit fox; however, the area within the array footprints will be grazed by sheep or goats. Vegetation changes resulting from this change in grazing could be either beneficial or detrimental to kit fox prey, and fluctuations in prey

populations have been shown to affect kit fox densities (White and Ralls 1993, White et al. 1996).

- Noise and ground vibrations from the use of heavy equipment during Proposed Action construction could result in temporary threshold shifts in hearing sensitivity (reduction in hearing ability), which could negatively affect foraging success as this nocturnal species relies primarily on hearing to detect predators and other threats. Noise generated by the rotary drill and other heavy equipment is expected to reach 90 dB at 10 feet and is loud enough to cause temporary threshold shifts that could last for an extended period of time. Noise and ground vibrations from the use of heavy equipment during construction or O&M activities could cause kit foxes to temporarily or permanently leave impact areas, and kit fox could move to areas where they are more susceptible to injury or mortality from predation, vehicular traffic, or other activities. San Joaquin kit foxes displaced from impact areas due to disturbance-related to construction or O&M activities may increase competition for food and habitat with kit foxes in other areas.

- Placement of solar arrays could influence the scent-marking behavior and disrupt territorial boundaries of San Joaquin kit foxes in the Proposed Action area. As territories shift interspecific competition and behavior changes could occur.

- The Proposed Action could also affect movement and dispersal of San Joaquin kit foxes. San Joaquin kit foxes could avoid, to some extent, the areas under and around the arrays (B. Cypher, pers. com. 2010). The 10 arrays are not contiguous and there will be no "impermeable" barriers to kit foxes within the project site. Therefore, kit foxes could and may move throughout the site during daily movement activities or during dispersal. Adults and juveniles are known to move through partially disturbed habitats such as farm lands, oil fields, and areas with low density roads and highways (Haight et al. 2002). Escape dens along the margins of the arrays will provide cover and reduce predation risk for kit foxes, which could facilitate increasing their movement through the Proposed Action area.

- There is a permeable habitat corridor extending from the Carrizo Plain northward that provides connectivity with the Antelope Plain on the eastern edge of the San Joaquin Valley and the Salinas Valley (Penrod et al. 2010, ESRP unpublished data). There is also a habitat corridor between the southern end of the Carrizo Plain and western Kern County through low-elevation passes and dry washes approximately 35 miles south of the Proposed Action area. The western and eastern edges of the Carrizo Plain are bordered by steep mountain ranges that present topographic barriers for kit fox. The Proposed Action area is located at the northeast edge of a 7-miles wide permeable corridor for kit fox movement and dispersal, (Penrod et al. 2010, ESRP unpublished data). Most of the Generation Tie-Line, substation, PG&E Caliente Switching Station and Twisselman Aggregate Mine are outside of the most suitable San Joaquin kit fox corridors (Penrod et al. 2010, ESRP unpublished data); the Generation Tie-Line, would not impede kit fox movement.

Overall, there will be a loss of some habitat used for breeding, feeding and sheltering of the San Joaquin kit fox in the action area as a result of the Proposed Action. In addition, there will be a

reduction of habitat within the north/south corridor and some reduction of movement possibilities for the San Joaquin kit fox. As a compensatory measure there will be land acquisition and protections for managed and restored habitat adjacent to and around the project site that will provide additional (due to restoration) opportunities for breeding, feeding, sheltering, and dispersal of San Joaquin kit fox. Currently there is estimated to be approximately 3.4 million acres of high and moderate quality habitat remaining for the San Joaquin kit fox. The impacts to remaining suitable habitat from the project represent 0.05 percent of the total remaining range. Conversion of cropland to permanently protected grasslands as a result of the conservation measures represents approximately 0.08 percent of its total remaining range. The impacts to existing suitable San Joaquin kit fox habitat, combined with the conservation restoration measures of the Proposed Action will result in an overall net increase of suitable habitat available to the kit fox in the Carrizo Plain. Therefore, the overall impacts compared to the acreage to be restored and protected offsite is expected to be minimal, and opportunities for dispersal to the north will still be available.

Giant Kangaroo Rat

Approximately 4,248 acres of the Proposed Action area contains suitable habitat for the giant kangaroo rat and occurs primarily on the solar generation facility site. Based on surveys conducted by the project proponent in 2009 and 2010, giant kangaroo rats currently occur on a portion of the solar generation project site.

Direct Effects

Direct effects on the giant kangaroo rat resulting from the Proposed Action are as follows:

- Construction of the Solar Generation Facility (including access roads, structures, parking areas, tracker foundations, equipment pads, substation, water supply facilities, and a 100-foot wide buffer around or along these features) the PG&E Caliente Switching Station and reconductoring the existing transmission line, and the expansion of the Twisselman Aggregate Mine would result in the direct loss and/or permanent modification of approximately 1,631 acres of suitable giant kangaroo rat habitat. This includes approximately 1,623 acres of suitable habitat within the Solar Generation Facility, approximately 4.8 acres within the Twisselman Aggregate Mine and approximately 3.4 acres within the PG&E Caliente Switching Station. An additional 83 acres of habitat will be temporarily impacted by construction, grading, staging areas, temporary access roads along tracker rows, trenching, and reconductoring, but will be stabilized and re-vegetated following construction. Some of the habitat on the site was occupied in 2009 and 2010, however, most was not. In 2009, evidence of giant kangaroo rat occupation was found within approximately 665 acres of the site, of which 538 acres was currently occupied and 127 acres contained inactive burrow precincts. In 2009 the giant kangaroo rat population was estimated to be between 1,124 and 1,246. In 2010, 467 acres of the project site were found to be occupied and based on a census count of active precincts the giant kangaroo rat population on the project site had increased to 1,876. Collectively, permanent and temporary impact areas include approximately 65.2 acres supporting 360 occupied giant kangaroo rat precincts (or 17 percent of the occupied precincts detected on the site in 2010). Impacts would also affect an additional 108.9 acres that contained 211 burrows that were occupied in 2009 but not in 2010.

- Giant kangaroo rats could be killed or injured by being hit or run over by nighttime security patrols during project construction and operation. All nighttime security patrols will be required to maintain posted speed limits (15 mph) on the project site, and will be required to remain on the existing roads except when emergency response requires vehicle access to off-road areas. Security personnel will be trained to identify giant kangaroo rats and their burrow systems and will be trained to avoid driving through the area of cropped vegetation over the burrow main chamber.

- Vehicles and construction equipment could destroy or damage giant kangaroo rat habitat. Vehicles driven through burrow precincts will crush burrows and pit-caches or haystacks (above ground seed storage), disrupt paths, and vehicles will compact loose soils used by giant kangaroo rats for sand bathing. Vehicular traffic would also damage vegetation and degrade food resources.

- Ground disturbance resulting from construction would affect currently occupied giant kangaroo rat habitat. Solar panels will be mounted on metal frames anchored with a low-impact penetrating foundation. Foundational piles or ground screws driven into the ground to anchor the solar arrays will disrupt burrows if placed within precincts and may result in mortality or injury through direct contact or as a result of burrows crushed by vehicles or equipment.

- Trenching required for burial of power and communications cables will directly affect giant kangaroo rats where trenches are excavated through precincts. Open trenches would create impassable barriers that could disrupt movement between burrows and foraging areas. Giant kangaroo rats could fall into the trenches and be vulnerable to predation, starvation, and entombment.

- Construction equipment could crush individual kangaroo rats or entomb individuals in burrows as a result of soil compaction.

- Giant kangaroo rats using precincts that will be permanently lost, graded, or otherwise impacted will be trapped and translocated by a Service approved biologist holding a valid Act section 10(a)(1)(A) permit, if it is determined that the activity could cause direct mortality of individuals. Up to 304 giant kangaroo rats may need to be relocated. This number is based on the number of precincts that are within 100 feet of the arrays, plus all precincts within the remaining temporary and permanent impact areas (e.g., substation, Operation and Maintenance facility, temporary working housing area). This number also assumes 50 percent population growth in areas not cleared in 2011, and limited recolonization of previously cleared arrays. There is some potential for injury or mortality of individuals during this translocation process. The risks and measures to minimize and avoid these risks are fully described in the biological assessment and in the document, *California Valley Solar Ranch: Plan for Relocation of Giant Kangaroo Rats* (H. T. Harvey & Associates 2010). Individuals will be released into adjacent areas providing suitable refugia, including inactive precincts and/or artificial burrows. Giant kangaroo rats could attempt to disperse from the relocation area or be reluctant to use new burrows; these individuals could be subject to increased predation, or could disperse

into unsuitable habitat where their survival or reproduction would be reduced. Also, some individuals may suffer mortality in traps or during handling.

- Spillage or leakage of industrial chemicals, fuels, and lubricants could result in fouling or poisoning of giant kangaroo rats and contamination of their habitat.

- Giant kangaroo rats could be killed or injured due to predation by species such as red fox, coyote, or domestic dogs that are attracted to the area by trash discarded by CVSR personnel during construction, and O&M activities.

Potential indirect effects on the giant kangaroo rat resulting from the Proposed Action are as follows:

- The solar arrays would be installed in areas of the Solar Generation Facility site that are characteristic giant kangaroo rat habitat; open, low relief, with a slope of <11 percent. Within proposed array areas, only 63 acres of Array 11 (which would be constructed in an area currently occupied by a gypsum mine) are considered unsuitable for this species. The area underneath and within 100 feet of the array structures may be altered due to changes in vegetation structure and environmental conditions to such an extent that giant kangaroo rat abundance or use is reduced. This would constitute a loss of suitable habitat. Based on the acreage of the array footprints plus a 100-foot-buffer around the arrays, up to 1,595 acres of giant kangaroo rat habitat could be lost from array construction. However, based on the amount of light that will still penetrate the solar arrays, the ground is expected to continue to be vegetated, and there is at least some potential that this species will persist in the areas in and around the solar arrays after the arrays are installed. For the area of the Twisselman mine expansion, 4.8 acres is suitable for the giant kangaroo rat.

- Noise and ground vibrations from the use of heavy equipment during Proposed Action construction could result in temporary threshold shifts in hearing sensitivity for giant kangaroo rats (reduction in hearing ability), which could negatively affect foraging success as this nocturnal species relies primarily on hearing to detect predators and other threats. Noise generated by the rotary drill and other heavy equipment is expected to reach 90 dBA at 10 feet and is loud enough to cause temporary threshold shifts that could last for an extended period of time (i.e., up to 30 days).

- Changing the grazing regime could affect the abundance of giant kangaroo rats. Under the current land use in the Proposed Action area, intensive livestock (cattle) grazing constrains vegetation height, density, and composition, and the areas that are currently occupied by giant kangaroo rats are dominated by a dense but closely cropped cover of annual grasses and forbs. The on-site conservation areas will continue to be grazed by cattle; however, the area within the array footprints will be grazed by sheep or goats. Vegetation changes resulting from this change in grazing could be either beneficial or detrimental to giant kangaroo rats, which prefer grassy habitat and avoid areas with dense shrub cover. However, the change in grazing from cattle to sheep and goats in the array footprints is not likely to significantly change vegetation conditions such that it reduces habitat suitability for giant kangaroo rats. Sheep have been noted foraging within giant kangaroo rat precincts, taking advantage of the vegetation conditions facilitated by the

"cultivating actions" of giant kangaroo rats (Hawbecker 1944). Therefore, it appears as if vegetation conditions associated with sheep grazing do not reduce habitat suitability for giant kangaroo rats, and sheep grazing and giant kangaroo rats can coexist within the array footprints.

- Giant kangaroo rats that are relocated, as described in *California Valley Solar Ranch: Plan for Relocation of Giant Kangaroo Rats* (H. T. Harvey & Associates), will be released into areas providing suitable refugia, including inactive precincts and/or artificial burrows. However, giant kangaroo rats could attempt to disperse from the relocation area or be reluctant to use new burrows; these individuals could be subject to increased predation, or could disperse into unsuitable habitat where their survival or reproduction would be reduced.

- New structures in the Proposed Action area will provide new perching structures for barn owls and great horned owls; this could enhance their ability to forage on giant kangaroo rats.

- Permanent lighting at the O&M building, PG&E Caliente Switching Station, substation, and Solar Generation Facility entry intersection at SR 58 could result in increased predation of giant kangaroo rats in illuminated areas, as a result of increased visibility to predators.

- Temporary lighting associated with the trailer park may result in increased predation of giant kangaroo rats in illuminated areas as a result of increased visibility to predators.

There will be a loss of suitable habitat (both occupied and unoccupied) of the giant kangaroo rat in the action area due to the Proposed Action. This represents 0.7 percent of the total remaining habitat of the species (U.S. Fish and Wildlife Service 2010c). However, as a compensatory measure, there will be habitat protection, restoration, and management of offsite lands that will provide for the continued viability of the species within the action area and will result in a net increase (approximately 60 percent) of habitat suitable for the species.

Tipton kangaroo rat

Tipton kangaroo rat occurs only on the Kern County portion for the reconductoring project and the following actions will result in the temporary impacts to 1.14 acres of habitat suitable for this species.

Direct Effects

Potential direct effects on the Tipton kangaroo rat from the PG&E Reconductoring are as follows:

- Construction activities in staging areas, pull sites, and temporary access roads within the PG&E Reconductoring action area will temporarily affect 1.14 acres of habitat in Kern county

- Tipton kangaroo rat burrow complexes may be impacted and require the trapping and relocating of individuals. There is potential for injury or mortality of individuals during

this process. All relocation actions will be conducted by individuals holding a current valid section 10 (a)(1)(A) handling permit for the Tipton kangaroo rat.

- Injury or mortality of Tipton kangaroo rats may occur if they are hit by construction equipment or vehicles. Since this species is nocturnal and no nighttime construction will occur, this effect is expected to be minimal

- Mortality could occur as a result of entombment of Tipton kangaroo rats if burrows collapse during construction activity.

- Installation of buried power and communication cables in suitable habitat could create impassable barriers between Tipton kangaroo rats burrows and foraging areas within the PG&E Reconductoring action area. Additionally, Tipton kangaroo rats could fall into deep, steep-walled trenches and not be able to escape, where they would be vulnerable to predation, starvation, or entombment.

- The use of pesticides or rodenticides to control noxious weeds or rodents could poison giant kangaroo rats or Tipton kangaroo rats.

- Spills or leaks of vehicle fluids, lubricants, or other toxic fluids could poison of giant kangaroo rats or Tipton kangaroo rats, their seed base, or their habitat.

Indirect Effects

Potential indirect effects on the Tipton kangaroo rat from the PG&E Reconductoring are as follows:

- Tipton kangaroo rats displaced from the PG&E Reconductoring action area due to disturbance during construction activities could increase competition for prey and living spaces with kangaroo rats in other areas.

- There is potential for increased predation of Tipton kangaroo rats by red foxes, coyotes, or domestic dogs attracted to food scraps and other trash discarded within the work areas by construction personnel.

- Vehicles and construction equipment could damage vegetation and degrade food resources.

- Tipton kangaroo rats occurring in burrows that will be permanently lost, graded, or otherwise impacted to the extent that mortality of individuals could result, will be trapped and relocated and released into pre-constructed artificial burrows in unaffected areas; or in the case of temporary impacts will be trapped, held until the activity is complete and potential risk resolved, and released to the burrow from which they were captured. There is some potential for injury or mortality of individuals during this process. All handling and relocation of Tipton kangaroo rat will be conducted by individuals holding a valid 10(a)(1)(A) permit.

Overall, there will be a minimal amount of temporary impact to the Tipton kangaroo or its habitat and this is not expected to be a significant effect to the species as a whole or in the action area.

Blunt nosed-leopard lizard

The blunt nosed-leopard lizard occurs only on the Kern county portion of the reconductoring action and approximately 14 acres of habitat suitable for this species will be temporarily impacted.

Direct Effects

Potential direct effects on the blunt-nosed leopard lizard from the PG&E Reconductoring are as follows:

- Construction activities in staging areas, pull sites, and temporary access roads will temporarily affect 14 acres of suitable habitat for blunt-nosed leopard lizards in Kern County.

- Injury or mortality of blunt-nosed leopard lizards could occur if they are hit by construction equipment or vehicles. Blunt-nosed leopard lizards are more susceptible to vehicular strikes in cool weather, when they are less active because of low body temperature.

- Mortality could result by entombment of blunt-nosed leopard lizards in burrows that collapse during construction activity.

- Installation of buried power and communication cables in suitable habitat could directly affect blunt-nosed leopard lizards by creating impassable barriers between burrows and foraging areas. Additionally, blunt-nosed leopard lizards could fall into deep, steep-walled trenches and not be able to escape, where they would be vulnerable to predation, starvation, or entombment.

Indirect Effects

Potential indirect effects on the blunt-nosed leopard lizard from the PG&E Reconductoring are as follows:

- Habitat loss or degradation could occur as a result of habitat disturbances that increase colonization by noxious weeds. Noxious weeds could reduce the movement of blunt-nosed leopard lizards and their ability to capture prey. Implementation of vegetation management to discourage the introduction of weeds would reduce this effect.

- Blunt-nosed leopard lizards may be passively displaced from work sites and adjacent occupied habitat by human activity and noise associated with construction activities.

Overall, there will be a minimal amount of impacts to the blunt-nosed leopard lizard and temporary impacts to a small amount of its habitat. This is not expected to result in a significant effect to the species as a whole or in the action area.

Kern Mallow

The Kern mallow occurs only on the Kern County portion of the reconductoring within the Lokern area. Kern mallow was detected between Towers 127 and 128, at Road Crossing 109 and at Distribution Line 113. The work areas between Towers 127 and 128 were eliminated from the Proposed Action. Work at Road Crossing 109 and Distribution Line 113 however, could not be eliminated.

Direct Effects

Potential direct effects on the Kern mallow from the Proposed Action are as follows:

- Construction activities in staging areas, pull sites, and temporary access roads will temporarily affect 0.11 acre of suitable habitat for Kern mallow in Kern County. Direct effects to populations of Kern mallow are anticipated on those work areas where populations are known to occur and could occur if individuals are present in work areas not yet surveyed. Individual Kern mallow plants could be lost due to trampling or earth moving. Construction activities could remove Kern mallow seed banks through grubbing and clearing of work sites, exposing seeds to the surface where they may desiccate or be consumed by seed eaters, or reduce germination by burying seeds. Dust from vehicles in work areas and on access roads could reduce survivorship and productivity of individual plants by decreasing photosynthetic output, reducing transpiration, and reducing reproductive success.

Indirect Effects

Potential indirect effects on the Kern mallow from the Proposed Action are as follows:

- Noxious weeds could be spread in work areas if construction equipment is contaminated with seeds. Noxious weeds could adversely affect Kern mallow populations by increased competition for soil nutrients, competition for growing space, and decreasing photosynthetic output.

  Impacts of the Proposed Action on soil, such as loss of soil structure, fertility, water holding capacity, erosion and sedimentation may cause indirect effects on Kern mallow by decreasing future vegetative growth and productivity.

Overall, there will be a minimal amount of temporary impact to Kern mallow and its habitat and this is not expected to result in a significant effect to the species as a whole or in the action area.

California Tiger Salamander

Photographs of a salamander embryo observed at a pond near Towers 071 and 073 were provided to two species experts, who were of the opinion that the embryo is that of a California tiger salamander. Based on the identification by the species experts, the presence of California tiger salamander in the action area is assumed. California tiger salamanders are assumed to occur only on the PG&E Reconductoring portion of the Proposed Action.

Direct Effects

Potential direct effects on California tiger salamander from the Proposed Action are as follows:

- Construction activities in staging areas, pull sites, and access roads will temporarily affect 14.75 acres of suitable upland habitat for California tiger salamander.

- Vehicle activity has the potential to crush rodent burrows in upland habitats that may be used by California tiger salamanders as refugia.
- If salamanders are traveling from upland refugia to breeding pools, individuals may become crushed by vehicles, especially on roads.
- Individuals may become entombed in crushed burrows, resulting in mortality by starvation.
- Individuals that are exposed on the surface during project activities within the project area may also be injured or subjected to increased predation or desiccation.
- Individuals could also fall into pits, trenches, or other excavations and be killed directly or indirectly (through desiccation, entombment, or starvation).

Indirect Effects

Potential indirect effects on California tiger salamander from the Proposed Action are as follows:

- Noxious weeds could be spread in work areas if construction equipment is contaminated with seeds. Noxious weeds could make California tiger salamander travel corridors between upland refugia and breeding pools more difficult to transverse during wetter years due to increased growth.

Overall, there will be a minimal amount of temporary impact to California tiger salamander and its habitat and this is not expected to result in a significant effect to the species as a whole or in the action area.

Vernal Pool Fairy Shrimp and Longhorn Fairy Shrimp Critical Habitat

Critical Habitat for vernal pool fairy shrimp and longhorn fairy shrimp occurs within the Proposed Action. Critical Habitat Unit 3 for longhorn fairy shrimp is the same as Critical Habitat Unit 30 for vernal pool fairy shrimp.

Direct Effects

Potential direct effects on vernal pool fairy shrimp and longhorn fairy shrimp critical habitat area as follows:

- Construction of the Proposed Action would result in the direct loss and/or permanent modification of approximately 515 upland acres of vernal pool fairy shrimp and longhorn fairy shrimp Critical Habitat. This includes Critical Habitat within Arrays 8 and 9, and a portion of Array 11.

Indirect Effects

Potential indirect effects on vernal pool fairy shrimp and longhorn fairy shrimp Critical Habitat are as follows:

- Noxious weeds could be spread in and outward from the work areas if construction equipment is contaminated with seeds, or if noxious weeds colonize areas of soil disturbance. Noxious weeds could adversely affect vernal pool fairy shrimp and longhorn fairy shrimp critical habitat by altering plant species composition within vernal pools or adjacent upland areas, and therefore, potentially altering soil moisture regimes.
- Grading for the solar arrays may alter hydric regimes wherever this alters existing topography. While the majority of the solar array site will not need to be graded, this

affect has been carefully minimized by project engineers to protect existing hydrology within uplands and wetlands that are conserved outside the array footprints.

- Shading from the solar trackers, and excess water from panel washing, may contribute to increased soil moisture retention within and down-slope from the arrays. Shading within the arrays may contribute to lower soil temperatures during the growing season and during the daytime than is typical for the region.
- Grading, soil compaction, erosion, and sedimentation from construction activities may indirectly affect vernal pool fairy shrimp and longhorn fairy shrimp critical habitat by altering hydrology, water quality, or soil conditions within the conserved uplands and wetlands outside of the array footprints.

Overall, there will be a minimal amount of impact to the upland element of the vernal pool species critical habitat.

For vernal pool fairy shrimp, the Proposed Action will impact approximately 0.1 percent of the total designated critical habitat rangewide and 5.2 percent within the unit. This is not expected to result in a significant effect to the primary constituent elements of the habitat designation as a whole or in the action area, or to diminish the conservation function of the critical habitat unit.

For longhorn fairy shrimp the Proposed Action will impact approximately 3.7 percent of the total designated critical habitat rangewide and 5.2 percent within the unit. This is not expected to result in a significant effect to the primary constituent elements of the habitat designation as a whole or in the action area, or to diminish the conservation function of the critical habitat unit.

Effects of the Conservation Measures

The Proposed Action was designed to avoid, minimize, and fully mitigate impacts to San Joaquin kit fox, giant kangaroo rat, Tipton kangaroo rat, blunt-nosed leopard lizard, California tiger

salamander, vernal pool fairy shrimp and longhorn fairy shrimp Critical Habitat, and Kern mallow. This will be accomplished through the following:

- Avoidance and minimization of impacts to individuals of these species (as described under the headings related to avoidance and minimization in the Project Description), both to minimize take of individuals and, where applicable, to retain individuals on and near the sites as a source of colonists for preserved and enhanced on-site and off-site conservation lands.

- Avoidance of impacts within the 4,691-acre CVSR Project area. The Proposed Action will preserve in perpetuity approximately 3,006 acres (~2,946 acres suitable for San Joaquin kit fox and ~2,606 acres suitable for giant kangaroo rat) of suitable habitat on-site. The majority of this habitat will not be impacted at all during construction; rather, through design and implemented conservation measures, much of the on-site habitat will be undisturbed.

- Habitats temporarily impacted will be restored following the completion of construction.
- All of the un-impacted and the temporarily impacted land within the CVSR Project that is subsequently restored will provide suitable habitat that could be used by kit fox during the operation of the Proposed Action.
- Where avoidance and restoration of temporarily impacted land is insufficient to mitigate impacts, compensatory mitigation – preservation, enhancement and management of on-site and off-site conservation lands in perpetuity – as described herein will occur.

In order to minimize impacts to listed species, the Proposed Action's compensatory mitigation strategy will ensure conservation as a result of avoiding most occupied areas during construction, protecting and managing existing suitable and occupied habitats, and restoring protecting and managing habitats that are currently unsuitable due to existing land management or activities. These measures will allow the species to continue to breed, feed, and shelter successfully and maintain a viable population within the action area.

Permanent loss of habitat for listed species as a result of the replacement of habitat with components of the Proposed Action will be compensated by the preservation, enhancement, and management in perpetuity of suitable lands outside the Proposed Action's immediate impact areas. Although the San Joaquin kit fox and giant kangaroo rat may continue to use the areas occupied by the solar arrays after installation, habitat within solar array areas are considered acreage for which compensatory measures will be provided and lands within the solar arrays will not be considered to provide conservation habitat. Compensatory habitat will include conservation land within the solar site that is not permanently converted to facilities or under arrays.

Under the conservation strategy approximately 8,500 acres of land will be protected and managed. Some of these protected lands also will be restored and enhanced, and the off-site lands protected will be strategically selected to enhance listed species benefits regionally. Thus, the effectiveness of the conservation strategy is greater than the raw ratio of lands protected to lands impacted.

The conservation habitat that will be used for compensatory mitigation is determined by the quality of habitat impacted by the Proposed Action, with a focus on the replacement and enhancement of lost functions and values through the preservation, enhancement, and management of habitat outside the impact areas.

All lands proposed for conservation have been or will be surveyed for listed species. The conserved habitats are suitable for San Joaquin kit fox and/or giant kangaroo rat as described in the project description and are either occupied or likely would become occupied because they are located adjacent to occupied habitat and would likely be colonized following restoration.

Focusing on functions and values of habitat that will provide mitigation requires the following interrelated considerations:

- Determination of the ratios of acreage impacted to acreage preserved or enhanced
- Specification of selection criteria for the attributes of the preservation/enhancement acreage
- Interrelated habitat considerations for multiple species
- Conservation land enhancement and management measures

The ratio of acres of conservation habitat preserved to acres impacted often varies by species and by project circumstances depending on the species' life history requirements and relative value of the impact and conservation sites. Conservation using highly important lands that provide high value for the species in question or that contribute significantly to regional preservation efforts (e.g., lands that augment large areas of contiguous, preserved habitat), or lands that currently provide very low value but that could be enhanced to increase value considerably, are most beneficial to species as they have the greatest likelihood of achieving the objective of maintaining or enhancing pre-project conditions and replacing or enhancing lost functions and values. Thus, conserving lands that provide high value for listed species through their significant contribution to regional preservation efforts and/or enhancing lands that currently provide very low value but restore functions and values in key areas within a regional context will be the primary focus of the compensatory conservation. Based on previous experiences to restore lands altered by agricultural activities it is reasonable to assume the proposed restoration of offsite habitats for San Joaquin kit fox and giant kangaroo rat will be successful given the adjacency to occupied lands and the propensity for these species to disburse and occupy suitable unoccupied habitats (Williams 1992, Williams et al. 1993, Williams et al. 1999).

On-site habitat temporarily impacted will be restored following the completion of construction. All of the un-impacted and the temporarily impacted land that is subsequently restored will provide suitable habitat during the operation of the Proposed Action. Off-site conservation lands, not already in public land, will comprise areas of suitable soil, topography, hydrology, and vegetation occupied by the species effected by the Proposed Action to ensure the presence and enhancement (through targeted management) of populations of these species, and habitat that is unoccupied and suitable, or that could be made suitable through restoration or enhancement. Through land use changes and targeted management for these species (e.g., by removing active discing, reseeding, and/ or introducing managed grazing), habitat quality for listed species will be improved considerably. For the San Joaquin kit fox and giant kangaroo rat, we anticipate the natural colonization of these improved and enhanced conservation lands because of their proximity to occupied habitat. Purchasing credits from Service approved conservation banks will provide certainty that the offsite compensation for Tipton kangaroo rat, Kern mallow, California tiger salamander, and blunt nosed leopard lizard will provide appropriate conservation benefits to those species.

Conservation areas would build upon the benefits provided by the management of giant kangaroo rat populations on the CPNM and link this regional population center with conservation areas in the San Joaquin Valley. Privately-held parcels of land proximate to the solar site, south within or in the vicinity of the CPNM, and in eastern Kern County possess extremely important ecological values for populations of giant kangaroo rats and San Joaquin kit fox. At present, the northern portion of the Carrizo Plain is, for the most part, isolated from

populations of giant kangaroo rats on the CPNM by unsuitable habitats and land use. Preserving the few remaining populations on these privately-held sites that could potentially spread into the upper portion of the Carrizo Plain during drier periods is an important beneficial element of the proposed off-site conservation, and is one of the most important ecological factors likely to affect the long term persistence of the species in areas outside of the CPNM. The conservation is a clear opportunity to enhance, and permanently protect the connectivity that enabled recolonization of the solar site and to enhance the connectivity of suitable habitats within the region.

Maintaining connectivity of kit fox corridors within the Carrizo Plain is another important ecological benefit of the conservation strategy. The potential off-site conservation lands within the Carrizo Plain north of the CPNM are mostly agricultural lands, which are currently dry-land farmed or were previously dry land farmed and are currently grazed. These lands are within the kit fox corridor identified by South Coast Wildlands (2010) and contribute to the preservation and enhancement of the corridor in this area by restoring habitat degraded by agricultural practices, preserving substantial areas between the Proposed Action and other proposed projects, and reducing the likelihood of future threats from solar development by limiting interconnection access to the Morro Bay to Midway PG&E line.

These compensatory compensation guidelines also benefit from a focus on umbrella species such as the San Joaquin kit fox and keystone species such as the giant kangaroo rat (U.S. Fish and Wildlife Service 1998). San Joaquin kit fox have large area requirements relative to the other listed species, and function as an umbrella species. The giant kangaroo rat is a keystone species that has been correlated with increased plant and animal diversity within communities they inhabit. The community-building activities of kangaroo rats also have an effect on the abiotic features of the landscape, such as soil-building dynamics. Fluctuations in the population of the giant kangaroo rat may indicate changes in the biotic and abiotic health of the landscape, possibly due to stochastic events that were undetected otherwise. The keystone nature of the giant kangaroo rat enables compensatory mitigation for the species to potentially benefit other listed species in the region. Because site conditions vary, one, both, or neither of these species may occur with the other listed species, but in the vast majority of the cases the habitat will be suitable for the other listed species if kit fox and/or giant kangaroo rat are present.

Overall, the conservation strategy of the Proposed Action will minimize the effects of the project and would result in permanent protection of suitable habitat for the listed species on lands where

these habitats are currently vulnerable to conversion to incompatible land uses such as dryland farming or viticulture.

Effects-Recovery of the Species

The effects of the Proposed Action as they more specifically relate to the recovery of the species are discussed here. The Recovery Plan for Upland Species of the San Joaquin Valley, California (U.S. Fish and Wildlife Service 1998) (Recovery Plan) addresses recovery goals for the San Joaquin kit fox, giant kangaroo rat, Tipton kangaroo rat, blunt-nosed leopard lizard, and Kern mallow. The Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon (U.S. Fish and Wildlife Service 2005) addresses recovery goals for vernal pool fairy shrimp and

longhorn fairy shrimp, but does not specifically address their critical habitat. There is no recovery plan for the California tiger salamander

San Joaquin kit fox and Giant kangaroo rat
The strategy in the Recovery Plan for San Joaquin kit fox and giant kangaroo rat include the establishment and maintenance of viable complexes of kit fox and giant kangaroo rat populations on private and public lands throughout their geographic ranges, especially the core populations on the Carrizo Plain Natural Area (U.S. Fish and Wildlife Service 1998). While the project does impact approximately 1,800 acres of habitat either occupied or suitable for these species on the Carrizo plain, the conservation measures will result in a net increase of lands of the same status and condition by protection, restoration and management of lands that are currently unsuitable and/or unmanaged. The measures incorporated into the Proposed Action include the conservation of approximately 9,000 acres of kit fox habitat in the Carrizo Plain, and relate to the recovery action of habitat protection, thus contributing to the recovery goal of establishing a viable kit fox population on private lands within the Carrizo Plain.

Tipton kangaroo rat, Blunt-nosed leopard lizard, Kern mallow, and California tiger salamander
The impacts to these four species occur along the reconductoring portion of the Proposed Action, and are individually and collectively small in scope and duration and are mostly temporary in nature.

The recovery strategy for Tipton kangaroo rat requires consolidating and protecting blocks of suitable habitat for the species (U.S. Fish and Wildlife Service 1998). The Proposed Action includes purchase of credits for Tipton kangaroo rat habitat at the Kern Water Bank, thus contributing to the recovery strategy by contributing to the protection of large blocks of suitable habitat.

The recovery actions for blunt-nosed leopard lizard include conducting range-wide surveys for the presence of the species, protecting additional habitat for the species in key portions of its range, and protecting habitat in other areas of its range (U.S. Fish and Wildlife Service 1998). Avoidance measures incorporated into the Proposed Action include surveys for the species which will provide additional details on the presence of blunt-nosed leopard lizard, while the compensation measures provide habitat protection for the species at a Service approved conservation bank. These measures relate to the recovery actions of conducting surveys for the species and protecting habitat; thus and the Proposed Action contributes toward the recovery actions for the species.

The primary goal of the recovery strategy for Kern mallow is to protect 90 percent of the remaining occupied habitat (U.S. Fish and Wildlife Service). The Proposed Action includes avoidance, minimization, restoration of impacted sites, and compensation of Kern mallow habitat at the Kern Water Bank, thus contributing to the recovery strategy by contributing to the protection of large blocks of suitable habitat.

No recovery plan for the California tiger salamander in the vicinity of the Proposed Action has been developed; however, the primary cause of decline of the salamander has been habitat loss and fragmentation. Direct effects of the Proposed Action will only temporarily impact tiger salamander upland habitat, and measures incorporated into the Proposed Action include

avoidance, minimization, restoration of impacted sites, and the purchase of credits at a Service approved conservation bank. Thus, the Proposed Action does not contribute to the loss or fragmentation of salamander habitat, and protects habitat in perpetuity from human disturbance.

Vernal pool fairy shrimp and longhorn fairy shrimp
The Recovery Plan for Vernal Pool Ecosystems of California and Southern California (U.S. Fish and Wildlife Service 2005) (Vernal Pool Recovery Plan) covers the vernal pool fairy shrimp and longhorn fairy shrimp. The overall goals of the Vernal Pool Recovery Plan include protecting in perpetuity self-sustaining populations throughout the full ecological, geographical, and genetic range of each listed species; while the overall objectives include promoting natural ecosystem processes and functions by protecting and conserving intact vernal pools and vernal pool complexes within the recovery planning area to maintain viable populations of listed species (U.S. Fish and Wildlife Service 2005). The Proposed Action does not impact the wetland features and elements of the designated unit. While the Proposed Action does impact a portion of upland features, they are far enough from the wetlands and minimized in scope to maintain the units' function of capturing surface moisture and maintaining hydrology of the designated unit. The Proposed Action relates to the recovery strategy by permanently protecting and managing habitat within, contiguous to and adjacent to these designated units.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the Proposed Action are not considered in this section because they require separate consultation pursuant to Section 7 of the Act. There are no known cumulative effects that are reasonably certain to occur within the action area under consideration.

Conclusion

For the proposed California Valley Solar Ranch project and the associated infrastructure, we have determined that the amount of take and/or adverse effects to the species and their habitats is small relative to the range-wide status of the Tipton kangaroo rat, blunt-nosed leopard lizard, Kern mallow and California tiger salamander, and are therefore expected to be minimal. We have also determined that the adverse effects to designated critical habitat for vernal pool fairy shrimp and longhorn fairy shrimp are also expected to be minimal because the habitat that is impacted is the upland component, is several hundred feet from the wetland features that could be occupied by the species, and is minimal in scope given the overall acreage of upland habitat in the action area, within the critical habitat units and throughout the range.

For the San Joaquin kit fox and giant kangaroo rat, the amount of take is expected to be more extensive, but of a nature that is not expected to appreciably reduce the ability of these species to continue to successfully breed, feed, shelter, and to disperse within and outside of the action area. This project as proposed will result in some limitations on movement of San Joaquin kit fox but is not expected to preclude north and south movements as sufficient corridors of suitable dispersal habitat occur and will remain around the project. It should be noted that the only other reasonably foreseeable project in the vicinity (Topaz Solar) will be considered as a federal action in a subsequent biological opinion; the topography of the landscape is such that, additional future

projects (beyond the Topaz Solar project) of this nature in this area would likely adversely impact the environmental conditions that provide for the breeding, feeding, sheltering and dispersal of the San Joaquin kit fox and giant kangaroo rat present significant barriers to dispersal around and adjacent to the project sites and should be carefully considered in future analyses.

After reviewing the current status of the San Joaquin kit fox, giant kangaroo rat, Tipton kangaroo rat, blunt-nosed leopard lizard, California tiger salamander, Kern mallow, and designated critical habitat for the vernal pool fairy shrimp and longhorn fairy shrimp, the environmental baseline for the action area, the effects of the proposed California Valley Solar Ranch Project and associated infrastructure which also includes the off-site transmission line reconductoring, tie in line, switching station, quarry, and conservation lands and the cumulative effects, it is the Service's biological opinion that the project as proposed, is not likely to jeopardize the continued existence these species or adversely modify or destroy designated critical habitat.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act, prohibit take of endangered and threatened species, respectively, without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct. The Service defines harassment as an intentional or negligent act or omission that creates the likelihood of injury to listed species by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. The Service defines harm to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of Section 7(b)(4) and Section 7(o)(2), take that is incidental to and not intended as part of the agency action is not considered to be prohibited, provided such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by DOE, and their applicant, based on commitments described in the project description and through binding conditions of any permit or contract issued to the applicant, in order for the exemption in Section 7(o)(2) to apply. DOE has the continuing duty to regulate the activity covered by this incidental take statement. If DOE (1) fails to assume and implement the terms and conditions or (2) fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to any permit or contract, then the protective coverage of Section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the DOE must report the progress of the action and its impact on the species, or ensure that their applicant provides such reports to the Service as specified in the incidental take statement [50 CFR §402.14(i)(3)].

Sections (7)(b)(4) and 7(o)(2) of the Act, which refer to terms and conditions and exemptions on taking listed fish and wildlife species, do not apply to listed plant species. However, Section 9(a)(2) of the Act prohibits removal, reduction to possession, and malicious damage or destruction of listed plant species on lands under Federal jurisdiction and the removal, cutting,

digging up, or damaging or destroying such species in a knowing violation of any State law or regulation, including State criminal trespass law. Actions funded, authorized or implemented by a Federal agency that could incidentally result in the damage or destruction of such species on Federal lands are not a violation of the Act, provided the Service determines in a biological opinion that the actions are unlikely to jeopardize the continued existence of the species.

Amount or Extent of Take

Upon implementation of the following reasonable and prudent measures the following levels of incidental take of the San Joaquin kit fox, giant kangaroo rat, Tipton kangaroo rat, blunt-nosed leopard lizard, and California tiger salamander will be exempted from prohibitions of take under Section 9 of the Act.

The Proposed Action is likely to result in the incidental take of the San Joaquin kit fox, giant kangaroo rat, Tipton kangaroo rat, blunt-nosed leopard lizard, and California tiger salamander.

For the San Joaquin kit fox, the following activities are expected to result in incidental take:

- Approximately 1,707 acres of suitable San Joaquin kit fox habitat will be permanently impacted by the construction and operation of the Proposed Action (solar field, reconductoring, and mine expansion). An additional 97 acres of suitable San Joaquin kit fox habitat will be temporarily impacted by construction activities but will be restored to pre-project conditions following construction. The Service estimates that San Joaquin kit fox within the action area (approximately 10 individuals) will be subject to take in the form of harm and harass as a result of construction and operation of Proposed Action.

For the giant kangaroo rat, incidental take can be difficult to detect for the following reasons: the species' relatively small body size, the fact that they spend much of their time in underground burrows, are active in the evening, and are quickly consumed by scavengers. These factors make an accurate population size estimate difficult and it's likely that individual mortality would go undetected. In addition, losses as a result of translocation or habitat modification may be masked by "normal" fluctuations in population size due to weather, predator populations, etc. For this reason, the Service is quantifying incidental take as the number of acres of habitat that will be temporarily or permanently impacted by the Proposed Action and the individuals that likely occupy that habitat. On that basis, the following level of take is anticipated:

- Approximately 1,631 acres of suitable giant kangaroo rat habitat (currently or recently occupied or could become occupied within the life of the project) will be permanently impacted by the construction and operation of the action. The Service estimates that giant kangaroo rats inhabiting this approximately 1,631 acres will be subject to take in the form of harm and harass as a result of this action. Based on surveys conducted on the project site, the Service estimates this 1,631 acres is occupied by up to 360 precincts/individuals that will be taken in the form of harm and/or harass.

- An additional 83 acres of suitable giant kangaroo rat habitat will be temporarily disturbed by construction activities and will be revegetated following construction. The Service estimates that the giant kangaroo rats inhabiting the 83 acres will be subject to take in the form of harm and harass during these activities. Based on surveys conducted on the

project site and known densities of this species in the action area, the Service estimates that 19 individuals/precincts will be taken in the form of harm and/or harass.

- In order to avoid direct mortality of giant kangaroo rats during the construction phase, up to 304 individuals may be relocated within the action area. Therefore, the Service estimates that, based on previous relocation actions (Williams et al. 1999), during the trapping, handling, and relocation activities 304 individuals will be harmed and/or harassed as a result of handling activities.

For the Tipton kangaroo rat, incidental take will be difficult to detect for the following reasons: the species' relatively small body size and the fact that they spend much of their time in underground burrows makes it likely that deaths would go undetected, and losses as a result of translocation or habitat modification may be masked by seasonal or annual fluctuations in population size due to other factors (i.e., environmental conditions). For this reason, the Service is quantifying incidental take as the number of acres of habitat that will become unsuitable or be adversely affected by the Proposed Action and the individuals that likely occupy that habitat. On that basis, the following level of take is anticipated:

- Approximately 1.14 acres of suitable Tipton kangaroo rat habitat in Kern County will be temporarily disturbed by construction activities in staging areas, pull sites, and temporary access roads for the PG&E Reconductoring. The Service estimates that Tipton kangaroo rats inhabiting the 1.14 acres, if occupied at the time of construction, will be subject to take in the form of harm as a result of this action. Based on known densities (Clark et al. 1982) we anticipate up to 2 individuals/precincts will be taken in the form of harm and harass.

For the blunt-nosed leopard lizard, incidental take will be difficult to detect for the following reasons: the species' relatively small body size makes it likely that deaths would go undetected. For this reason, the Service is quantifying incidental take as the number of acres of habitat that will become unsuitable or be adversely affected by the Proposed Action. On that basis, the following level of take from harm and harass is anticipated:

- Approximately 14 acres of suitable blunt-nosed leopard lizard habitat in Kern County will be temporarily disturbed by construction activities in staging areas, pull sites, and temporary access roads (38 individual sites total) for the PG&E Reconductoring. Each of these sites could be occupied by up to 1 individual. The Service estimates that the 38 blunt-nosed leopard lizards inhabiting the 14 acres at theses activity sites, if occupied at the time of construction, will be subject to take in the form of harm or harass as a result of this action.

For the California tiger salamander, incidental take will be difficult to detect for the following reasons: the species' relatively small body size and the fact that they spend much of their time in underground burrows makes an accurate population size estimate difficult and it's likely that deaths would go undetected. For this reason, the Service is quantifying incidental take as the number of acres of habitat that will become unsuitable or be adversely affected by the Proposed Action and the number of individuals that are likely to occur there. On that basis, the following level of take is anticipated:

- Approximately 14.75 acres of suitable California tiger salamander upland habitat will be temporarily impacted by the Proposed Action. Given the very low densities of salamanders found in upland portions of their habitat, the Service estimates that 1 California tiger salamander inhabiting the 14.75 acres, if occupied at the time of construction, will be subject to take in the form of harm and harass as a result of this action.

Effect of the Take

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the San Joaquin kit fox, giant kangaroo rat, Tipton kangaroo rat, blunt nosed leopard lizard, and California tiger salamander.

Reasonable and Prudent Measures

The following reasonable and the reasonable and prudent measure is necessary and appropriate to minimize the anticipated amount or extent of incidental taking resulting from the Project on the San Joaquin kit fox, giant kangaroo rat, Tipton kangaroo rat, blunt-nosed leopard lizard, California tiger salamander, Kern mallow, and designated critical habitat for vernal pool fairy shrimp and longhorn fairy shrimp:

> Adhere to all conservation measures in the biological assessment, its amendment and the additional measures as noted in this biological opinion and under the additional terms and conditions noted below:

Terms and Conditions

In order to be exempt from the prohibitions of Section 9 of the Act, the DOE and their applicant must comply with the following terms and conditions, which implement the reasonable and prudent measure described above. These terms and conditions are nondiscretionary.

The following terms and conditions implement reasonable and prudent measure referenced above:

1. The DOE shall include as a condition of any and all permits or contracts associated with the loan guarantee for the Project that the applicant must fully implement and adhere to all conservation measures, and all other conditions and reporting requirements in this biological opinion.

2. The DOE and the project applicant shall minimize the potential for harm, harassment, or killing of federally-listed species resulting from Project related activities by implementation of the conservation measures as described in the biological assessment and amendments, and also referenced in the conservation measures section of this biological opinion.

3. Where offsite conservation is proposed at a Service approved conservation bank, credits shall be purchased commensurate with and/or prior to each phase or construction action.

4. Prior to groundbreaking, site specific information on the location, habitat type, land use, species occurrences, ownership and title, and proposed acquisition or easement type for the conservation lands shall be submitted for Service approval.

5. DOE or their applicant will be responsible for implementing the conservation measures and terms and conditions of this biological opinion and shall be the point of contact in the field for the Project and shall maintain a copy of this biological opinion on-site whenever construction is taking place. Their name and telephone number shall be provided to the Service at least thirty (30) calendar days prior to groundbreaking on the Project site. Prior to ground disturbance, the superintendent must submit a letter to the Service verifying that they possess a copy of this biological opinion and have read and understand the terms and conditions.

6. If requested, before, during, or upon completion of ground breaking and/or construction activities, the project applicant shall allow access by the Service personnel to the project site to inspect project effects to listed species and associated habitats.

7. Consistent with the phased implementation schedule of the Proposed Action, a management plan for each off-site conservation acquisition site and on-site avoided/conserved land to meet the compensatory conservation measures for each phase must be approved by the Service.

8. Consistent with the phased implementation schedule of the Proposed Action, an analysis of costs for the management plans and associated endowments necessary to meet the compensatory conservation measures for each phase of construction must be approved by the Service.

9. Consistent with the phased implementation schedule of the Proposed Action, a Service approved conservation easement necessary to meet the compensatory conservation measures for each phase of construction shall be placed on on-site and off-site conservation lands.

10. Weekly reports during active relocation activities shall be provided to the Service by electronic mail regarding the progress should giant kangaroo rats need to be relocated. Prior to initiation of trapping and relocation, the Service shall approve format of said reports.

Reporting Requirements

The DOE must require that HPR II provide the Service with a report twice a year (6 months apart) to describe the progress of implementation of all the commitments in the conservation measures and terms and conditions sections of this biological opinion.

The DOE must require that HPR II immediately report any information to the Service about take or suspected take of federally-listed species not authorized in this biological opinion. The Sacramento Fish and Wildlife Office is to be notified within 24 hours of the finding of any dead federally-listed species or any unanticipated harm to the species addressed in this biological opinion. The Service contact person for this is the Assistant Field Supervisor of the Endangered Species Division at (916) 414-6600 and the Resident Agent-in-Charge of the Service's Law Enforcement Division at (916) 414-6660.

CONSERVATION RECOMMENDATIONS

Conservation recommendations are suggestions from the Service regarding discretionary measures to minimize or avoid adverse effects of a Proposed Action on listed species or critical habitat or regarding the development of new information. These measures may serve to further minimize or avoid the adverse effects of a Proposed Action on listed, proposed, or candidate species, or on designated critical habitat. They may also serve as suggestions on how action agencies can assist species conservation in furtherance of their responsibilities under Section 7(a)(1) of the Act, or recommend studies improving an understanding of a species' biology or ecology. Wherever possible, conservation recommendations should be tied to tasks identified in recovery plans. The Service is providing you with the following conservation recommendations:

- DOE should implement all Recovery Action as outlined in our Recovery Plan for Upland Species for the San Joaquin Valley, California and the Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION – CLOSING STATEMENT

This concludes formal consultation on the proposed California Valley Solar Ranch in San Luis Obispo and Kern Counties, California. As provided in 50 CFR Section 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) The amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or, (4) a new species is listed or critical habitat designated that may be affected by the action.

If you have any questions regarding this biological opinion please contact Kenneth Sanchez or Kate Symonds at (916) 414-6600.

Sincerely,

Susan K. Moore
Field Supervisor

Enclosures:
Table II, Figures 1&2
cc:
Ms. J. Vance, CDFG, Fresno, CA
Mr. C. Johnson, USACE, San Francisco, CA
Mr. C. Diel, USFWS, Ventura, CA

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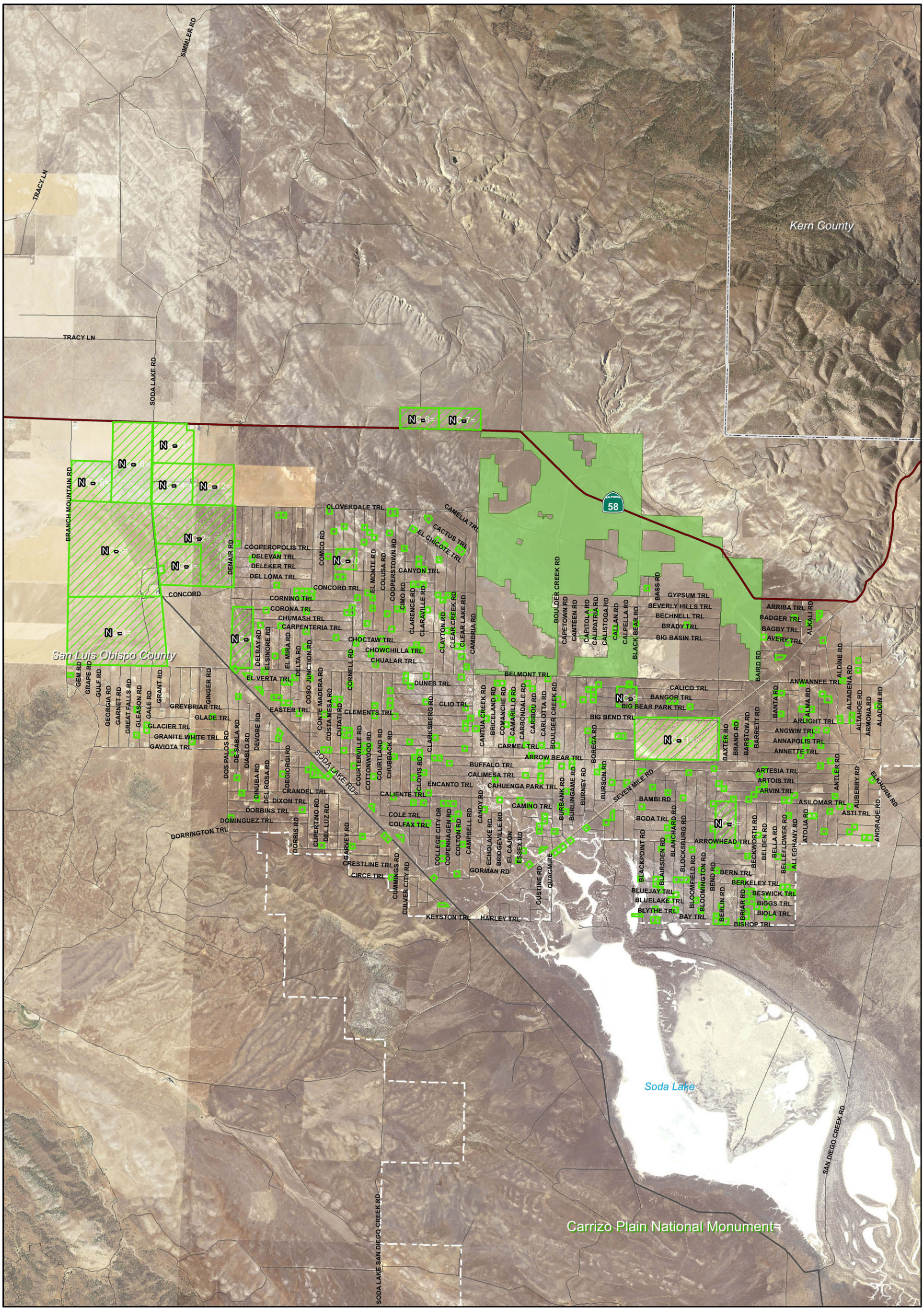
Table 2 California Valley Solar Ranch proposed conservation land portfolio.

Parcel ID codes for CVSR Conservation Lands

APN	acres	new ID code	notes
North Carrizo			
On-site CVSR Lands	2866		Note that total area is 3250 acres, but areas within 100ft of project features are not given conservation credit.
072-211-009 (Tab)	119	NC-1	
072-141-023 (Tab)	452	NC-2	
072-141-022 (Tab)	168	NC-3	
072-201-002 (Ruskovich)	635	NC-4	
072-141-033 (Ruskovich)	642	NC-5	
072-111-018 (Freeborn)	80	NC-6	
072-111-019 (Nolan)	80	NC-7	
CSD lot #2	80	NC-8	
CSD lot #3	40	NC-9	
CSD lot #6	40	NC-10	
072-221-008 (Turner)	327	NC-11	
072-141-012 (Diefenderfer)	995	NC-12	Acreage total for NC-12 through NC-17
072-141-031 (Diefenderfer)		NC-13	
072-141-032 (Diefenderfer)		NC-14	
072-141-029 (Diefenderfer)		NC-15	
072-141-030 (Diefenderfer)		NC-16	
California Valley Parcels	1,023	NC-17	
South Carrizo			
096-221-012 (Runels)	320	SC-1	
096-341-003 (McCart)	80	SC-2	
096-341-004 (McCart)	80	SC-3	
096-291-019 (Greathouse)	80	SC-4	
096-221-026 (Lowery)	78	SC-5	
095-031-011 (Jung)	320	SC-6	
095-121-006 (Frederick)	91	SC-7	
095-231-011 (Frederick)	91	SC-8	
096-371-021 (Erickson)	320	SC-9	
095-121-009 (Iffert)	160	SC-10	
096-231-005 (Harrington)	41	SC-11	
096-241-012 (HN Sisters)	120	SC-12	
096-271-002 (HN Sisters)	40	SC-13	
Total	9,368		



Legend

CVSR MA

Off-site Conservation Lands=
(Small parcels in CA Subdivision are coded NC-17)=

Data Sources: [1] San Luis Obispo County Graphic Information Systems (February 2000), [2] ESRI StreetMap USA (2010), [3] 1m USDA NAIP aerial (2009)

Scale=

1:72,000

1 inch = 6,000 feet=

0= 3,000= 6,000= 12,000=Feet=

Coordinate System: North American Datum 83 Universal Trans Mecator (UTM) Zone 11 North=

California Valley Solar Ranch

Conservation Lands – North Carrizo

HPR II

H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

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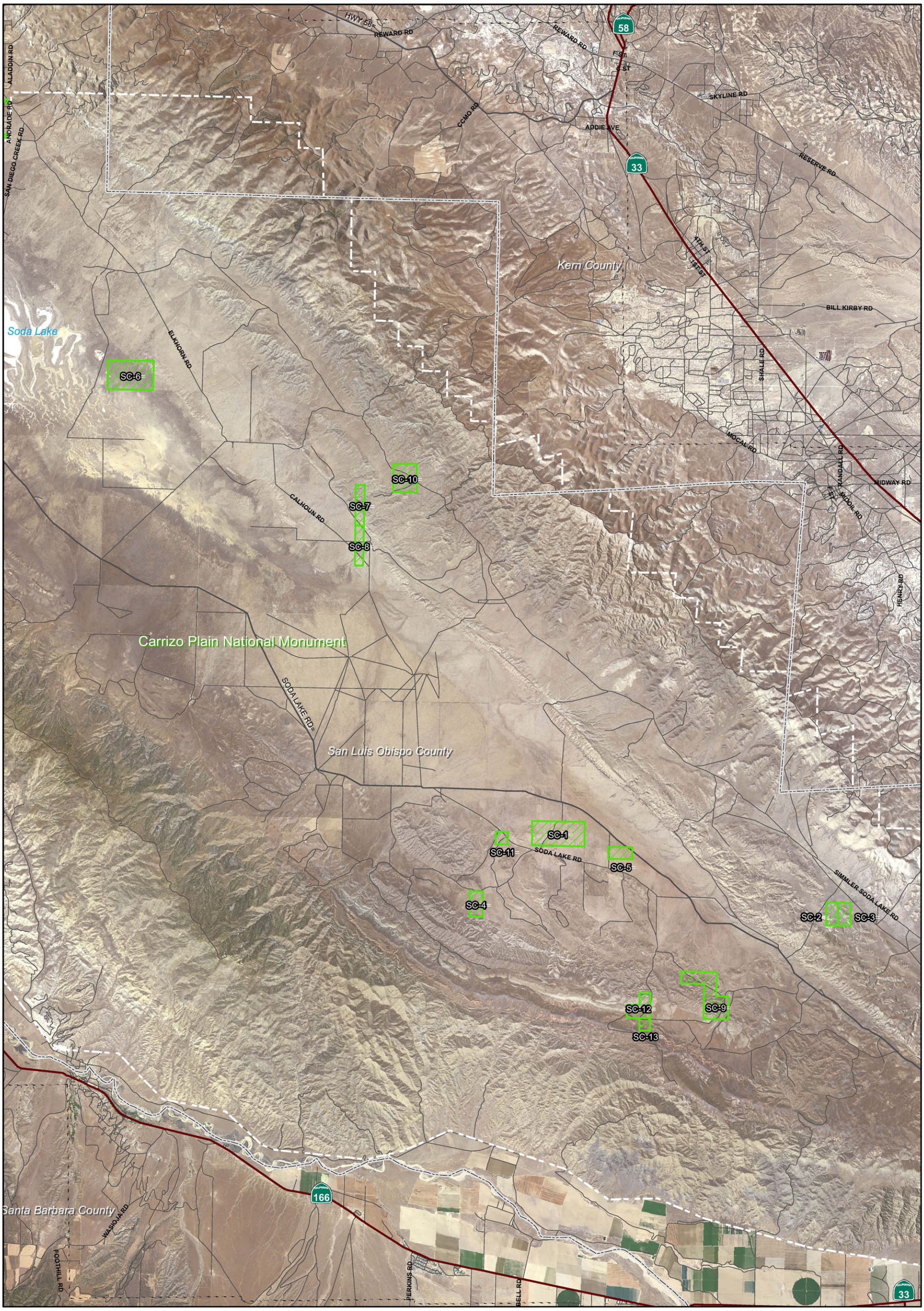

Legend

Off-site Conservation Lands

Data Sources: [1] San Luis Obispo County Graphic Information Systems (February 2000), [2] ESRI StreetMap USA (2010), [3] 1m USDA NAIP aerial (2009)

Scale=

1:120,000

1 inch 10,000 feet=

0= 5,000= 10,000= 20,000=Feet=

Coordinate System: North American Datum 83 Universal Trans Mecator (UTM) Zone 11 North=

California Valley Solar Ranch

Conservation Lands – South Carrizo=

HPR II

H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

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D4 US Army Corps of Engineers: Letter of Determination, No Waters of U.S. on California Valley Ranch Solar Site

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DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1455 MARKET STREET
SAN FRANCISCO, CALIFORNIA 94103-1398

REPLY TO
ATTENTION OF

Regulatory Division

DEC 06 2010

SUBJECT: File Number 2010-00021S

SunPower Corporation Systems
Attn: Renee Robin
1414 Harbour Way South
Richmond, California 94804

Dear Ms. Robin:

This letter is in regard to your request dated March 26, 2010, concerning Department of the Army authorization for plans to conduct the California Valley Solar Ranch Project, on a 4,365 acre site bisected by State Route 58 and bounded by the California Valley subdivision to the South (approximate center of project: 35.32885 N, -119.90547 W), in San Luis Obispo County, California.

We have determined that there are no waters of the U.S. as defined by Section 404 of the Clean Water Act and no navigable waters of the U.S. as defined by Section 10 of the Rivers and Harbors Act of 1899 within the boundaries of the project site shown in the attached delineation map for your project. Therefore, a Department of the Army authorization will not be required to complete the activity you are proposing.

We have determined that construction of your project will not involve the discharge of fill materials into regulated waters of the United States pursuant to the U.S. Supreme Court decision in Solid Waste Agency of Northern Cook County (SWANCC) v. U.S. Army Corps of Engineers, 531 U.S. 159 (2001). The SWANCC identified water bodies are not "waters of the United States" because they are: (1) not navigable waters, (2) not interstate waters, (3) not part of a tributary to item (1) or (2), (4) not wetlands adjacent to any of the foregoing waters, or (5) not an impoundment of any of the foregoing waters. In addition, the interstate commerce nexus to these particular waters is insufficient to establish Clean Water Act jurisdiction. These waters are therefore not subject to regulation by the U.S. Army Corps of Engineers (Corps) under Section 404 of the Clean Water Act.

This approved jurisdictional determination is presumed to be consistent with the U.S. Supreme Court decision of June 19, 2006, concerning *Rapanos v. United States*, 126 S. Ct. 2208 (2006) ("Rapanos"). In the Rapanos decision, the Court determined, in part, that jurisdiction may not be asserted over certain categories of waters that lack a "significant nexus" effect with a traditional navigable waters. Those categories of waters requiring a significant nexus effect determination include: Non-navigable tributaries that are not relatively permanent (do not typically flow year-round or have continuous flow at least seasonally); wetlands adjacent to non-

navigable tributaries that are not relatively permanent; and wetlands adjacent to but not directly abutting a relatively permanent non-navigable tributary.

Enclosed is a map labeled "File #2010-00021S – California Valley Solar Ranch," dated November 22, 2010, showing no Corps jurisdiction within the project site. This map, and the determination that a permit is not required for your activity, are based upon on-site inspections of the project by our staff on March 24, 2010, June 30, 2010, August 23, 2010, and October 6, 2010, and our review of the project documents, including the "California Valley Solar Ranch Project, San Luis Obispo County, California; Preliminary Delineation of Wetlands and Other Waters," dated 29 December 2009, and the packages of further information submitted by H.T. Harvey and Associates. This jurisdictional delineation will expire in five years from the date of this letter. However, if there has been a change in circumstances that affects the extent of Corps jurisdiction, a revision may be completed before that date. A change to your project could also change the determination that no permit is required.

You are advised that the Corps has established an Administrative Appeal Process, as described in 33 C.F.R. Part 331 (65 Fed. Reg. 16,486; March 28, 2000), and outlined in the enclosed flowchart and "Notification of Administrative Appeal Options, Process, and Request for Appeal" form (NAO-RFA). If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to the District Engineer for reconsideration or submit a completed NAO-RFA form to the Division Engineer to initiate the appeal process. You will relinquish all rights to appeal, unless the Corps receives new information or a completed NAO-RFA form within sixty (60) days of the date of the NAO-RFA.

This determination does not obviate the need to obtain other Federal, State or local approvals required by law, including compliance with the Federal Endangered Species Act (ESA) (16 U.S.C. Section 1531 et seq.). Even though this activity is not prohibited by, or otherwise subject to regulation under Section 404, the take of a threatened or endangered species as defined under the ESA is not authorized. In the absence of a separate authorization from the U.S. Fish and Wildlife Service or the National Marine Fisheries Service, both lethal and non-lethal takes of protected species are a violation of the ESA. Similarly, the appropriate State of California, Regional Water Quality Control Board may still regulate your proposed activity because of impacts to a "water of the State". Therefore, you should also contact appropriate Federal, State and local regulatory authorities to determine whether your activity may require other authorizations or permits.

If you have any questions regarding this matter, please call Ian Liffmann of our Regulatory Division by phone at (415) 503-6769 or by email at ian.liffmann@usace.army.mil. Please address all correspondence to the Regulatory Division and refer to the File Number at the head of this letter.

Sincerely,

Jane M. Hicks
Chief, Regulatory Division

Copy furnished:

CA RWQCB, San Luis Obispo, CA
CA SWRCB, Sacramento, CA
H.T. Harvey and Associates; Attn: Pat Boursier

D5 US Army Corps of Engineers: Letter of Determination, No Waters of the U.S. on Twisselman Mine Site

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DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1455 MARKET STREET, 16TH FLOOR
SAN FRANCISCO, CALIFORNIA 94103-1398

JUN - 7 2011

REPLY TO
ATTENTION OF

Regulatory Division (1145b)

SUBJECT: File Number 2010-00021S

SunPower Corporation Systems
Attn: Renee Robin
1414 Harbour Way South
Richmond, California 94804

Dear Ms. Robin:

This letter is in regard to your request received on January 28, 2011, concerning the extent of Waters of the United States at the Twisselman Aggregate Surface Mine, North of State Route 58 in Eastern San Luis Obispo County, California.

All proposed discharges of dredged or fill material occurring below the plane of ordinary high water in non-tidal waters of the United States; or below the high tide line in tidal waters of the United States; and within the lateral extent of wetlands adjacent to these waters, typically require Department of the Army authorization and the issuance of a permit under Section 404 of the Clean Water Act of 1972, as amended (33 U.S.C. § 1344 *et seq.*). Waters of the United States generally include the territorial seas; all traditional navigable waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including waters subject to the ebb and flow of the tide; wetlands adjacent to traditional navigable waters; non-navigable tributaries of traditional navigable waters that are relatively permanent, where the tributaries typically flow year-round or have continuous flow at least seasonally; and wetlands directly abutting such tributaries. Where a case-specific analysis determines the existence of a "significant nexus" effect with a traditional navigable water, waters of the United States may also include non-navigable tributaries that are not relatively permanent; wetlands adjacent to non-navigable tributaries that are not relatively permanent; wetlands adjacent to but not directly abutting a relatively permanent non-navigable tributary; and certain ephemeral streams in the arid West.

The enclosed delineation map, labeled "File #2010-00021S – California Valley Solar Ranch, Twisselman Mine, 29.3 Acres, north of main project site," in one sheet, dated May 18, 2011, accurately depicts the extent and location of other waters of the United States within the boundary area of the site that are **not** subject to U.S. Army Corps of Engineers' regulatory authority under Section 404 of the Clean Water Act. These particular water bodies are considered to be isolated with no apparent connection to interstate or foreign commerce. This approved jurisdictional determination is based on the current conditions of the site, as verified during a field investigation of March 16, 2011, a review of available digital photographic

imagery, and a review of other data included in your submittal. This approved jurisdictional determination will expire in five (5) years from the date of this letter, unless new information or a change in field conditions warrants a revision to the delineation map prior to the expiration date.

This approved jurisdictional determination is presumed to be consistent with the U.S. Supreme Court decision of January 9, 2001, concerning the *Solid Waste Agency of Northern Cook County v. United States Corps of Engineers*, 531 U.S. 159 (2001) ("SWANCC"). In the SWANCC decision, the Court invalidated, at least, portions of the Migratory Bird Rule as a sole nexus to the Commerce Clause, and ruled that the U.S. Army Corps of Engineers had exceeded its statutory authority in exerting jurisdiction over non-navigable isolated, intrastate waters that did not provide some other interstate or foreign commerce use (33 C.F.R § 328.(a)(3)).

This approved jurisdictional determination is presumed to be consistent with the U.S. Supreme Court decision of June 19, 2006, concerning *Rapanos v. United States*, 126 S. Ct. 2208 (2006) ("Rapanos"). In the Rapanos decision, the Court determined, in part, that jurisdiction may not be asserted over certain categories of waters that lack a "significant nexus" effect with a traditional navigable waters. Those categories of waters requiring a significant nexus effect determination include: Non-navigable tributaries that are not relatively permanent (do not typically flow year-round or have continuous flow at least seasonally); wetlands adjacent to non-navigable tributaries that are not relatively permanent; and wetlands adjacent to but not directly abutting a relatively permanent non-navigable tributary.

The current absence of jurisdictional waters of the United States within the boundary area of the site does not obviate any requirement to obtain other Federal, State, or local approvals necessitated by law. Any impacts to federally-listed threatened or endangered species and/or designated critical habitat may be subject to regulation by the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service under Section 10 of the Endangered Species Act of 1973, as amended (16 U.S.C. § 1531 *et seq.*). If "waters of the state" are potentially present, the site may be subject to regulation by the California Regional Water Quality Control Board, Central Coast Region, under the Porter-Cologne Water Quality Control Act, as amended (California Water Code § 1300 *et seq.*). You are, therefore, urged to contact these agencies directly to determine the need for other authorizations or permits.

You are advised that the approved jurisdictional determination may be appealed through the U.S. Army Corps of Engineers' *Administrative Appeal Process*, as described in 33 C.F.R. Part 331 (65 Fed. Reg. 16,486; Mar. 28, 2000), and outlined in the enclosed flowchart and *Notification of Administrative Appeal Options, Process, and Request for Appeal* (NAO-RFA) Form. If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to this office for reconsideration of this decision. If you do not provide new information to this office, you may elect to submit a completed NAO-RFA Form to the Division Engineer to initiate the appeal process; the completed NAO-RFA Form must be

submitted directly to the Appeal Review Officer at the address specified on the NAO-RFA Form. You will relinquish all rights to a review or an appeal, unless this office or the Division Engineer receives new information or a completed NAO-RFA Form within sixty (60) days of the date on the NAO-RFA Form. If you intend to accept the approved jurisdictional determination, you do not need to take any further action associated with the Administrative Appeal Process.

You may refer any questions on this matter to Ian Liffmann of my Regulatory staff by telephone at (415) 503-6769 or by e-mail at ian.liffmann@usace.army.mil. All correspondence should be addressed to the Regulatory Division, South Branch, referencing the file number at the head of this letter.

The San Francisco District is committed to improving service to our customers. My Regulatory staff seeks to achieve the goals of the Regulatory Program in an efficient and cooperative manner, while preserving and protecting our nation's aquatic resources. If you would like to provide comments on our Regulatory Program, please complete the Customer Service Survey Form available on our website: http://www.spn.usace.army.mil/regulatory/.

Sincerely,

Jane M. Hicks
Chief, Regulatory Division

Enclosures

Copy Furnished (w/ encls):

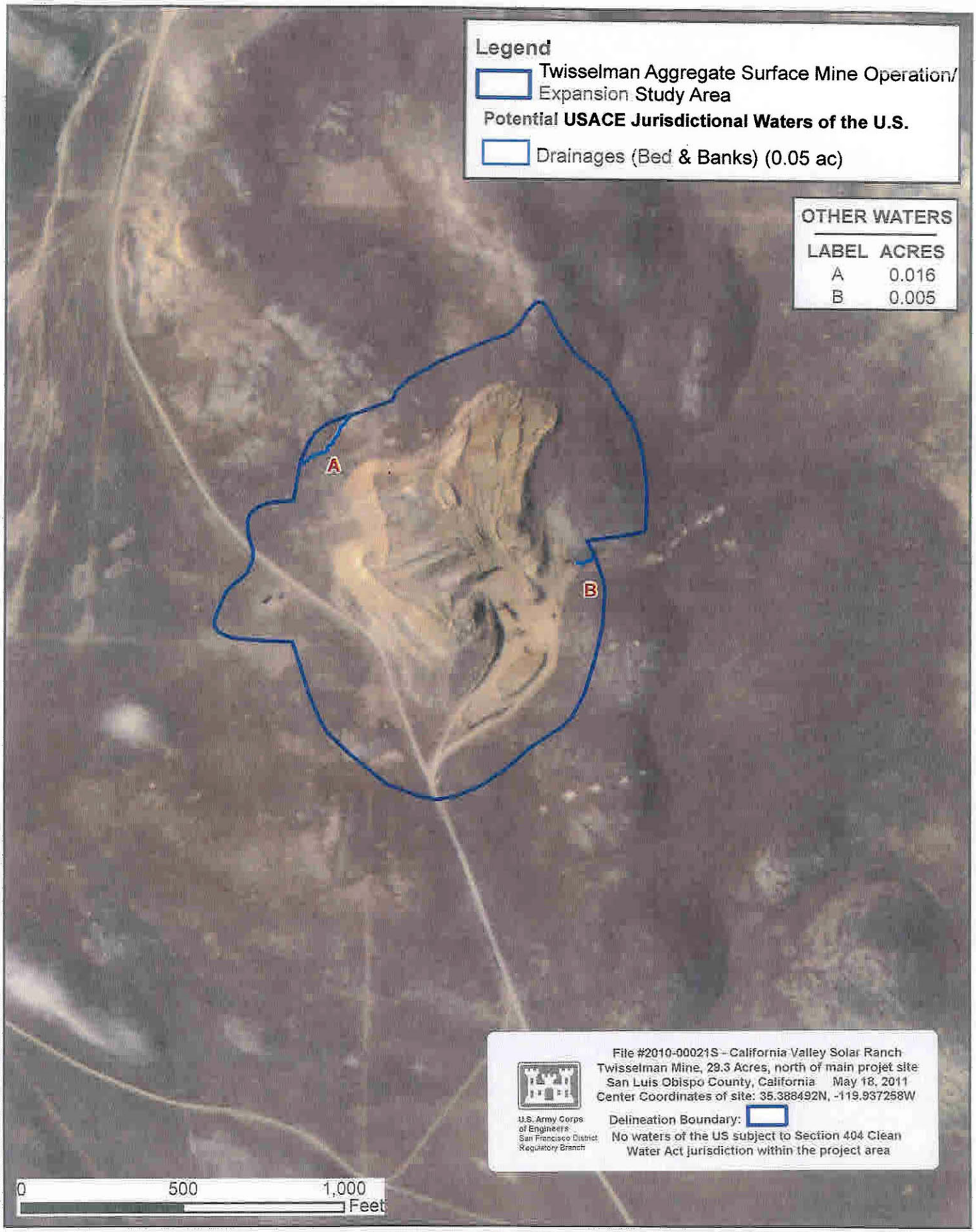
H.T. Harvey and Associates; Attn: Patrick Boursier

Copy Furnished (w/ encl 1 only):

CA RWQCB, San Luis Obispo, CA

Copies Furnished (w/o encls):

U.S. EPA San Francisco, CA
CA SWRCB, Sacramento, CA



N:\Projects\30000\3103-01\Reports\Twisselman ID of Waters

H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS
HPR II

Figure 5: USACE Jurisdictional Waters of the U.S.
Twisselman Aggregate Surface Mine Operation/Expansion
Preliminary Delineation of Wetlands and Other Waters
January 2011

E Section 106 Consultation

E1 – Cultural Setting and Regulations

E2 – Native American Consultation Letters

E3 – Native American Heritage Commission Lists

E4 – Consultation Summary Results

E5 – Native American Correspondence

E6 – SHPO Consultation and Request for Concurrence

E7 – SHPO Concurrence Letter

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E-1 Cultural Setting & Regulations

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Regulatory and Cultural Setting for CVSR Project Area

The CVSR Site and Reconductoring project is affected by various laws, ordnances, orders and plans. In addition the resources contained within the APE, and potentially effected by the Project need to be assessed in the cultural context from which they were formed. The following text provides the various federal, state and local regulations that effect cultural and paleontological resources as pertaining to protection and mitigation. This is followed by a brief synopsis of the cultural setting which discusses the various periods of human habitation, how the California Valley was used during the prehistoric, ethnographic and historic periods, and provides the environment from which interpretation of the resources found during surveys for the Project are made.

E.1 Cultural and Paleontological Resources Regulatory Setting

Cultural and Paleontological resources are protected under a variety of federal, state, and local laws. Protection of these resources began in it's earliest form in 1906 with the passing of the Antiquities Act. Since that time efforts to preserve a record of the nation's natural and cultural history and prehistory have resulted in a network of executive orders, regulations, acts and standards that work to protect significant cultural and paleontological resources for future generations.

The following section outlines the federal, state, and local regulations governing the protection and treatment of cultural resources that are applicable to the CVSR project.

Federal

Code of Federal Regulations Title 36 Section 800

This statute protects historic properties and pertains to implementation of the regulations of Section 106 of the National Historic Preservation Act (NHPA). Section 106 requires federal agencies to take into account the effects of a proposed plan on historic properties.

National Environmental Policy Act: U.S. Code (USC), Title 42 Sections 4321 et seq.

This statute requires federal agencies to consider potential environmental impacts of projects with federal involvement and to consider appropriate mitigation measures.

Federal Land Policy and Management Act of 1976

This statute requires the Secretary of the Interior to retain and maintain public lands in a manner that will protect the quality of scientific, scenic, historic, ecological, environmental, and air and atmospheric water resources, as well as archaeological values.

Executive Order 11593

This order requires federal agencies to inventory their cultural resources and to record to professional standards, any cultural resource that may be altered or destroyed. It also mandates the protection and enhancement of the cultural environment through providing leadership,

establishing state offices of historic preservation, and developing criteria for assessing resource values.

Archaeological and Historic Preservation Act of 1974

This act addresses impacts to cultural resources that may result from federal activities that would significantly alter the landscape.

Executive Order 13007

This order requires that an agency allow Native Americans to worship at sacred sites located on federal property.

Executive Order 13175

This order requires federal agencies to coordinate and consult with Indian tribal governments whose interests might be directly and substantially affected by activities on federally administered lands.

Antiquities Act of 1906

This law made it illegal to remove cultural resources from any federal land without express permission to do so. This law also gave the President authority to establish historical monuments and landmarks.

National Historic Preservation Act

This NHPA was enacted in 1966 to preserve historical and archaeological sites. The Act requires federal agencies to evaluate the impact of all federally funded or permitted projects on historic properties through Section 106 Review. The Act established the Advisory Council on Historic Preservation, the State Historic Preservation Office, the National Register of Historic Places, the Section 106 review process, and the Standards and Guidelines for Archeology and Historic Preservation.

The previously listed federal regulations provide the policies that mandate the consideration of cultural resources; however, they do not provide guidance on what resources need to be protected and how research is to be conducted. Standards for cultural resources identification and recordation are established in the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation. This statute is a set of standards and guidelines for archaeology and historic preservation. They are considered the appropriate professional methods and techniques for the preservation of archaeological and historic properties and are used by all federal agencies. The California Office of Historic Preservation refers to these standards in their requirements for selection of qualified personnel and in the mitigation of potential impacts on cultural resources on public lands in California.

Section 106 of the National Historic Preservation Act

Section 106 of NHPA (16 United States Code [USC] 470f) requires federal agencies to take into account the effect of their undertakings on historic properties and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment. The Section 106 process normally includes the following steps:

1. Initiate the Section 106 process.
2. Identify historic properties.
3. Assess the effects of the undertaking on historic properties within the area of potential effects(APE).
4. If historic properties are subject to adverse effects, the State Historic Preservation Officer (SHPO), and any other consulting parties (including Native American tribes) consult to seek ways to avoid, minimize, or mitigate the adverse effect. A memorandum of agreement (MOA) is usually developed to document the measures agreed upon to resolve the adverse effects.
5. Proceed in accordance with the terms of the MOA.

Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (Federal Register V.48 N. 190 Part IV p. 44738-44739)

This statute is a set of standards and guidelines for archaeological and historical preservation. They are considered the appropriate professional methods and techniques for the preservation of archaeological and historic properties and are used by all federal agencies. The California Office of Historic Preservation refers to these standards in their requirements for selection of qualified personnel and in the mitigation of potential impacts on cultural resources on public lands in California.

Native American Graves Protection and Repatriation Act (1990): 25 USC Sections 3001 et seq.

This statute requires all federal agencies and museums receiving federal funds to inventory their collections, notify appropriate parties of sensitive collections, acknowledge requests from native groups for repatriation, review the collections and the requests, and, if appropriate, repatriate human remains, grave associations, sacred objects, and items of cultural patrimony to affiliated tribes or individuals. It establishes that Native American human remains legally belong to the nearest affiliated Indian tribe or family of known individuals, rather than with the owner of the land on which they were found. This statute also requires that archaeologists consult with land management officials prior to conducting field work on federal land or in a federal undertaking.

Executive Order 11593, May 13, 1971 (36 CFR 8921)

This order mandates the protection and enhancement of the cultural environment through providing leadership, establishing state offices of historic preservation, and developing criteria for assessing resource values.

American Indian Religious Freedom Act: Title 42, USC Section 1996

This statute protects Native American religious practices, ethnic heritage sites, and land uses.

Archaeological Resources Protection Act (ARPA) of 1979, Public Law 96-95; 16 USC 470aa-mm)

ARPA prohibits the excavation or removal of an archaeological resource from federal or traditional Native American lands without a permit from the appropriate land management agency. Under ARPA, the sale, purchase, exchange, transport, or possession of an archaeological resource removed without permission of the land management agency is forbidden. It also stipulates that the location and nature of archaeological resources be protected from public

disclosure to protect the resources from looting activities and other intentional damage. Violators convicted of violation of ARPA are subject to fine and imprisonment.

California State

Public Resources Code (PRC) Sections

5020–5024. These sections are statutes that pertain to the protection of historical resources.

5097.98 (b) and (e). These sections requires a landowner on whose property Native American human remains are found to limit further development activity in the vicinity until conferring with the most likely descendants (as identified by the Native American Heritage Commission) to consider treatment options.

5097.91–5097.991. These sections pertain to the establishment and authorities of the Native American Heritage Commission (NAHC). Sections 5097.91–5097.991 also prohibit the acquisition or possession of Native American artifacts or human remains taken from a Native American grave or cairn except in accordance with an agreement reached with the NAHC, and provide for Native American remains and associated grave artifacts to be repatriated.

5097.993–5097.994. These sections establish the Native American Historic Resource Protection Act, which makes it a misdemeanor crime for the unlawful and malicious excavation, removal, or destruction of Native American archaeological or historical sites on public or private lands.

6254 (r). This section established the California Public Records Act which protects Native American graves, cemeteries, and sacred places maintained by the Native American Heritage Commission by protecting records of such resources from public disclosure.

CEQA

21083.2. This section of the California Environmental Quality Act (CEQA) provides for protection of archaeological resources by directing the lead agency on any project undertaken, assisted, or permitted by the state to include in its environmental impact report for the project a determination of the project's effect on unique archaeological resources. It enables a lead agency to require an applicant to make reasonable efforts to preserve or mitigate impacts to any affected unique archaeological resource, and sets requirements for the applicant to provide payment to cover the costs of mitigation.

21084.1. This section of CEQA establishes that adverse effect on a historical resource qualifies as a significant effect on the environment.

25373, 37361. These sections allow city and county legislative bodies to acquire property for the preservation or development of a historic landmark. It allows local legislative bodies to enact ordnances to provide special conditions or regulations for the protection or enhancement of places or objects of special historical or aesthetic interest or value.

65092. This section provides for notice of projects in consideration for construction to be sent to California Native American tribes who are on the contact list maintained by the Native American Heritage Commission.

Health and Safety Code (HSC) Sections

7050 – 7054. These HSC sections are statutes that pertain to disturbance and removal of human remains, felony offenses related to human remains, and depositing human remains outside of a cemetery.

8010–8011. This HSC sections establishes the California Native American Grave Protection and Repatriation Act that is consistent with and facilitates implementation of the federal Native American Graves Protection and Repatriation Act

Senate Concurrent Resolutions

Number 43. This resolution requires all state agencies to cooperate with programs of archaeological survey and excavation, and to preserve known archaeological resources whenever this is reasonable.

Number 87. This resolution provides for the identification and protection of traditional Native American resource-gathering sites on state land.

Administrative Code, Title 14, Section 4307

This code states that no person shall remove, injure, deface, or destroy any object of paleontological, archaeological, or historical interest or value.

California Code of Regulations Section 1427

This code recognizes that California's archaeological resources are endangered by urban development and population growth and by natural forces. It declares that these resources need to be preserved in order to illuminate and increase public knowledge of the historic and prehistoric past of California.

Penal Code Section 622: Destruction of Sites

This code establishes as a misdemeanor the willful injury, disfiguration, defacement, or destruction of any object or thing of archaeological or historical interest or value, whether situated on private or public lands.

San Luis Obispo County

County Land Use Ordinances

The County Land Use Ordinances address the discovery and disposition of human remains. In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, the law requires that no further excavation or disturbance of the site, or any nearby area where human remains may be located, occur until:

1. The County Coroner has been informed and has determined that no investigation of the cause of death is required, and

2. If the remains are of Native American origin, the descendants from the deceased Native Americans have made a recommendation for the means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods.

If the discovery of human remains is in conjunction with a project requiring a permit from the County, then the County Environmental Coordinator must also be contacted. If the activity leading to the discovery does not require a County permit, the Environmental Coordinator can still provide assistance to the land owner.

County Conservation and Open Space Element

The Conservation and Open Space Element states as it's goals to honor the history and cultural diversity of the county, promote public awareness and support for the preservation of cultural resources, to preserve and protect the county's historical, Native America, archaeological and paleontological resources. To implement these goals the county has established a Cultural Resources Advisory Committee to guide the Board of Supervisors on the protection of such resources and implemented a Historic Preservation Ordinance to more effectively preserve Native American cultural sites, archaeological resources, protect and enhance historic buildings, prevent demolition or substantial changes in appearance of historically designated buildings and to promote restoration to historic buildings. The Open Space Element also stipulates the need for Native American participation in all phases of fieldwork and in development review, and stipulates the requirement for developments proposed within an archaeologically or historically sensitive area.

Land Use Element

The Land Use Element establishes the Voluntary Transfer of Development Credits program for which preservation of cultural resources is one of the objectives.

Kern County

Kern County General Plan, Section 1.10.3, Policy 25.

This portion of the General Plan provides that the County of Kern will promote the preservation of cultural and historic resources that provide ties with the past and constitute a heritage value to residents and visitors. There are five implementing measures (K through O). Included in these is a measure that states that the County

Planning Department will evaluate the necessity for the involvement of a qualified Native American monitor for grading and other construction activities on CEQA projects.

Kern County Code of Building Regulations Section 17.48.060.

Item 45 of this Section provides a definition of a historic structure as any structure that is on the NRHP, or on a State inventory in a state with a historic preservation plan approved by the Secretary of Interior.

Kern County Code of Building Regulations Section 17.48.370.

Subsection (B) provides that the County floodplain administrator is empowered to grant variances for the repair or rehabilitation of historic structures upon determination that the proposed repair or rehabilitation will not preclude the structure's continued designation as a historic structure and the variance is the minimum necessary to preserve the historic character of the structure.

Paleontological Regulations

Federal

Antiquities Act of 1906

The federal Antiquities Act of 1906 (16 USC 431–433) was enacted with the primary goal of protecting cultural resources in the United States. As such, it explicitly prohibits appropriation, excavation, injury, and destruction of "any historic or prehistoric ruin or monument, or any object of antiquity" located on lands owned or controlled by the federal government, without permission of the secretary of the federal department with jurisdiction. It also establishes criminal penalties, including fines and/or imprisonment, for these acts. The Antiquities Act institutes a requirement for appropriate studies by qualified experts and stipulations regarding the management/curation of collected materials. Neither the Antiquities Act itself nor its implementing regulations (43 CFR 3) specifically mentions paleontological resources. However, several federal agencies—including the National Park Service, the U.S. Bureau of Land Management, and the U.S. Department of Agriculture Forest Service—have interpreted objects of antiquity as including fossils. Consequently, the Antiquities Act represents an early cornerstone for efforts to protect the nation's paleontological resources.

National Environmental Policy Act

The National Environmental Policy Act (NEPA) does not provide specific guidance regarding paleontological resources, but the NEPA requirement that federal agencies take all practicable measures to "preserve important historic, cultural, and natural aspects of our national heritage" (42 USC 4331[b][4]) is interpreted as applying to paleontological materials. Under NEPA, paleontological resources are typically treated in a manner similar to that used for cultural resources.

State

California Environmental Quality Act

CEQA encourages the protection of all aspects of the environment by requiring state and local agencies to prepare multidisciplinary analyses of the environmental impacts of a proposed project and to make decisions based on the findings of those analyses.

CEQA includes in its definition of historical resources "any object [or] site …that has yielded or may be likely to yield information important in prehistory" (14 CCR 15064.5[3]), which is typically interpreted as including fossil materials and other paleontological resources. More specifically, destruction of a "unique paleontological resource or site or unique geologic feature" constitutes a significant impact under CEQA (State CEQA Guidelines Appendix G). CEQA does

not provide an explicit definition of a "unique paleontological resource," but a definition is implied by comparable language within the act relating to archeological resources: "As used in this section, 'unique archaeological resource' means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
2. Has a special and particular quality such as being the oldest of its type or the best available example of its type.
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person." (PRC 21083.2.)

Application of comparable criteria to paleontological resources would dictate comparable protection for scientifically important paleontological resources, including both potentially significant fossils and their geologic settings.

Treatment of paleontological resources under CEQA is generally similar to treatment of cultural resources, requiring evaluation of resources in the project; assessment of potential impacts on significant or unique resources; and development of mitigation measures for potentially significant

Administrative Code Title 14, Section 4307

The Administrative Code addresses removal, injury, defacement, or destruction of any object of paleontological value.

California Public Resources Code

Several sections of the California Public Resources Code protect paleontological resources. PRC 5097.5 prohibits "knowing and willful" excavation, removal, destruction, injury, and defacement of any "vertebrate paleontological site, including fossilized footprints" on public lands (defined as lands under state, county, city, district, or public authority jurisdiction, or the jurisdiction of a public corporation), except where the agency with jurisdiction has granted express permission. PRC 30244 requires reasonable mitigation for impacts on paleontological resources that occur as a result of development on public lands.

County

San Luis Obispo County Conservation and Open Space Element.

Policy CR 4.5 protects paleontological resources from development by recommending avoidance of a resource where feasible. The policy requires paleontological studies in the form of a resource assessment and mitigation plan to identify the extent and potential significance of resources that may exist within the proposed development and to provide mitigation measures to reduce the potential impacts when avoidance is not feasible. Paleontological monitoring is required in areas when resources are known or are likely to occur.

Kern County General Plan, Section 1.10.3, Policy 25.

This portion of the General Plan provides that the County of Kern will promote the preservation of cultural and historic resources that provide ties with the past and constitute a heritage value to residents and visitors. There are five implementing measures (K through O). Included in these is a measure that states that the preservation of paleontological resources should be addressed where feasible.

E.2 Cultural Setting

Prehistoric

The CVSR project would be located in an area historically occupied by the Obispeno, Chumash, Salinan, and Yokut Native Americans; however, the Carrizo Plain and surrounding area has been inhabited likely since the end of the last ice age during the Late Pleistocene 10,000 BP (before present). Sites of this antiquity are generally associated with lakes that formed in interior draining basins from the melting glaciers such as Soda Lake, less than four miles to the south of the southern CVSR project site boundary. Although sites from this age have long been identified in the nearby southern San Joaquin Valley, the first site with diagnostic artifacts attributed to the PaleoIndian Period have only recently been found in California Valley (Whitley, Loubser, et al. 2007).

The PaleoIndian Period is followed by the Millingstone Period (8500 to 4000 BP). This period is hallmarked by the widespread use of groundstone implements for food processing, and a diverse hunting strategy that seems to have been a secondary subsistence focus (Jones, et al. 2007). This period may represent a resource shift from predominantly meat protein to a greater emphasis on gathered plants and hard seeds as food sources (ICF International 2010c). Most Millingstone Period sites are located in coastal areas and the few inland sites dating to this period have yielded marine shell artifacts indicating either population movement from the coast, or trade relationships with coastal peoples (Jones, et al. 2007).

The Middle Period (4000 to 800 BP) has recently been identified as a period of population increase and expansion (Whitley, Loubser, et al. 2007; Whitley, Simon, et al. 2007). The material culture from this time period is hallmarked by the appearance of the hopper-mortar and mortar and pestle and is thought to indicate an emphasis on acorn processing (Moratto 1984). Recent work on land use patterning has indicated that Middle Period habitation sites are generally associated with terraces and ridges above streams and is thought to be :…the largest and densest concentration of habitation remains that we are aware of, away from the coast and islands, in south-central California."(Whitley, Simon, et al. 2007:5). While habitation sites are seen to be commonly associated with stream beds, Middle Period lithic scatters and foraging activities may have a pattern of occurring in peripheral upland areas. These areas have been noted to overlook the locations that yielded village deposits. Data for this hypothesis is still preliminary and not many of the upland areas within the valley have been subjected to archaeological study (Whitley, Loubser, et al. 2007).

The transition from the Middle Period to the Late Period (800-200 BP) correlates with the end of a drought and the lowest levels of water at Soda Lake than ever before during the varying climate during the 3200 year span of the Middle Period. The water level in Soda lake continued to drop until the lake desiccated by 1200BP (Whitley, Simon, et al. 2007). The landscape pattern attributed to Late Period sites is a preference for habitation sites to be adjacent to flowing springs (Whitley, Simon, et al. 2007). During this transition the population base in the California Valley also seems to have collapsed. Known Late Period sites comprise only 18% of all Middle and Late Period sites by number, and cover only 5% of the total acreage covered by known archaeological sites within the Carrizo Plain National Monument (Whitley, Simon, et al. 2007).

The Carrizo Plain is an area of active deposition. As described in Section 3.4: Geology and Soils, the project site is comprised of alluvial deposits dating to the Pleistocene and Holocene. These sediments are of an age that could be concealing cultural resources. A geoarchaeological assessment has been done for the region in which the project site is contained. This assessment has determined that the project site has the potential to have buried cultural resources they may not have a surface manifestation (ICF International 2010c).

Ethnographic

As stated above, the project site is located in an area historically utilized by the Chumash, Salinan, and Southern Valley Yokut Native Americans. The Carrizo Plain and surrounding foothills are still used today as a ceremonial place for Native Americans, and is considered sacred (ICF International 2010c). While the reservation system has artificially constrained the traditional habitation areas for the Native American groups of the region, the ethnographic record "…suggests that the Carrizo Plain was a region peripheral to the main areas of aboriginal inhabitation at the time of Euro-American contact…" (Whitley, Loubser, et al. 2007:9).

Historic

The history of the California Valley is poorly documented, but Euro-American use of the area has primarily focused on ranching and dry farming. The Homestead Act provided for people to purchase thousands of acres in the California Valley/Carrizo Plain area. The first Euro-American settlers to become established in the area arrived in 1885. During the 20th Century mineral extraction in the form of oil and gypsum and dry farming were the dominant land uses in the project area (Lange and Goodwin 2010). The CVSR project site was owned by Augusta C. Osmont who bought the property in the 1920's. The property was inherited by Adelia Sperry and Vance C. Osmont, Augusta's children, in 1932. The property was in the hands of Christian and Eleanor Twisselman by 1948, a major pioneer ranching and farming family. The Twisselman's were major land owners in San Luis Obispo County. The property is currently owned by Darrell Twisselman who has used the land for cattle grazing since the 1960's (Lange and Goodwin 2010).

E-2 Native American Consultation Letters

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Federally Recognized Tribes

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Department of Energy
Washington, DC 20585

NOV 30 2010

Honorable Vincente Arementa
Chairperson
Santa Ynez Band of Chumash Mission Indians of the Santa Ynez Reservation
P.O. Box 517
Santa Ynez, CA 93460

Re: Proposed California Valley Solar Ranch Project in San Luis Obispo and Kern Counties, California

Dear Chairperson Armenta,

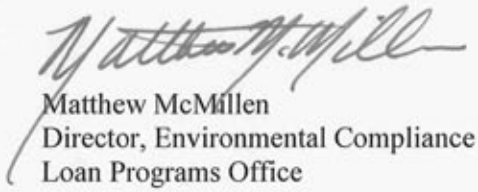
The U.S. Department of Energy (DOE) is evaluating the application of a company called High Plains Ranch II, LLC (aka "SunPower") for a loan guarantee to support construction and startup of SunPower's California Valley Solar Ranch (CVSR) project, a commercial 250 megawatt solar photovoltaic electricity generating project in southeastern San Luis Obispo County, California. The site is adjacent to the California Valley subdivision at the northeastern fringe of the Carrizo Plain. DOE will be performing an environmental review of the CVSR project in compliance with the National Environmental Policy Act (NEPA), and an historic resources review in compliance with Section 106 of the National Historic Preservation Act (NHPA).

Our records show that the Santa Ynez Band of Chumash Mission Indians of the Santa Ynez Reservation Tribe has expressed a historical interest in the area of the proposed project. I am writing this letter to extend an opportunity to the Santa Ynez Band of Chumash Mission Indians Tribe to engage DOE in government to government consultation on the proposed CVSR project. Consideration of any comments or concerns you provide, particularly with regard to sites of religious and cultural significance, will help ensure that DOE complies with its NEPA and NHPA Section 106 responsibilities.

The CVSR Project would be located on an approximately 4,365 acre site in an unincorporated area of eastern San Luis Obispo County, California. The Project would leave approximately 2,430 acres undisturbed and available for grazing. The Project, which is described in greater detail in Table 1 and shown on Figure 1, would be located on the Carrizo Plain about 2 miles north of the northern boundary of the Carrizo Plain National Monument. SunPower would clear approximately 1,935 acres of the site for construction, however given the mainly flat contour of the area, very little grading would be required. The power generated at the proposed facility would connect into the nearby existing PG&E Morro Bay-Midway 230-kilovolt (kV) transmission line. The Project would also require reconductoring of approximately 35 miles of the Morro Bay-Midway 230-kV transmission line in San Luis Obispo and Kern Counties. We want to give you the opportunity to raise any issues or concerns you may have regarding the proposed project site.

We would greatly appreciate receiving any comments or concerns you may have by December 31, 2010. Please send comments to me at the following address: U.S. Department of Energy, 1000 Independence Ave., SW, LP-10, Washington, DC 20585, or by email at matthew.mcmillen@hq.doe.gov. I can also be reached by telephone at 202-586-7248.

Respectfully,



Matthew McMillen
Director, Environmental Compliance
Loan Programs Office

Attachments

Department of Energy
Washington, DC 20585

NOV 30 2010

Honorable Ruben Barrios
Chairperson
Santa Rosa Rancheria (Tachi Yokut Tribe)
P.O. Box 8
Lemoore, California 93245

Re: Proposed California Valley Solar Ranch Project in San Luis Obispo and Kern Counties, California

Dear Chairperson Barrios,

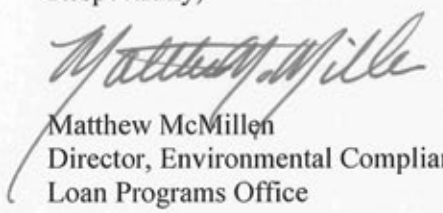
The U.S. Department of Energy (DOE) is evaluating the application of a company called High Plains Ranch II, LLC (aka "SunPower") for a loan guarantee to support construction and startup of SunPower's California Valley Solar Ranch (CVSR) project, a commercial 250 megawatt solar photovoltaic electricity generating project in southeastern San Luis Obispo County, California. The site is adjacent to the California Valley subdivision at the northeastern fringe of the Carrizo Plain. DOE will be performing an environmental review of the CVSR project in compliance with the National Environmental Policy Act (NEPA), and an historic resources review in compliance with Section 106 of the National Historic Preservation Act (NHPA).

Our records show that the Tachi Yokut Tribe has expressed a historical interest in the area of the proposed project. I am writing this letter to extend an opportunity to the Tachi Yokut Tribe to engage DOE in government to government consultation on the proposed CVSR project. Consideration of any comments or concerns you provide, particularly with regard to sites of religious and cultural significance, will help ensure that DOE complies with its NEPA and NHPA Section 106 responsibilities.

The CVSR Project would be located on an approximately 4,365 acre site in an unincorporated area of eastern San Luis Obispo County, California. The Project would leave approximately 2,430 acres undisturbed and available for grazing. The Project, which is described in greater detail in Table 1 and shown on Figure 1, would be located on the Carrizo Plain about 2 miles north of the northern boundary of the Carrizo Plain National Monument. SunPower would clear approximately 1,935 acres of the site for construction, however given the mainly flat contour of the area, very little grading would be required. The power generated at the proposed facility would connect into the nearby existing PG&E Morro Bay-Midway 230-kilovolt (kV) transmission line. The Project would also require reconductoring of approximately 35 miles of the Morro Bay-Midway 230-kV transmission line in San Luis Obispo and Kern Counties. We want to give you the opportunity to raise any issues or concerns you may have regarding the proposed project site.

We would greatly appreciate receiving any comments or concerns you may have by December 31, 2010. Please send comments to me at the following address: U.S. Department of Energy, 1000 Independence Ave., SW, LP-10, Washington, DC 20585, or by email at matthew.mcmillen@hq.doe.gov. I can also be reached by telephone at 202-586-7248.

Respectfully,



Matthew McMillen
Director, Environmental Compliance
Loan Programs Office

Attachments

State Recognized Tribes

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Department of Energy
Washington, DC 20585

NOV 30 2010

Arianne Garcia
Chairperson
Chumash Council of Bakersfield
P.O. Box 902
Bakersfield, California 93302

Re: Proposed California Valley Solar Ranch Project in San Luis Obispo and Kern Counties, California

Dear Chairperson Garcia,

The U.S. Department of Energy (DOE) is evaluating the application of a company called High Plains Ranch II, LLC (aka "SunPower") for a loan guarantee to support construction and startup of SunPower's California Valley Solar Ranch (CVSR) project, a commercial 250 megawatt solar photovoltaic electricity generating project in southeastern San Luis Obispo County California. The site is adjacent to the California Valley subdivision at the northeastern fringe of the Carrizo Plain. DOE will be performing an environmental review of the CVSR project in compliance with the National Environmental Policy Act (NEPA), and an historic resources review in compliance with Section 106 of the National Historic Preservation Act (NHPA).

The California Native American Heritage Commission provided your name as an individual who may have knowledge of cultural resources in the project area. Any information you can provide regarding such resources will help ensure that DOE complies with its NEPA and NHPA Section 106 responsibilities.

The CVSR Project would be located on an approximately 4,365 acre site in an unincorporated area of eastern San Luis Obispo County, California. The Project would leave approximately 2,430 acres undisturbed and available for grazing. The Project, which is described in greater detail in Table 1 and shown on Figure 1, would be located on the Carrizo Plain about 2 miles north of the northern boundary of the Carrizo Plain National Monument. SunPower would clear approximately 1,935 acres of the site for construction, however given the mainly flat contour of the area, very little grading would be required. The power generated at the proposed facility would connect into the nearby existing PG&E Morro Bay-Midway 230-kilovolt (kV) transmission line. The Project would also require reconductoring of approximately 35 miles of the Morro Bay-Midway 230-kV transmission line in San Luis Obispo and Kern Counties. We want you to have the opportunity to share any information you may have regarding the site.

We would greatly appreciate receiving any information you may have by December 31, 2010. Please send comments to me at the following address: U.S. Department of Energy, 1000 Independence Ave., SW, LP-10, Washington, DC 20585, or by email at Lynn.Alexander@hq.doe.gov. I can also be reached by telephone at 202-287-5656.

Respectfully,

Lynn Alexander
Environmental Protection Specialist
Loan Programs Office

Attachments

Department of Energy
Washington, DC 20585

NOV 30 2010

Carol A. Pulido
165 Mountainview Street
Oak View, California 93022

Re: Proposed California Valley Solar Ranch Project in San Luis Obispo and Kern Counties, California

Dear Ms. Pulido,

The U.S. Department of Energy (DOE) is evaluating the application of a company called High Plains Ranch II, LLC (aka "SunPower") for a loan guarantee to support construction and startup of SunPower's California Valley Solar Ranch (CVSR) project, a commercial 250 megawatt solar photovoltaic electricity generating project in southeastern San Luis Obispo County California. The site is adjacent to the California Valley subdivision at the northeastern fringe of the Carrizo Plain. DOE will be performing an environmental review of the CVSR project in compliance with the National Environmental Policy Act (NEPA), and an historic resources review in compliance with Section 106 of the National Historic Preservation Act (NHPA).

The California Native American Heritage Commission provided your name as an individual who may have knowledge of cultural resources in the project area. Any information you can provide regarding such resources will help ensure that DOE complies with its NEPA and NHPA Section 106 responsibilities.

The CVSR Project would be located on an approximately 4,365 acre site in an unincorporated area of eastern San Luis Obispo County, California. The Project would leave approximately 2,430 acres undisturbed and available for grazing. The Project, which is described in greater detail in Table 1 and shown on Figure 1, would be located on the Carrizo Plain about 2 miles north of the northern boundary of the Carrizo Plain National Monument. SunPower would clear approximately 1,935 acres of the site for construction, however given the mainly flat contour of the area, very little grading would be required. The power generated at the proposed facility would connect into the nearby existing PG&E Morro Bay-Midway 230-kilovolt (kV) transmission line. The Project would also require reconductoring of approximately 35 miles of the Morro Bay-Midway 230-kV transmission line in San Luis Obispo and Kern Counties. We want you to have the opportunity to share any information you may have regarding the site.

We would greatly appreciate receiving any information you may have by December 31, 2010. Please send comments to me at the following address: U.S. Department of Energy, 1000 Independence Ave., SW, LP-10, Washington, DC 20585, or by email at Lynn.Alexander@hq.doe.gov. I can also be reached by telephone at 202-287-5656.

Respectfully,

Lynn Alexander
Environmental Protection Specialist
Loan Programs Office

Attachments

Department of Energy
Washington, DC 20585

NOV 30 2010

Donna Begay
Tribal Chairwoman
Tubatulabals of Kern Valley
P.O. Box 226
Lake Isabella, California 93240

Re: Proposed California Valley Solar Ranch Project in San Luis Obispo and Kern Counties, California

Dear Chair Woman Begay,

The U.S. Department of Energy (DOE) is evaluating the application of a company called High Plains Ranch II, LLC (aka "SunPower") for a loan guarantee to support construction and startup of SunPower's California Valley Solar Ranch (CVSR) project, a commercial 250 megawatt solar photovoltaic electricity generating project in southeastern San Luis Obispo County California. The site is adjacent to the California Valley subdivision at the northeastern fringe of the Carrizo Plain. DOE will be performing an environmental review of the CVSR project in compliance with the National Environmental Policy Act (NEPA), and an historic resources review in compliance with Section 106 of the National Historic Preservation Act (NHPA).

The California Native American Heritage Commission provided your name as an individual who may have knowledge of cultural resources in the project area. Any information you can provide regarding such resources will help ensure that DOE complies with its NEPA and NHPA Section 106 responsibilities.

The CVSR Project would be located on an approximately 4,365 acre site in an unincorporated area of eastern San Luis Obispo County, California. The Project would leave approximately 2,430 acres undisturbed and available for grazing. The Project, which is described in greater detail in Table 1 and shown on Figure 1, would be located on the Carrizo Plain about 2 miles north of the northern boundary of the Carrizo Plain National Monument. SunPower would clear approximately 1,935 acres of the site for construction, however given the mainly flat contour of the area, very little grading would be required. The power generated at the proposed facility would connect into the nearby existing PG&E Morro Bay-Midway 230-kilovolt (kV) transmission line. The Project would also require reconductoring of approximately 35 miles of the Morro Bay-Midway 230-kV transmission line in San Luis Obispo and Kern Counties. We want you to have the opportunity to share any information you may have regarding the site.

We would greatly appreciate receiving any information you may have by December 31, 2010. Please send comments to me at the following address: U.S. Department of Energy, 1000 Independence Ave., SW, LP-10, Washington, DC 20585, or by email at Lynn.Alexander@hq.doe.gov. I can also be reached by telephone at 202-287-5656.

Respectfully,

Lynn Alexander
Environmental Protection Specialist
Loan Programs Office

Attachments

Department of Energy
Washington, DC 20585

NOV 30 2010

Julie Lynn Tumamait
365 North Poli Avenue
Ojai, California 93023

Re: Proposed California Valley Solar Ranch Project in San Luis Obispo and Kern Counties, California

Dear Ms. Tumamait,

The U.S. Department of Energy (DOE) is evaluating the application of a company called High Plains Ranch II, LLC (aka "SunPower") for a loan guarantee to support construction and startup of SunPower's California Valley Solar Ranch (CVSR) project, a commercial 250 megawatt solar photovoltaic electricity generating project in southeastern San Luis Obispo County California. The site is adjacent to the California Valley subdivision at the northeastern fringe of the Carrizo Plain. DOE will be performing an environmental review of the CVSR project in compliance with the National Environmental Policy Act (NEPA), and an historic resources review in compliance with Section 106 of the National Historic Preservation Act (NHPA).

The California Native American Heritage Commission provided your name as an individual who may have knowledge of cultural resources in the project area. Any information you can provide regarding such resources will help ensure that DOE complies with its NEPA and NHPA Section 106 responsibilities.

The CVSR Project would be located on an approximately 4,365 acre site in an unincorporated area of eastern San Luis Obispo County, California. The Project would leave approximately 2,430 acres undisturbed and available for grazing. The Project, which is described in greater detail in Table 1 and shown on Figure 1, would be located on the Carrizo Plain about 2 miles north of the northern boundary of the Carrizo Plain National Monument. SunPower would clear approximately 1,935 acres of the site for construction, however given the mainly flat contour of the area, very little grading would be required. The power generated at the proposed facility would connect into the nearby existing PG&E Morro Bay-Midway 230-kilovolt (kV) transmission line. The Project would also require reconductoring of approximately 35 miles of the Morro Bay-Midway 230-kV transmission line in San Luis Obispo and Kern Counties. We want you to have the opportunity to share any information you may have regarding the site.

We would greatly appreciate receiving any information you may have by December 31, 2010. Please send comments to me at the following address: U.S. Department of Energy, 1000 Independence Ave., SW, LP-10, Washington, DC 20585, or by email at Lynn.Alexander@hq.doe.gov. I can also be reached by telephone at 202-287-5656.

Respectfully,

Lynn Alexander
Environmental Protection Specialist
Loan Programs Office

Attachments

Department of Energy
Washington, DC 20585

NOV 30 2010

Honorable Mark Steven Vigil
Chief
San Luis Obispo County Chumash Council
1030 Ritchie Road
Grover Beach, California 93433

Re: Proposed California Valley Solar Ranch Project in San Luis Obispo and Kern Counties, California

Dear Chief Vigil,

The U.S. Department of Energy (DOE) is evaluating the application of a company called High Plains Ranch II, LLC (aka "SunPower") for a loan guarantee to support construction and startup of SunPower's California Valley Solar Ranch (CVSR) project, a commercial 250 megawatt solar photovoltaic electricity generating project in southeastern San Luis Obispo County California. The site is adjacent to the California Valley subdivision at the northeastern fringe of the Carrizo Plain. DOE will be performing an environmental review of the CVSR project in compliance with the National Environmental Policy Act (NEPA), and an historic resources review in compliance with Section 106 of the National Historic Preservation Act (NHPA).

The California Native American Heritage Commission provided your name as an individual who may have knowledge of cultural resources in the project area. Any information you can provide regarding such resources will help ensure that DOE complies with its NEPA and NHPA Section 106 responsibilities.

The CVSR Project would be located on an approximately 4,365 acre site in an unincorporated area of eastern San Luis Obispo County, California. The Project would leave approximately 2,430 acres undisturbed and available for grazing. The Project, which is described in greater detail in Table 1 and shown on Figure 1, would be located on the Carrizo Plain about 2 miles north of the northern boundary of the Carrizo Plain National Monument. SunPower would clear approximately 1,935 acres of the site for construction, however given the mainly flat contour of the area, very little grading would be required. The power generated at the proposed facility would connect into the nearby existing PG&E Morro Bay-Midway 230-kilovolt (kV) transmission line. The Project would also require reconductoring of approximately 35 miles of the Morro Bay-Midway 230-kV transmission line in San Luis Obispo and Kern Counties.
We want you to have the opportunity to share any information you may have regarding the site.

We would greatly appreciate receiving any information you may have by December 31, 2010. Please send comments to me at the following address: U.S. Department of Energy, 1000 Independence Ave., SW, LP-10, Washington, DC 20585, or by email at Lynn.Alexander@hq.doe.gov. I can also be reached by telephone at 202-287-5656.

Respectfully,

Lynn Alexander
Environmental Protection Specialist
Loan Programs Office

Attachments

Department of Energy
Washington, DC 20585

NOV 30 2010

Peggy Odom
Chumash Tribe
1339 24th Street
Oceano, California 93445

Re: Proposed California Valley Solar Ranch Project in San Luis Obispo and Kern Counties, California

Dear Ms. Odom,

The U.S. Department of Energy (DOE) is evaluating the application of a company called High Plains Ranch II, LLC (aka "SunPower") for a loan guarantee to support construction and startup of SunPower's California Valley Solar Ranch (CVSR) project, a commercial 250 megawatt solar photovoltaic electricity generating project in southeastern San Luis Obispo County California. The site is adjacent to the California Valley subdivision at the northeastern fringe of the Carrizo Plain. DOE will be performing an environmental review of the CVSR project in compliance with the National Environmental Policy Act (NEPA), and an historic resources review in compliance with Section 106 of the National Historic Preservation Act (NHPA).

The California Native American Heritage Commission provided your name as an individual who may have knowledge of cultural resources in the project area. Any information you can provide regarding such resources will help ensure that DOE complies with its NEPA and NHPA Section 106 responsibilities.

The CVSR Project would be located on an approximately 4,365 acre site in an unincorporated area of eastern San Luis Obispo County, California. The Project would leave approximately 2,430 acres undisturbed and available for grazing. The Project, which is described in greater detail in Table 1 and shown on Figure 1, would be located on the Carrizo Plain about 2 miles north of the northern boundary of the Carrizo Plain National Monument. SunPower would clear approximately 1,935 acres of the site for construction, however given the mainly flat contour of the area, very little grading would be required. The power generated at the proposed facility would connect into the nearby existing PG&E Morro Bay-Midway 230-kilovolt (kV) transmission line. The Project would also require reconductoring of approximately 35 miles of the Morro Bay-Midway 230-kV transmission line in San Luis Obispo and Kern Counties. We want you to have the opportunity to share any information you may have regarding the site.

We would greatly appreciate receiving any information you may have by December 31, 2010. Please send comments to me at the following address: U.S. Department of Energy, 1000 Independence Ave., SW, LP-10, Washington, DC 20585, or by email at Lynn.Alexander@hq.doe.gov. I can also be reached by telephone at 202-287-5656.

Respectfully,

Lynn Alexander
Environmental Protection Specialist
Loan Programs Office

Attachments

Department of Energy
Washington, DC 20585

NOV 30 2010

Frank Arredondo
P.O. Box 161
Santa Barbara, California 93102

Re: Proposed California Valley Solar Ranch Project in San Luis Obispo and Kern Counties, California

Dear Mr. Arrendondo,

The U.S. Department of Energy (DOE) is evaluating the application of a company called High Plains Ranch II, LLC (aka "SunPower") for a loan guarantee to support construction and startup of SunPower's California Valley Solar Ranch (CVSR) project, a commercial 250 megawatt solar photovoltaic electricity generating project in southeastern San Luis Obispo County California. The site is adjacent to the California Valley subdivision at the northeastern fringe of the Carrizo Plain. DOE will be performing an environmental review of the CVSR project in compliance with the National Environmental Policy Act (NEPA), and an historic resources review in compliance with Section 106 of the National Historic Preservation Act (NHPA).

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Respectfully,

Lynn Alexander
Environmental Protection Specialist
Loan Programs Office

Attachments

Department of Energy
Washington, DC 20585

NOV 30 2010

Beverly Salazar Folkes
1931 Shadybrook Drive
Thousand Oaks, California 91362

Re: Proposed California Valley Solar Ranch Project in San Luis Obispo and Kern Counties, California

Dear Ms. Folkes,

The U.S. Department of Energy (DOE) is evaluating the application of a company called High Plains Ranch II, LLC (aka "SunPower") for a loan guarantee to support construction and startup of SunPower's California Valley Solar Ranch (CVSR) project, a commercial 250 megawatt solar photovoltaic electricity generating project in southeastern San Luis Obispo County California. The site is adjacent to the California Valley subdivision at the northeastern fringe of the Carrizo Plain. DOE will be performing an environmental review of the CVSR project in compliance with the National Environmental Policy Act (NEPA), and an historic resources review in compliance with Section 106 of the National Historic Preservation Act (NHPA).

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Respectfully,

Lynn Alexander
Environmental Protection Specialist
Loan Programs Office

Attachments

Department of Energy
Washington, DC 20585

NOV 30 2010

Lei Lynn Odom
1339 24th Street
Oceano, California 93445

Re: Proposed California Valley Solar Ranch Project in San Luis Obispo and Kern Counties, California

Dear Ms. Odom,

The U.S. Department of Energy (DOE) is evaluating the application of a company called High Plains Ranch II, LLC (aka "SunPower") for a loan guarantee to support construction and startup of SunPower's California Valley Solar Ranch (CVSR) project, a commercial 250 megawatt solar photovoltaic electricity generating project in southeastern San Luis Obispo County California. The site is adjacent to the California Valley subdivision at the northeastern fringe of the Carrizo Plain. DOE will be performing an environmental review of the CVSR project in compliance with the National Environmental Policy Act (NEPA), and an historic resources review in compliance with Section 106 of the National Historic Preservation Act (NHPA).

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Respectfully,

Lynn Alexander
Environmental Protection Specialist
Loan Programs Office

Attachments

Department of Energy
Washington, DC 20585

NOV 30 2010

Diane Napoleone
Diane Napolenon and Associates
1433 Camino Trillado
Carpinteria, California 93013

Re: Proposed California Valley Solar Ranch Project in San Luis Obispo and Kern Counties, California

Dear Ms. Napolenon,

The U.S. Department of Energy (DOE) is evaluating the application of a company called High Plains Ranch II, LLC (aka "SunPower") for a loan guarantee to support construction and startup of SunPower's California Valley Solar Ranch (CVSR) project, a commercial 250 megawatt solar photovoltaic electricity generating project in southeastern San Luis Obispo County California. The site is adjacent to the California Valley subdivision at the northeastern fringe of the Carrizo Plain. DOE will be performing an environmental review of the CVSR project in compliance with the National Environmental Policy Act (NEPA), and an historic resources review in compliance with Section 106 of the National Historic Preservation Act (NHPA).

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Respectfully,

Lynn Alexander
Environmental Protection Specialist
Loan Programs Office

Attachments

Department of Energy
Washington, DC 20585

NOV 30 2010

Randy Guzman-Folkes
655 Los Angeles Avenue, Unit E
Moorpark, California 93021

Re: Proposed California Valley Solar Ranch Project in San Luis Obispo and Kern Counties, California

Dear Mr. Guzman-Folkes,

The U.S. Department of Energy (DOE) is evaluating the application of a company called High Plains Ranch II, LLC (aka "SunPower") for a loan guarantee to support construction and startup of SunPower's California Valley Solar Ranch (CVSR) project, a commercial 250 megawatt solar photovoltaic electricity generating project in southeastern San Luis Obispo County California. The site is adjacent to the California Valley subdivision at the northeastern fringe of the Carrizo Plain. DOE will be performing an environmental review of the CVSR project in compliance with the National Environmental Policy Act (NEPA), and an historic resources review in compliance with Section 106 of the National Historic Preservation Act (NHPA).

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Respectfully,

Lynn Alexander
Environmental Protection Specialist
Loan Programs Office

Attachments

Department of Energy
Washington, DC 20585

NOV 30 2010

Janet Garcia
Chairperson
Coastal Band of the Chumash Nation
P.O. Box 4464
Santa Barbara, California 93140

Re: Proposed California Valley Solar Ranch Project in San Luis Obispo and Kern Counties, California

Dear Chairperson Garcia,

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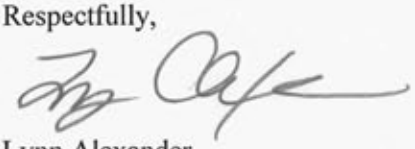

Lynn Alexander
Environmental Protection Specialist
Loan Programs Office

Attachments

Department of Energy
Washington, DC 20585

NOV 30 2010

Mona Olivas Tucker
660 Camino Del Ray
Arroyo Grande, California 93420

Re: Proposed California Valley Solar Ranch Project in San Luis Obispo and Kern Counties, California

Dear Ms. Tucker,

The U.S. Department of Energy (DOE) is evaluating the application of a company called High Plains Ranch II, LLC (aka "SunPower") for a loan guarantee to support construction and startup of SunPower's California Valley Solar Ranch (CVSR) project, a commercial 250 megawatt solar photovoltaic electricity generating project in southeastern San Luis Obispo County California. The site is adjacent to the California Valley subdivision at the northeastern fringe of the Carrizo Plain. DOE will be performing an environmental review of the CVSR project in compliance with the National Environmental Policy Act (NEPA), and an historic resources review in compliance with Section 106 of the National Historic Preservation Act (NHPA).

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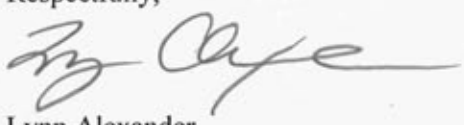

Lynn Alexander
Environmental Protection Specialist
Loan Programs Office

Attachments

Department of Energy
Washington, DC 20585

NOV 30 2010

Matthew Darian Goldman
495 Mentone
Grover Beach, California 93433

Re: Proposed California Valley Solar Ranch Project in San Luis Obispo and Kern Counties, California

Dear Mr. Goldman,

The U.S. Department of Energy (DOE) is evaluating the application of a company called High Plains Ranch II, LLC (aka "SunPower") for a loan guarantee to support construction and startup of SunPower's California Valley Solar Ranch (CVSR) project, a commercial 250 megawatt solar photovoltaic electricity generating project in southeastern San Luis Obispo County California. The site is adjacent to the California Valley subdivision at the northeastern fringe of the Carrizo Plain. DOE will be performing an environmental review of the CVSR project in compliance with the National Environmental Policy Act (NEPA), and an historic resources review in compliance with Section 106 of the National Historic Preservation Act (NHPA).

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Respectfully,

Lynn Alexander
Environmental Protection Specialist
Loan Programs Office

Attachments

Department of Energy
Washington, DC 20585

NOV 30 2010

Sam Cohen
Tribal Administrator
Santa Ynez Band of Mission Elders
P.O. Box 517
Santa Ynez, California 93460

Re: Proposed California Valley Solar Ranch Project in San Luis Obispo and Kern Counties, California

Dear Mr. Cohen,

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Respectfully,

Lynn Alexander
Environmental Protection Specialist
Loan Programs Office

Attachments

Department of Energy
Washington, DC 20585

NOV 30 2010

Xielolixii
Salinan-Chumash Nation
3901 Q Street, Suite 31B
Bakersfield, California 93301

Re: Proposed California Valley Solar Ranch Project in San Luis Obispo and Kern Counties, California

Dear Xielolixii,

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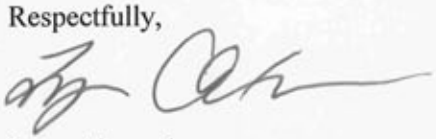

Lynn Alexander
Environmental Protection Specialist
Loan Programs Office

Attachments

Department of Energy
Washington, DC 20585

NOV 30 2010

Jose Freeman
Salinan Nation Cultural Preservation Association
15200 County Road, 96B
Woodland, California 95695

Re: Proposed California Valley Solar Ranch Project in San Luis Obispo and Kern Counties, California

Dear Mr. Freeman,

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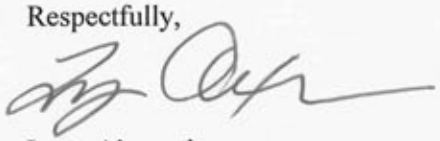

Lynn Alexander
Environmental Protection Specialist
Loan Programs Office

Attachments

Department of Energy
Washington, DC 20585

NOV 30 2010

Donna Haro
Xolon Salinan Tribe
110 Jefferson Street
Bay Point, California 94565

Re: Proposed California Valley Solar Ranch Project in San Luis Obispo and Kern Counties, California

Dear Ms. Haro,

The U.S. Department of Energy (DOE) is evaluating the application of a company called High Plains Ranch II, LLC (aka "SunPower") for a loan guarantee to support construction and startup of SunPower's California Valley Solar Ranch (CVSR) project, a commercial 250 megawatt solar photovoltaic electricity generating project in southeastern San Luis Obispo County California. The site is adjacent to the California Valley subdivision at the northeastern fringe of the Carrizo Plain. DOE will be performing an environmental review of the CVSR project in compliance with the National Environmental Policy Act (NEPA), and an historic resources review in compliance with Section 106 of the National Historic Preservation Act (NHPA).

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The CVSR Project would be located on an approximately 4,365 acre site in an unincorporated area of eastern San Luis Obispo County, California. The Project would leave approximately 2,430 acres undisturbed and available for grazing. The Project, which is described in greater detail in Table 1 and shown on Figure 1, would be located on the Carrizo Plain about 2 miles north of the northern boundary of the Carrizo Plain National Monument. SunPower would clear approximately 1,935 acres of the site for construction, however given the mainly flat contour of the area, very little grading would be required. The power generated at the proposed facility would connect into the nearby existing PG&E Morro Bay-Midway 230-kilovolt (kV) transmission line. The Project would also require reconductoring of approximately 35 miles of the Morro Bay-Midway 230-kV transmission line in San Luis Obispo and Kern Counties. We want you to have the opportunity to share any information you may have regarding the site.

We would greatly appreciate receiving any information you may have by December 31, 2010. Please send comments to me at the following address: U.S. Department of Energy, 1000 Independence Ave., SW, LP-10, Washington, DC 20585, or by email at Lynn.Alexander@hq.doe.gov. I can also be reached by telephone at 202-287-5656.

Respectfully,

Lynn Alexander
Environmental Protection Specialist
Loan Programs Office

Attachments

Department of Energy
Washington, DC 20585

NOV 30 2010

Doug Alger
Cultural Resources Coordinator
Salinan Nation Cultural Preservation Association
P.O. Box 56
Lockwood, California 93932

Re: Proposed California Valley Solar Ranch Project in San Luis Obispo and Kern Counties, California

Dear Mr. Alger,

The U.S. Department of Energy (DOE) is evaluating the application of a company called High Plains Ranch II, LLC (aka "SunPower") for a loan guarantee to support construction and startup of SunPower's California Valley Solar Ranch (CVSR) project, a commercial 250 megawatt solar photovoltaic electricity generating project in southeastern San Luis Obispo County California. The site is adjacent to the California Valley subdivision at the northeastern fringe of the Carrizo Plain. DOE will be performing an environmental review of the CVSR project in compliance with the National Environmental Policy Act (NEPA), and an historic resources review in compliance with Section 106 of the National Historic Preservation Act (NHPA).

The California Native American Heritage Commission provided your name as an individual who may have knowledge of cultural resources in the project area. Any information you can provide regarding such resources will help ensure that DOE complies with its NEPA and NHPA Section 106 responsibilities.

The CVSR Project would be located on an approximately 4,365 acre site in an unincorporated area of eastern San Luis Obispo County, California. The Project would leave approximately 2,430 acres undisturbed and available for grazing. The Project, which is described in greater detail in Table 1 and shown on Figure 1, would be located on the Carrizo Plain about 2 miles north of the northern boundary of the Carrizo Plain National Monument. SunPower would clear approximately 1,935 acres of the site for construction, however given the mainly flat contour of the area, very little grading would be required. The power generated at the proposed facility would connect into the nearby existing PG&E Morro Bay-Midway 230-kilovolt (kV) transmission line. The Project would also require reconductoring of approximately 35 miles of the Morro Bay-Midway 230-kV transmission line in San Luis Obispo and Kern Counties. We want you to have the opportunity to share any information you may have regarding the site.

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Respectfully,

Lynn Alexander
Environmental Protection Specialist
Loan Programs Office

Attachments

Department of Energy
Washington, DC 20585

NOV 30 2010

Gregg Castro
Administrator
Salinan Nation Cultural Preservation Association
5225 Roeder Road
San Jose, California 95111

Re: Proposed California Valley Solar Ranch Project in San Luis Obispo and Kern Counties, California

Dear Mr. Castro,

The U.S. Department of Energy (DOE) is evaluating the application of a company called High Plains Ranch II, LLC (aka "SunPower") for a loan guarantee to support construction and startup of SunPower's California Valley Solar Ranch (CVSR) project, a commercial 250 megawatt solar photovoltaic electricity generating project in southeastern San Luis Obispo County California. The site is adjacent to the California Valley subdivision at the northeastern fringe of the Carrizo Plain. DOE will be performing an environmental review of the CVSR project in compliance with the National Environmental Policy Act (NEPA), and an historic resources review in compliance with Section 106 of the National Historic Preservation Act (NHPA).

The California Native American Heritage Commission provided your name as an individual who may have knowledge of cultural resources in the project area. Any information you can provide regarding such resources will help ensure that DOE complies with its NEPA and NHPA Section 106 responsibilities.

The CVSR Project would be located on an approximately 4,365 acre site in an unincorporated area of eastern San Luis Obispo County, California. The Project would leave approximately 2,430 acres undisturbed and available for grazing. The Project, which is described in greater detail in Table 1 and shown on Figure 1, would be located on the Carrizo Plain about 2 miles north of the northern boundary of the Carrizo Plain National Monument. SunPower would clear approximately 1,935 acres of the site for construction, however given the mainly flat contour of the area, very little grading would be required. The power generated at the proposed facility would connect into the nearby existing PG&E Morro Bay-Midway 230-kilovolt (kV) transmission line. The Project would also require reconductoring of approximately 35 miles of the Morro Bay-Midway 230-kV transmission line in San Luis Obispo and Kern Counties. We want you to have the opportunity to share any information you may have regarding the site.

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Respectfully,

Lynn Alexander
Environmental Protection Specialist
Loan Programs Office

Attachments

Department of Energy
Washington, DC 20585

NOV 30 2010

John W. Burch
Chairperson
Salinan Tribe of Monterey,
San Luis Obispo Counties
7070 Morrow Road, #A
Atascadero, California 93422

Re: Proposed California Valley Solar Ranch Project in San Luis Obispo and Kern Counties, California

Dear Chairperson Burch,

The U.S. Department of Energy (DOE) is evaluating the application of a company called High Plains Ranch II, LLC (aka "SunPower") for a loan guarantee to support construction and startup of SunPower's California Valley Solar Ranch (CVSR) project, a commercial 250 megawatt solar photovoltaic electricity generating project in southeastern San Luis Obispo County California. The site is adjacent to the California Valley subdivision at the northeastern fringe of the Carrizo Plain. DOE will be performing an environmental review of the CVSR project in compliance with the National Environmental Policy Act (NEPA), and an historic resources review in compliance with Section 106 of the National Historic Preservation Act (NHPA).

The California Native American Heritage Commission provided your name as an individual who may have knowledge of cultural resources in the project area. Any information you can provide regarding such resources will help ensure that DOE complies with its NEPA and NHPA Section 106 responsibilities.

The CVSR Project would be located on an approximately 4,365 acre site in an unincorporated area of eastern San Luis Obispo County, California. The Project would leave approximately 2,430 acres undisturbed and available for grazing. The Project, which is described in greater detail in Table 1 and shown on Figure 1, would be located on the Carrizo Plain about 2 miles north of the northern boundary of the Carrizo Plain National Monument. SunPower would clear approximately 1,935 acres of the site for construction, however given the mainly flat contour of the area, very little grading would be required. The power generated at the proposed facility would connect into the nearby existing PG&E Morro Bay-Midway 230-kilovolt (kV) transmission line. The Project would also require reconductoring of approximately 35 miles of the Morro Bay-Midway 230-kV transmission line in San Luis Obispo and Kern Counties.
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Respectfully,

Lynn Alexander
Environmental Protection Specialist
Loan Programs Office

Attachments

Department of Energy
Washington, DC 20585

NOV 30 2010

Adelina Alva-Padilla
Chair Woman
Santa Ynez Tribal Elders Council
P.O. Box 365
Santa Ynez, California 93460

Re: Proposed California Valley Solar Ranch Project in San Luis Obispo and Kern Counties, California

Dear Chair Woman Alva-Padilla,

The U.S. Department of Energy (DOE) is evaluating the application of a company called High Plains Ranch II, LLC (aka "SunPower") for a loan guarantee to support construction and startup of SunPower's California Valley Solar Ranch (CVSR) project, a commercial 250 megawatt solar photovoltaic electricity generating project in southeastern San Luis Obispo County California. The site is adjacent to the California Valley subdivision at the northeastern fringe of the Carrizo Plain. DOE will be performing an environmental review of the CVSR project in compliance with the National Environmental Policy Act (NEPA), and an historic resources review in compliance with Section 106 of the National Historic Preservation Act (NHPA).

The California Native American Heritage Commission provided your name as an individual who may have knowledge of cultural resources in the project area. Any information you can provide regarding such resources will help ensure that DOE complies with its NEPA and NHPA Section 106 responsibilities.

The CVSR Project would be located on an approximately 4,365 acre site in an unincorporated area of eastern San Luis Obispo County, California. The Project would leave approximately 2,430 acres undisturbed and available for grazing. The Project, which is described in greater detail in Table 1 and shown on Figure 1, would be located on the Carrizo Plain about 2 miles north of the northern boundary of the Carrizo Plain National Monument. SunPower would clear approximately 1,935 acres of the site for construction, however given the mainly flat contour of the area, very little grading would be required. The power generated at the proposed facility would connect into the nearby existing PG&E Morro Bay-Midway 230-kilovolt (kV) transmission line. The Project would also require reconductoring of approximately 35 miles of the Morro Bay-Midway 230-kV transmission line in San Luis Obispo and Kern Counties. We want you to have the opportunity to share any information you may have regarding the site.

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Respectfully,

Lynn Alexander
Environmental Protection Specialist
Loan Programs Office

Attachments

Department of Energy
Washington, DC 20585

NOV 30 2010

Robert Duckworth
Environmental Coordinator
Salinan National Cultural
Preservation Association
Drawer 2447
Greenfield, California 93927

Re: Proposed California Valley Solar Ranch Project in San Luis Obispo and Kern Counties, California

Dear Mr. Duckworth,

The U.S. Department of Energy (DOE) is evaluating the application of a company called High Plains Ranch II, LLC (aka "SunPower") for a loan guarantee to support construction and startup of SunPower's California Valley Solar Ranch (CVSR) project, a commercial 250 megawatt solar photovoltaic electricity generating project in southeastern San Luis Obispo County California. The site is adjacent to the California Valley subdivision at the northeastern fringe of the Carrizo Plain. DOE will be performing an environmental review of the CVSR project in compliance with the National Environmental Policy Act (NEPA), and an historic resources review in compliance with Section 106 of the National Historic Preservation Act (NHPA).

The California Native American Heritage Commission provided your name as an individual who may have knowledge of cultural resources in the project area. Any information you can provide regarding such resources will help ensure that DOE complies with its NEPA and NHPA Section 106 responsibilities.

The CVSR Project would be located on an approximately 4,365 acre site in an unincorporated area of eastern San Luis Obispo County, California. The Project would leave approximately 2,430 acres undisturbed and available for grazing. The Project, which is described in greater detail in Table 1 and shown on Figure 1, would be located on the Carrizo Plain about 2 miles north of the northern boundary of the Carrizo Plain National Monument. SunPower would clear approximately 1,935 acres of the site for construction, however given the mainly flat contour of the area, very little grading would be required. The power generated at the proposed facility would connect into the nearby existing PG&E Morro Bay-Midway 230-kilovolt (kV) transmission line. The Project would also require reconductoring of approximately 35 miles of the Morro Bay-Midway 230-kV transmission line in San Luis Obispo and Kern Counties.
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Respectfully,

Lynn Alexander
Environmental Protection Specialist
Loan Programs Office

Attachments

Department of Energy
Washington, DC 20585

NOV 30 2010

Fred Collins
Spokesperson
Northern Chumash Tribal Council
67 South Street
San Luis Obispo, California 93401

Re: Proposed California Valley Solar Ranch Project in San Luis Obispo and Kern Counties, California

Dear Mr. Collins,

The U.S. Department of Energy (DOE) is evaluating the application of a company called High Plains Ranch II, LLC (aka "SunPower") for a loan guarantee to support construction and startup of SunPower's California Valley Solar Ranch (CVSR) project, a commercial 250 megawatt solar photovoltaic electricity generating project in southeastern San Luis Obispo County California. The site is adjacent to the California Valley subdivision at the northeastern fringe of the Carrizo Plain. DOE will be performing an environmental review of the CVSR project in compliance with the National Environmental Policy Act (NEPA), and an historic resources review in compliance with Section 106 of the National Historic Preservation Act (NHPA).

The California Native American Heritage Commission provided your name as an individual who may have knowledge of cultural resources in the project area. Any information you can provide regarding such resources will help ensure that DOE complies with its NEPA and NHPA Section 106 responsibilities.

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Respectfully,

Lynn Alexander
Environmental Protection Specialist
Loan Programs Office

Attachments

Department of Energy
Washington, DC 20585

NOV 30 2010

Delia Dominguez
Kitanemuk & Yowlumne Tejon Indians
981 N. Virginia
Covina, California 91722

Re: Proposed California Valley Solar Ranch Project in San Luis Obispo and Kern Counties, California

Dear Ms. Dominguez,

The U.S. Department of Energy (DOE) is evaluating the application of a company called High Plains Ranch II, LLC (aka "SunPower") for a loan guarantee to support construction and startup of SunPower's California Valley Solar Ranch (CVSR) project, a commercial 250 megawatt solar photovoltaic electricity generating project in southeastern San Luis Obispo County California. The site is adjacent to the California Valley subdivision at the northeastern fringe of the Carrizo Plain. DOE will be performing an environmental review of the CVSR project in compliance with the National Environmental Policy Act (NEPA), and an historic resources review in compliance with Section 106 of the National Historic Preservation Act (NHPA).

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Respectfully,

Lynn Alexander
Environmental Protection Specialist
Loan Programs Office

Attachments

Department of Energy
Washington, DC 20585

NOV 30 2010

Kathy Morgan
Chairperson
Tejon Indian Tribe
2234 4th Street
Wasco, California 93280

Re: Proposed California Valley Solar Ranch Project in San Luis Obispo and Kern Counties, California

Dear Chairperson Morgan,

The U.S. Department of Energy (DOE) is evaluating the application of a company called High Plains Ranch II, LLC (aka "SunPower") for a loan guarantee to support construction and startup of SunPower's California Valley Solar Ranch (CVSR) project, a commercial 250 megawatt solar photovoltaic electricity generating project in southeastern San Luis Obispo County California. The site is adjacent to the California Valley subdivision at the northeastern fringe of the Carrizo Plain. DOE will be performing an environmental review of the CVSR project in compliance with the National Environmental Policy Act (NEPA), and an historic resources review in compliance with Section 106 of the National Historic Preservation Act (NHPA).

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Respectfully,

Lynn Alexander
Environmental Protection Specialist
Loan Programs Office

Attachments

Attachments

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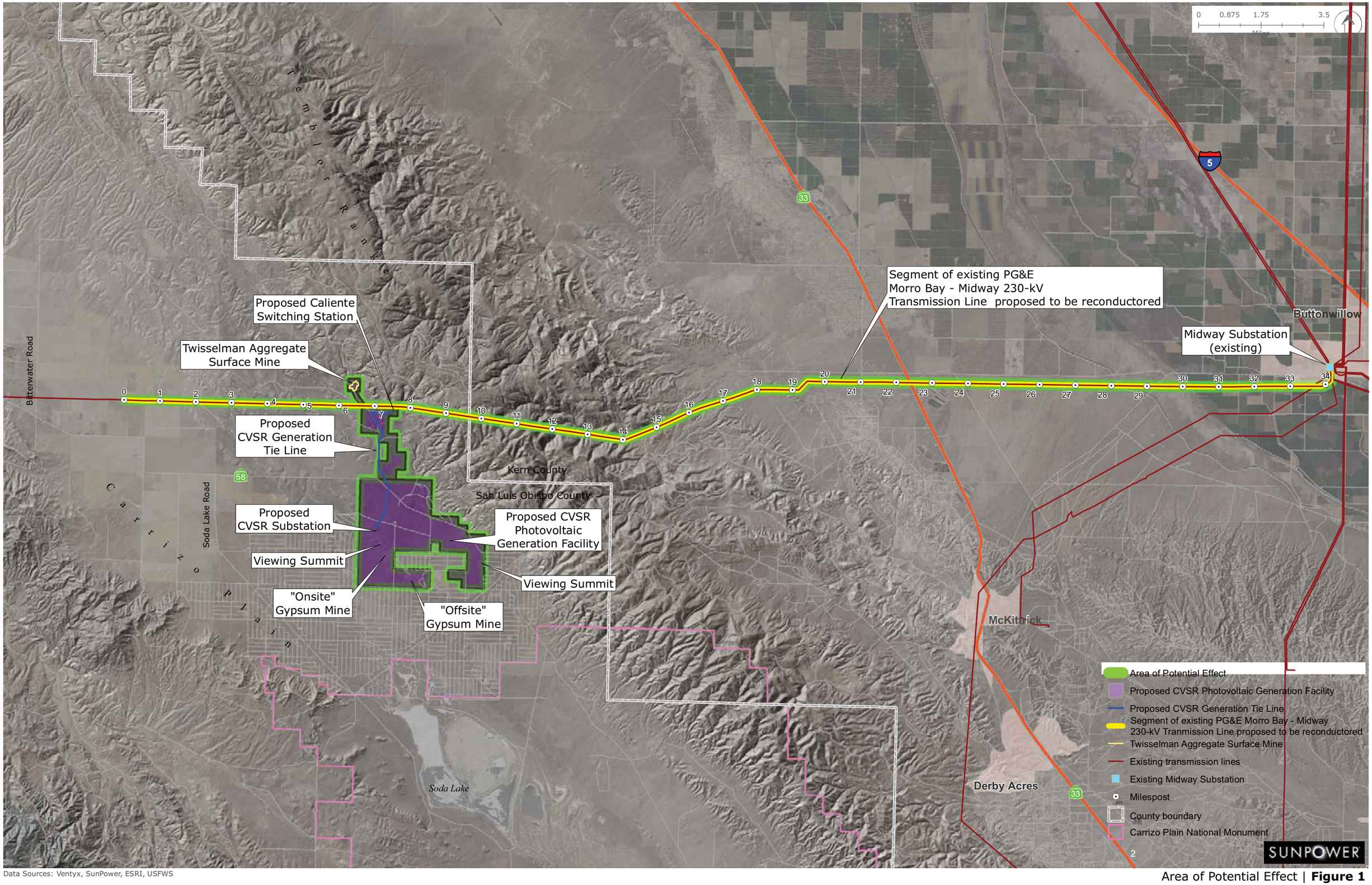
Table 1: SUNPOWER/CVSR LOAN GUARANTEE APPLICATION - PROJECT DESCRIPTION

CVSR (Financed with DOE Loan Guarantee)
Development of the CVSR Photovoltaic Generation Facility
• Photovoltaic solar panel arrays, designated in 10 separate array configurations, ranging in size from approximately 70 acres to nearly 500 acres. Each array would be mounted on SunPower T0 tracker units. The arrays would contain 88,000 SunPower T0 tracker units. • Electrical collection infrastructure, including both direct-current and alternating-current collection systems, power inverters, and associated equipment. Between and among the solar panel arrays the collection system would be buried underground, while the remainder of the system would carry electricity on overhead lines to the CVSR Substation. • A permanent 20,541-square foot operations and maintenance building with outdoor storage. • A 2,540-square foot visitor center located adjacent to the operations and maintenance facility. • Primary and fire access roads. • Two outdoor viewing summits and adjacent, accessible low-impact hiking trails. • Reverse osmosis water treatment system for water supply and fire safety requirements; comprised of a well, equipment within a small building, two brine evaporation ponds, and a 271,000-gallon water tank. • An on-site septic system with leach field. • A 3.4-acre CVSR substation, which would step-up voltage collected from the arrays at 34.5-kV to 230-kV, and from which the CVSR's project generation tie-line would originate. • Highway signage and security fencing. • Temporary Construction Worker Accommodations Area. • Gasoline tank. • Temporary covered work area. • Portable concrete batch plant. • Establishment of conservation areas. • Use of an "off-site" gypsum mine for the export of excess material from grading of arrays and the switchyard, and reclamation of the on-site mine. • Designated vehicle meeting point for trucks with oversize- and wide-loads that need escort over SR 58.
Construction of a New Generation Tie Line and Interconnection Facility
• A new approximately 2.8-mile 230kV, single-circuit, generation tie ("gen-tie") transmission line constructed on steel towers and running from the CVSR substation to interconnection facilities to be constructed at the nearby, existing PG&E Morro Bay-Midway 230-kV transmission line. • A new 6.9-acre Caliente Switching Station ("switchyard") on a 9-acre property, along with <1,000-foot loop-in lines to interconnect the gen-tie line from the CVSR substation with the existing PG&E Morro Bay-Midway 230-kV transmission line. • Roadway improvements from the project switchyard area to the Aggregate Mine.
Restoration and Reclamation of an On-Site Gypsum Mine
• An inactive gypsum mine is located on the southwest portion of the CVSR site. During construction this area, which is currently occupied by abandoned mining equipment, would be used for construction staging. • After completion of construction, the mine would be reclaimed and the area re-vegetated in accordance with the Surface Mining and Reclamation Act.

Table 1: SUNPOWER/CVSR LOAN GUARANTEE APPLICATION - PROJECT DESCRIPTION

CVSR (Financed with DOE Loan Guarantee)
Reconductoring of the PG&E Morro Bay-Midway Transmission Line
• Approximately 35 miles of the existing PG&E Morrow Bay-Midway 230-kV electricity transmission line would be reconductored, in part to accommodate the electricity from the CVSR project. • The reconductoring activities necessary to deliver the CVSR's full capacity would be limited to equipment upgrades to existing infrastructure. This work would take place within currently developed transmission line rights-of-way owned by PG&E. • These upgrades would involve replacing old conductors with new conductors, replacing up to 17 transmission line towers, reinforcing the foundations and increasing the height of about 85 towers by 20 feet, and modifying current access roads.
"CONNECTED ACTION" (Not Financed with DOE Loan Guarantee)
Reactivation of the Twisselman Aggregate Surface Mine
• In order to produce aggregate base for project access road construction, a nearby, existing 23.2-acre aggregate surface mine (the "Twisselman Mine") would be re-established. • No new structures, paving, or landscaping would be required in connection with re-establishment of the Aggregate Mine.



Data Sources: Ventyx, SunPower, ESRI, USFWS

Area of Potential Effect | **Figure 1**

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E-3 Native American Heritage Commission Lists

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Introduction

The information contained in Appendix E-3 was generated during the County of San Luis Obispo's CEQA process and not as part of the DOE's EA/NEPA process.

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LSA List

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SECTION 106 NATIVE AMERICAN SCOPING RECORD
California Valley Solar Ranch Project, Eastern San Luis Obispo County, California

Date LSA Requested a Sacred Lands File Search from the Native American Heritage Commission (NAHC): June 24, 2009.
Date the NAHC Replied: June 29, 2009.
Results of the Sacred Lands File Search: **Did indicate the presence of Native American cultural resources in the Carrizo Plains area of San Luis Obispo County**. The letter specifically asked that Chief Mark Vigil of the San Luis Obispo County Chumash Council be contacted, and recommended that the other 20 people listed below be contacted as well.

Groups Contacted	Date LSA Letter to Tribes	Date Tribal Response Received	Date and Results of Follow-up Telephone Calls and/or Emails
Beverly Salazar Folkes Chumash, Tataviam, Fernandeño	July 2, 2009	No response received.	07-23-09: A voicemail was left for Ms. Folkes 07-30-09: Ms. Folkes stated that due to the sensitive and undeveloped nature of the project area, she recommends monitoring by a Native American during ground disturbing activities. She would also like to be notified of any discoveries.
San Luis Obispo County Chumash Council Chief Mark Steven Vigil Chumash	July 2, 2009	No response received.	07-23-09: A voicemail was left for Mr. Vigil. 07-27-09: The letter was returned as unclaimed. 07-30-09: A voicemail was left for Mr. Vigil stating that the letter would be sent again by regular mail. It was also stated that if there was no response, it would be assumed that he has no comment on this project.
Santa Ynez Band of Mission Indians Vincent Armenta, Chairperson Chumash	July 2, 2009	No response received.	07-23-09: An administrative assistant directed the call to Freddy Romero, Cultural Preservation Consultant for the Elders Council. Mr. Romero requested additional information such as maps and a visual simulation to assess visual impacts to the surrounding area. He requested that the information be sent to him by email. He also stated that the Tribe would like to be involved in consultation throughout the project. 08-05-09: An email with some of the information Mr. Romero requested was sent to him. Additional information still needs to be provided.
Diane Napoleone and Associates Diane Napoleone Chumash	July 2, 2009	No response received.	07-23-09: Ms. Napoleone stated that she did not receive the letter and requested that it be sent to her again by regular mail. It was sent on 07-23-09. She also stated that she does have concerns about project impacts to cultural resources and will likely comment.
Julie Lynn Tumamait Chumash	July 2, 2009	No response received.	07-23-09: Ms. Tumamait is opposed to new solar facilities because they are very land intensive and there are lots of potential impacts. She would prefer an alternative site where there will be no direct or indirect impacts to sacred lands.

Groups Contacted	Date LSA Letter to Tribes	Date Tribal Response Received	Date and Results of Follow-up Telephone Calls and/or Emails
Salinan Tribe of Monterey, San Luis Obispo and San Benito Counties John W. Burch, Traditional Chairperson Salinan	July 2, 2009	July 17, 2009 (via email): Patti Dunton responded on behalf of the Tribe to say that they have many concerns about cultural resources and sacred sites being impacted by solar power development in California Valley. She included several response letters for other similar projects as examples of their concerns. She requested a copy of the report to review and will comment.	Not applicable.
Lei Lynn Odom Chumash	July 2, 2009	No response received.	07-23-09: A voicemail was left for Ms. Odom. 07-30-09: Ms. Odom stated that the most important thing with regards to the Carrizo Plains area is to keep the horizon clear so there will be no visual impacts to sacred sites. Also, she is concerned about what would happen if so much land gets developed and then the facility is not profitable. Is there a provision for removing the equipment should this occur? She recommends monitoring by a qualified Chumash monitor during ground disturbing activities and would like to be notified of any discoveries. She can provide monitors if necessary. 08-10-09: The letter was returned as unclaimed.
Santa Ynez Tribal Elders Council Adelina Alva-Padila, Chair Woman Chumash	July 2, 2009	No response received.	07-23-09: A Tribal administrator stated that Freddy Romero is the spokesman for the Elders Council with regards to cultural resources. Please see Mr. Romero's comments under Vincent Armenta, above.
Randy Guzman-Folkes Chumash, Fernandeño, Tataviam, Shoshone Paiute, Yaqui	July 2, 2009	No response received.	07-28-09: Due to the sensitive nature of the project area, Mr. Folkes recommends monitoring by a Native American and an archaeologist during all ground disturbing activities. He can provide monitors if necessary. He would also like to be notified of any discoveries. 07-30-09: The letter was returned unclaimed.
Salinan Nation Cultural Preservation Association Jose Freeman, President Salinan	July 2, 2009	No response received.	07-28-09: A voicemail was left for Mr. Freeman. 07-29-09: Mr. Freeman returned the call and left a voicemail saying that he does have concerns with the project and cultural resources and would like more

Groups Contacted	Date LSA Letter to Tribes	Date Tribal Response Received	Date and Results of Follow-up Telephone Calls and/or Emails
			information. 07-30-09: The letter was returned unclaimed. A voicemail was left for Mr. Freeman. Please also see Robert Duckworth, below.
Xolon Salinan Tribe Donna Haro Salinan	July 2, 2009	No response received.	A phone number was not provided by the NAHC.
Coastal Band of the Chumash Nation Janet Garcia, Chairperson Chumash	July 2, 2009	No response received.	07-28-09: The person who answered the phone stated that Janet Garcia could not be reached at that number. 07-30-09: The letter was returned unclaimed.
Salinan Nation Cultural Preservation Association Doug Alger, Cultural Resources Coordinator Salinan	July 2, 2009	No response received.	07-28-09: There was no answer at the number provided. 07-30-09: Mr. Alger stated that he has no information regarding cultural resources and the project area.
Mona Olivas Tucker Chumash	July 2, 2009	No response received.	07-27-09: The letter was returned as unclaimed. 07-28-09: A voicemail was left for Ms. Tucker. 07-30-09: Ms. Tucker definitely had concerns about this project and cultural resources, because the area was utilized throughout history and there are sacred places involved. She is also concerned about the vast amount of land being utilized and visual impacts to sites. She stated that even though nothing was found on the surface, there is always the potential for buried cultural material, and noted that finding everything during a survey of nearly 2000 acres would be very difficult. She recommends monitoring by a Native American during all ground disturbing activities. She asked that the comments above also come from her son, Mathew Goldman (see below). She also requested that the letter be sent again by regular mail. 08-05-09: The letter was mailed to Ms. Tucker.
Salinan Nation Cultural Preservation Association Robert Duckworth, Environmental Coordinator Salinan	July 2, 2009	No response received.	07-28-09: Mr. Duckworth noted that a surface survey does not take into account the potential for buried cultural material and recommended subsurface testing over the property to get the "lay of the land" and a sense of what's there. He recommended monitoring by a Native American during all ground disturbing activities, and also by an archaeologist subsequent to any discoveries. He also requested that plans showing the project layout be sent to him via certified mail, and would like to know the plan for

Groups Contacted	Date LSA Letter to Tribes	Date Tribal Response Received	Date and Results of Follow-up Telephone Calls and/or Emails
			curating any artifacts discovered. He would like to be notified of any discoveries, as well. 07-31-09: Mr. Duckworth called to ask what stage the project was in. He was informed that the technical studies are being completed and construction has not started. He also stated that he is speaking with Jose Freeman, who is also with his group, and they will likely be commenting soon.
Mathew Darian Goldman Chumash	July 2, 2009	No response received.	07-28-09: Mr. Goldman confirmed that he received the letter. He will review and comment, although it may take a few weeks. Also, please see Ms. Mona Olivas Tucker's comments above. She is his mother and had requested that her comments represent comments from both of them.
Santa Ynez Band of Mission Indians Sam Cohen, Tribal Administrator Chumash	July 2, 2009	No response received.	07-29-09: A voicemail was left for Mr. Cohen. 07-30-09: A voicemail was left for Mr. Cohen saying that if he did not respond, it would be assumed that he has no concerns regarding the project and cultural resources.
Frank Arredondo Chumash	July 2, 2009	No response received.	07-28-09: Mr. Arredondo asked that the information be sent to him again by email. He expects to comment. The letter and map were emailed to him on 07-29-09.
Salinan Nation Cultural Preservation Association Gregg Castro, Administrator Salinan	July 2, 2009	No response received.	Several attempts were made to contact Mr. Castro at the number provided by the NAHC between 07-28-09 and 07-30-09. The number does not connect. 07-29-09: In a voicemail, Jose Freeman stated that he would be talking with Mr. Castro and also Mr. Duckworth about the project.
Salinan-Chumash Nation Xielolixii Salinan, Chumash	July 2, 2009	No response received.	07-28-09: A voicemail was left for Xielolixii. 07-30-09: A voicemail was left for Xielolixii saying that if she did not respond, it would be assumed that she has no concerns regarding the project and cultural resources.
Northern Chumash Tribal Council Fred Collins, Spokesperson Chumash	July 2, 2009	No response received.	07-28-09: Mr. Collins is concerned about visual impacts and also impacts to traditional medicine plants. He would like to visit the site with a project representative as soon as the second week in August. He would like to continue to be informed about the project and notified of any discoveries.

PG&E Lists

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STATE OF CALIFORNIA Arnold Schwarzenegger, Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
Fax (916) 657-5390

February 26, 2010

Andrea Nardin
ICF International
630 K Street, Suite 400
Sacramento, CA 95814

Sent by Fax: 916-737-3030
Number of Pages: 3

Re: Proposed Carrizo to Midway Reconductoring Project; San Luis Obispo County.

Dear Ms. Nardin:

A record search of the sacred lands file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend others with specific knowledge. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 653-4040.

Sincerely,

Katy Sanchez

Katy Sanchez
Program Analyst

Native American Contact List
San Luis Obispo County
February 26, 2010

Beverly Salazar Folkes
1931 Shadybrook Drive
Thousand Oaks, CA 91362
805 492-7255
(805) 558-1154 - cell
folkes9@msn.com
Chumash
Tataviam
Fernandeño

San Luis Obispo County Chumash Council
Chief Mark Steven Vigil
1030 Ritchie Road
Grover Beach CA 93433
cheifmvigil@fix.net
(805) 481-2461
(805) 474-4729 - Fax
Chumash

Santa Ynez Band of Mission Indians
Vincent Armenta, Chairperson
P.O. Box 517
Santa Ynez , CA 93460
varmenta@santaynezchumash.
(805) 688-7997
(805) 686-9578 Fax
Chumash

Diane Napoleone and Associates
Diane Napoleone
1433 Camino Trillado
Carpinteria , CA 93013
805-684-4213
Chumash

Julie Lynn Tumamait
365 North Poli Ave
Ojai , CA 93023
jtumamait@sbcglobal.net
(805) 646-6214
Chumash

Santa Ynez Tribal Elders Council
Adelina Alva-Padilla, Chair Woman
P.O. Box 365
Santa Ynez , CA 93460
elders@santaynezchumash.org
(805) 688-8446
(805) 693-1768 FAX
Chumash

Lei Lynn Odom
1339 24th Street
Oceano , CA 93445
(805) 489-5390
Chumash

Randy Guzman - Folkes
655 Los Angeles Avenue, Unit E
Moorpark , CA 93021
ndnRandy@gmail.com
(805) 905-1675 - cell
Chumash
Fernandeño
Tataviam
Shoshone Paiute
Yaqui

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Cambria to Midway Reconductoring Project; San Luis Obispo County.

Native American Contact List
San Luis Obispo County
February 26, 2010

Coastal Band of the Chumash Nation
Janet Garcia,Chairperson
P.O. Box 4464 Chumash
Santa Barbara CA 93140
805-964-3447

Salinan-Chumash Nation
Xielolixii
3901 Q Street, Suite 31B Salinan
Bakersfield , CA 93301 Chumash
xielolixii@yahoo.com

408-966-8807 - cell

Mona Olivas Tucker
660 Camino Del Rey Chumash
Arroyo Grande CA 93420
(805) 489-1052 Home
(805) 748-2121 Cell

Northern Chumash Tribal Council
Fred Collins, Spokesperson
67 South Street Chumash
San Luis Obispo CA 93401
(805) 801-0347 (Cell)

Matthew Darian Goldman
495 Mentone Chumash
Grover Beach CA 93433
805-748-6913

Frank Arredondo
PO Box 161 Chumash
Santa Barbara Ca 93102
805-617-6884
ksen_sku_mu@yahoo.com

Santa Ynez Band of Mission Indians
Sam Cohan, Tribal Administrator
P.O. Box 517 Chumash
Santa Ynez , CA 93460
(805) 688-7997
(805) 686-9578 Fax

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This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Carrizo to Midway Reconductoring Project; San Luis Obispo County.

STATE OF CALIFORNIA Arnold Schwarzenegger, Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-6251
Fax (916) 657-5390
Web Site www.nahc.ca.gov
ds_nahc@pacbell.net

March 9, 2010

Ms. Andrea Nardin, Archaeologist
ICF INTERNATIONAL
630 "K" Street, Suite 400
Sacramento, CA 95814

Sent by FAX to 916-737-3030
No. of Pages: 4

Re: Request for a Sacred Lands File Search and Native American Contacts List for a Proposed "Transmission Line Upgrade for Energy Projects Generated by Solar" located on and near the Carrizo Plain; San Luis Obispo and Kern Counties, California

Dear Ms. Nardin:

The Native American Heritage Commission (NAHC), the State of California 'Trustee Agency' for the protection and preservation of Native American cultural resources (c.f. CA Public Resources Code §21070; also c.f. *Environmental Protection Information Center v. Johnson (1985) 170 Cal App. 3rd 604*), was able to perform a record search of its Sacred Lands File (SLF) for the affected project area (APE) requested. The California Environmental Quality Act (CEQA; CA Public Resources Code Section 21000 – 21177)) requires that any project that causes a substantial adverse change in the significance of an historical resource, that includes archaeological resources, is a 'significant effect' requiring the preparation of an Environmental Impact Report (EIR) per the California Code of Regulations §15064.5(b)(c)(f) CEQA guidelines). Section 15382 of the 2007 CEQA Guidelines defines a significant impact on the environment as "a substantial, or potentially substantial, adverse change in any of physical conditions within an area affected by the proposed project, including ...objects of historic or aesthetic significance." The NAHC SLF search **did not indicate** the presence of Native American cultural resources within one-half - mile radius of the proposed project site (APE). However, there are Native American cultural resources in close proximity to the APE in the Carrizo Plain.

This letter includes state and federal statutes relating to Native American historic properties of religious and cultural significance to American Indian tribes and interested Native American individuals as 'consulting parties' under both state and federal law.

Early consultation with Native American tribes in your area is the best way to avoid unanticipated discoveries once a project is underway. Enclosed are the names of the nearest tribes and interested Native American individuals that the NAHC recommends as 'consulting parties,' for this purpose, that may have knowledge of the religious and cultural significance of the historic properties in the project area (e.g. APE). We recommend that you contact persons on the attached list of Native American contacts. Furthermore we suggest that you contact the California Historic Resources Information System (CHRIS) at the Office of Historic Preservation Coordinator's office (at (916) 653-7278, for referral to the nearest Information Center of which there are 10.

Consultation with tribes and interested Native American consulting parties, on the NAHC list ,should be conducted in compliance with the requirements of federal NEPA (42 U.S.C. 4321-43351) and Section 106 and 4(f) of federal NHPA (16 U.S.C. 470 [f]*et seq)*, 36 CFR Part 800.3 (f) (2), the President's Council on Environmental Quality (CSQ; 42 U.S.C. 4371 *et seq.*) and NAGPRA (25 U.S.C. 3001-3013), as appropriate. . The 1992 *Secretary of the Interior's Standards for the*

Treatment of Historic Properties were revised so that they could be applied to all historic resource types included in the National Register of Historic Places and including *cultural landscapes*.

Lead agencies should consider avoidance, as defined in Section 15370 of the California Environmental Quality Act (CEQA) when significant cultural resources could be affected by a project. Also, Public Resources Code Section 5097.98 and Health & Safety Code Section 7050.5 provide for provisions for accidentally discovered archeological resources during construction and mandate the processes to be followed in the event of an accidental discovery of any human remains in a project location other than a 'dedicated cemetery. Discussion of these should be included in your environmental documents, as appropriate.

The response to this search for Native American cultural resources is conducted in the NAHC Sacred Lands Inventory, established by the California Legislature (CA Public Resources Code §5097.94(a) and is exempt from the CA Public Records Act (c.f. California Government Code §6254.10) although Native Americans on the attached contact list may wish to reveal the nature of identified cultural resources/historic properties. Confidentiality of "historic properties of religious and cultural significance' may also be protected the under Section 304 of the NHPA or at the Secretary of the Interior' discretion if not eligible for listing on the National Register of Historic Places. The Secretary may also be advised by the federal Indian Religious Freedom Act (cf. 42 U.S.C. 1996) in issuing a decision on whether or not to disclose items of religious and/or cultural significance identified in or near the APE and possibly threatened by proposed project activity.

If you have any questions about this response to your request, please do not hesitate to contact me at (916) 653-6251.

Sincerely,

Dave Singleton
Program Analyst

Attachment: Native American Contacts List (NOTE: we further recommend that other forms of 'proof of mailing or proof of contact be utilized instead of 'Return Receipt Requested' Certified or Registered Mail.) Further, we suggest a follow-up telephone call to the contacts if the replies are not received or need clarification.

Native American Contacts
March 8, 2010
Kern and San Luis Obispo Counties

Santa Ynez Band of Mission Indians
Vincent Armenta, Chairperson
P.O. Box 517 Chumash
Santa Ynez , CA 93460
varmenta@santaynezchumash.
(805) 688-7997
(805) 686-9578 Fax

Salinan Tribe of Monterey, San Luis Obispo Counties
John W. Burch, Traditional Chairperson
7070 Morro Rd, #A Salinan
Atascadero , CA 93422
salinantribe@aol.com
805-460-9202
805 235-2730 Cell
805-460-9204

Julie Lynn Tumamait
365 North Poli Ave Chumash
Ojai , CA 93023
jtumamait@sbcglobal.net
(805) 646-6214

Santa Ynez Tribal Elders Council
Adelina Alva-Padilla, Chair Woman
P.O. Box 365 Chumash
Santa Ynez , CA 93460
elders@santaynezchumash.org
(805) 688-8446
(805) 693-1768 FAX

San Luis Obispo County Chumash Council
Chief Mark Steven Vigil
1030 Ritchie Road Chumash
Grover Beach CA 93433
chiefmvigil@fix.net
(805) 481-2461
(805) 474-4729 - Fax

Salinan Nation Cultural Preservation Association
Robert Duckworth, Environmental Coordinator
Drawer 2447 Salinan
Greenfield , CA 93927
dirobduck@thegrid.net
831-578-1652

Peggy Odom
1339 24th Street Chumash
Oceano , 93445
(805) 489-5390

Northern Chumash Tribal Council
Fred Collins, Spokesperson
67 South Street Chumash
San Luis Obispo CA 93401
(805) 801-0347 (Cell)

This list is current only as of the date of this document.

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This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Pacific Gas & Electric Transmission Line Upgrade for Solar Energy Projects on the Carrizo Plain; located in Kern and San Luis Obispo counties, California for which Sacred Lands File searches were made and Native American Contacts lists requested.

Native American Contacts
March 8, 2010
Kern and San Luis Obispo Counties

Santa Rosa Rancheria
Chairperson
P.O. Box 8
Lemoore , CA 93245
(559) 924-1278
(559) 924-3583 Fax

Tache
Tachi
Yokut

Carol A. Pulido
165 Mountainview Street
Oak View , CA 93022
805-649-2743 (Home)

Chumash

Kitanemuk & Yowlumne Tejon Indians
Delia Dominguez
981 N. Virginia
Covina , CA 91722
(626) 339-6785

Yowlumne
Kitanemuk

Tubatulabals of Kern Valley
Donna Begay, Tribal Chairwoman
P.O. Box 226
Lake Isabella, CA 93240
(760) 379-4590
(760) 379-4592 FAX

Tubatulabal

Tejon Indian Tribe
Kathy Morgan, Chairperson
2234 4th Street
Wasco , CA 93280
661-758-2303

Yowlumne
Kitanemuk

Frank Arredondo
PO Box 161
Santa Barbara Ca 93102
805-617-6884
ksen_sku_mu@yahoo.com

Chumash

Chumash Council of Bakersfield
Arianne Garcia, Chairperson
P.O. Box 902
Bakersfield , CA 93302
chumashtribe@sbcglobal.net
(661) 836-0486
(661) 836-0487

Chumash

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This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Pacific Gas & Electric Transmission Line Upgrade for Solar Energy Projects on the Carrizo Plain; located in Kern and San Luis Obispo counties, California for which Sacred Lands File searches were made and Native American Contacts lists requested.

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E-4 Consultation Summary Results

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Native American Contact History for the California Valley Solar Ranch Project

Groups Contacted	Tribe	Date DOE Letter Sent to Tribes	Date Tribal Response Received	Date and Results of Follow-Up Telephone Calls and/or Emails
Santa Ynez Band of Mission Indians Vincent Armenta, Chairperson Sam Cohen, Tribal Administrator P.O. Box 517 Santa Ynez, CA 93460 Phone: (805) 688-7997 Fax: (805) 686-9578 Email: varmenta@santaynezchuash.com	Chumash	11-30-2010	No response to letter received.	12-15-2010: Original phone number disconnected. DOE tried (805) 688-7997 instead. 02-15-2011: DOE spoke with Karen Keever, Chairperson of the Elder's Council, to request that DOE give a presentation to the Elder's Council on the project. See entry under Karen Keever for details.
Santa Rosa Rancheria Ruben Barrios, Chairperson P.O. Box 8 Lemoore, CA 93245 Phone: (559) 924-1278 Fax: (559) 924-3483	Tache, Tachi, and Yokut	11-30-2010	No response to letter received.	12-15-2010: A voicemail was left for Ruben Barrios. 12-21-2010: A second voicemail was left for Ruben Barrios. 04-05-2011: E&E spoke with Lalo Franco, Cultural Resources Manager for the Tribe. The DOE letter has not been forwarded to Lalo at this point, but he recommends the project construction proceed with caution, with a monitor for cultural resources on site, appropriate worker sensitivity training for construction crews, and to ensure that cultural resources and California health and safety laws pertaining to the treatment of human remains are followed.
Santa Ynez Band of Mission Elders Karen Keever, Chairperson Adelina Alva-Padilla, Past Chairperson P.O. Box 365 Santa Ynez, CA 93460 Phone: (805) 688-8446 Phone: (805) 688-7997 ext. 37 Fax: (805) 693-1768 Email: elders@santaynezchumash.org	Chumash	11-30-2010	12-10-2010: Freddy Romero left a voice mail for Lynn Alexander (DOE) in response to one of DOE's letters on CVSR. Mr. Romero says that his Council tried several times to schedule a meeting with SunPower so they could receive a presentation on the CVSR project, but never could get that meeting scheduled. He and the Council would very much like to have such a presentation/meeting now. His phone number is 805-688-7997 ext. 37. 12-13-2010: The letter has been received and they will contact us if there are questions or concerns. Adelina Alva-Padilla is no longer Chairperson. Ms. Keever is the current Chairperson and is part of the official Tribal Government of the federally-recognized Santa Ynez Band of Mission Indians.	12-13-2010: The letter has been received and they will contact us if there are questions or concerns. Adelina Alva-Padilla is no longer Chairperson. Ms. Keever is the current Chairperson and is part of the official Tribal Government of the federally-recognized Santa Ynez Band of Mission Indians. 12-15-2010: Mr. Romero said that he would be asking the Elders Council and Mr. Vincent Armenta to formally request Government-to-Government consultation, but that the necessary attendees would be out of the office December 20 through 24, 2010. 01-14-2011: Lynn Alexander (DOE) had a follow-up telephone conversation with Karen Keever. Mr. Fred Collins is not associated with the Tribal Government. Mr. Freddie Romero is the tribe's official cultural resources consultant (works with the federal tribe). Mr. Sam Cohen is their lawyer and DOE would receive any official response from the tribe from him regarding official Government-to-Government consultation requests from the tribe. 01-20-2011: Ms. Keever will talk with the Tribal Elders Council at the Monday, February 14, 2011 meeting about whether they want SunPower and DOE to come and give them a presentation on the CVSR project at their next meeting. Ms. Keever will contact Lynn Alexander with their decision. If they decide they want the presentation, SunPower and DOE would be asked to come to the Elders Council's Monday, February 28, 2011 meeting to give a presentation. 02-15-2011: Ms. Keever called DOE to request a presentation from DOE to the Elder's Council about the project.

Native American Contact History for the California Valley Solar Ranch Project

Groups Contacted	Tribe	Date DOE Letter Sent to Tribes	Date Tribal Response Received	Date and Results of Follow-Up Telephone Calls and/or Emails
Santa Ynez Band of Mission Elders (Cont.)				02-17-11: Ms. Keever emailed Lynn to state that the Elders Council would like a presentation on the project. Email discourse back and forth established a meeting on March 14, 2011 at 10:00 a.m. at the Tribal Hall, 100 Via Juana Road, Santa Ynez, California. DOE will provide introductions, then SunPower will give a presentation about the project. 03-14-11: DOE and SunPower made presentation to Elder's Council. Copies of cultural resource surveys/reports provided to Elder's Council 03-15-11: Karen Ladd (E&E) emailed Karen Keever link to County of San Luis Obispo website for California Valley Solar Ranch EIR. 04-04-11: SunPower, PG&E and members from the Chumash Elder's Council met at California Valley to conduct a tour of the Switching Station site so the Council can determine the significance of the impact and discuss project design alternatives. 06-09-11: Karen Ladd (E&E) emailed Karen Keever updated grading plans showing the design modifications to the Caliente Switching Station that avoids impacts to the CVSR BRM-1 cultural resources site.
San Luis Obispo County Chumash Council Chief Mark Steven Vigil 1030 Ritchie Road Grover Beach, CA 93433 Phone: (805) 481-2461 Fax: (805) 474-4729 Email: cheifmvigil@fix.net	Chumash	11-30-2010	No response received.	12-09-2010: A voicemail was left for Chief Mark Steven Vigil. 12-30-2010: E&E sent an email reminder to Chief Mark Steven Vigil.
Peggy Odom 1339 24th Street Oceano, CA 93445 Phone: (805) 489-5390	Chumash	11-30-2010	No response received.	12-13-2010: A message was left for Peggy Odom.
Salinan Tribe of Monterey, San Luis Obispo Counties John W. Burch, Chairperson 7070 Morrow Road, #A Atascadero, CA 93422 Phone: (805) 460-9202 Fax: (805) 460-9204 Cell: (805) 235-2730 Email: salinantribe@aol.com	Salinan	11-30-2010	No response received.	12-13-2010: A voicemail was left for John Burch. 12-30-2010: E&E sent an email reminder to John Burch.

Native American Contact History for the California Valley Solar Ranch Project

Groups Contacted	Tribe	Date DOE Letter Sent to Tribes	Date Tribal Response Received	Date and Results of Follow-Up Telephone Calls and/or Emails
Salinan National Cultural Preservation Association Robert Duckworth, Environmental Coordinator Drawer 2447 Greenfield, CA 93927 Phone: (831) 578-1852 Email: dirobduck@thegrid.net	Salinan	11-30-2010	No response received.	12-13-2010: A voicemail was left for Robert Duckworth. 12-30-2010: E & E sent an email reminder to Robert Duckworth.
Northern Chumash Tribal Council Fred Collins, Tribal Administrator Educational Services & Environmental Consulting 67 South Street San Luis Obispo, CA 93401 Phone: (805) 528-0806 Email: fcollins@northernchumash.org	Chumash	11-30-2010	12-29-2010 to 1-3-2011: Mr. Collins emailed Lynn Alexander (DOE) and Renee Robins (SunPower) several times regarding his wish to have a meeting with SunPower about CVSR. He states that he tried to set up such a meeting/presentation with SunPower long ago and never heard back. He represents the Northern Chumash Tribal Council, but not the federally-recognized Santa Ynez Band of Mission Indians Tribal Government.	12-13-2010: A voicemail was left for Fred Collins. 01-12-2011: SunPower met with Mr. Collins at his ranch to discuss the project.
Kitanemuk & Yowlumne Tejon Indians Delia Dominguez 981 North Virginia Covina, CA 91722 Phone: (626) 339-6785	Yowlumne and Kitanemuk	11-30-2010	No response to letter received.	12-14-2010: A voicemail was left for Delia Dominguez.
Tejon Indian Tribe Kathy Morgan, Chairperson 2234 4th Street Wasco, CA 93280 Phone: (661) 758-2303	Yowlumne and Kitanemuk	11-30-2010	No response to letter received.	12-14-2010: A voicemail was left for Kathy Morgan.
Chumash Council of Bakersfield Arianne Garcia, Chairperson P.O. Box 902 Bakersfield, CA 93302 Phone: 661) 836-0486 Fax: (661) 836-0487 Email: chumashtribe@sbcglobal.net	Chumash	11-30-2010	No response to letter received.	12-14-2010: No answer.
Carol A. Pulido 165 Mountainview Street Oak View, CA 93022 Phone: (805) 649-2743	Chumash	11-30-2010	No response to letter received.	12-14-2010: A voicemail was left for Carol Pulido.

Native American Contact History for the California Valley Solar Ranch Project

Groups Contacted	Tribe	Date DOE Letter Sent to Tribes	Date Tribal Response Received	Date and Results of Follow-Up Telephone Calls and/or Emails
Tubatulabals of Kern Valley Donna Begay, Tribal Chairwoman P.O. Box 226 Lake Isabella, CA 93240 Phone: (760) 379-4590 Fax: (760) 379-4592	Tubatulabal	11-30-2010	No response to letter received.	12-14-2010: Outside of their tribal territories.
Frank Arredondo P.O. Box 161 Santa Barbara, CA 93102 Phone: (805) 617-6884 Email: ksen_sku_mu@yahoo.com	Chumash	11-30-2010	12-14-2010: Received letter, has concerns, will submit comments by the end of the week.	12-14-2010: A voicemail was left for Frank Arredondo.
Beverly Salazar Folkes 1931 Shadybrook Drive Thousand Oaks, CA 91362 Phone: (805) 492-7255 Cell: (805) 558-1154 Email: fiolkes9@msn.com	Chumash, Tataviam and Fernandeno	11-30-2010	12-14-2010: Concerned that the project is in undisturbed land. Concerned about buried cultural resources and burials.	
Lei Lynn Odom 1339 24th Street Oceano, CA 93445 Phone: (805) 489-5390	Chumash	11-30-2010	12-16-2010: Lei Lynn called to express concern over not having the reports and is concerned that she has not been given all of the information.	12-13-2010: Their group is meeting was December 13, 2010 to discuss the project. Sandra Pentney (E & E) to call December 14, 2010 to follow up. 12-14-2010: A voicemail was left for Lei Lynn Odom
Diane Napoleone and Associates Diane Napoleone 1433 Camino Trillado Carpinteria, CA 93013 Phone: (805) 684-4213	Chumash	11-30-2010		12-14-2010: No longer at this number. Letter returned to DOE as undeliverable.
Randy Guzman-Folkes 655 Los Angeles Avenue, Unit E Moorpark, CA 93021 Cell: (805) 905-1675 Email: ndnrandy@yahoo.com	Chumash, Fernandeno, Tataviam, Shoshone Paiute, and Yaqui	11-30-2010		12-06-2010: Called Lynn Alexander (DOE) saying that he would be interested in participating in any meetings we have with tribes and offered his knowledge and expertise of the Carrizo Plain and tribal history there. 12-14-2010: Received the letter. Wants to see monitoring for construction by the Chumash or other local tribe. Does not know about specific sites in the area. Would be interested in meeting with the DOE. Would like us to email him at ndnrandy@yahoo.com so that he can respond via email.

Native American Contact History for the California Valley Solar Ranch Project

Groups Contacted	Tribe	Date DOE Letter Sent to Tribes	Date Tribal Response Received	Date and Results of Follow-Up Telephone Calls and/or Emails
Coastal Band of the Chumash Nation Janet Garcia, Chairperson P.O. Box 4464 Santa Barbara, CA 93140 Phone: (805) 964-3447	Chumash	11-30-2010	No response to letter received.	12-15-2010: Number no longer in service.
Mona Olivas Tucker 660 Camino Del Ray Arroyo Grande, CA 93420 Phone: (805) 489-1052 Cell: (805) 748-2121 Email: monalisatucker@gmail.com	Chumash	11-30-2010	12-15-2010: Received the letter. Recommends that site is designed to avoid cultural resources. Feels strongly against impacting the bedrock mortars. Would like to review the cultural reports for the project	
Matthew Darian Goldman 495 Mentone Grover Beach, CA 93433 Phone: (805) 748-6913	Chumash	11-30-2010	12-15-2010: Received the letter. Carrizo Plain is very important to the tribe and the whole area is sensitive. Concerned that the project will disturb burials and that the project construction will not be adequately monitored. Would like to see the project happen, but disturbance of sacred areas and sites is a big concern.	12-17-2010: Called to request the reports once more and to express concern that they have not been given reports to review. States that the site has to be protected.
Santa Ynez Band of Mission Elders Sam Cohen, Tribal Administrator P.O. Box 517 Santa Ynez, CA 93460 Phone: (805) 688-7997 Fax: (805) 686-9578 Cell: (805) 245-9083	Chumash	11-30-2010		12-15-2010: A voicemail was left for Sam Cohen. 01-14-2011: According to Freddy Romero and Karen Keever, Sam Cohen will be the person to formally respond “yes” or “no” for formal government-to-government consultation for the Chumash federally-recognized tribe.
Salinan-Chumash Nation Xielolixii 3901 Q Street, Suite 31B Bakersfield, CA 93301 Cell: (408) 966-8007 Email: xielolixii@yahoo.com	Salinan and Chumash	11-30-2010	No response to letter received.	12-15-2010: A voicemail was left for Xielolixii. 12-30-2010: E & E sent an email reminder to Xielolixii.
Santa Ynez Band of Chumash Indians/Santa Ynez Band of Mission Indians Freddy Romero, Santa Ynez Band of Mission Indians/Chumash Initial Cultural Resources Consultant Phone: (805) 688-7997 ext. 37	Chumash	11-30-2010	12-10-2010: Freddy Romero left a voicemail message for Lynn Alexander (DOE) in response to one of DOE's letters on CVSR. He says that his Council tried several times to schedule a meeting with SunPower so they could receive a presentation on the CVSR Project, but never could get that meeting scheduled. He and the Council would very much like to have such a presentation/meeting now. His phone number is 805-688-7997 ext. 37.	12-15-2010: Mr. Romero said that he would be asking the Elders Council and Mr. Vincent Armenta to formally request Government-To-Government consultation, but that the necessary attendees would be out of the office from December 20 through 24, 2010.

Native American Contact History for the California Valley Solar Ranch Project

Groups Contacted	Tribe	Date DOE Letter Sent to Tribes	Date Tribal Response Received	Date and Results of Follow-Up Telephone Calls and/or Emails
Santa Ynez Band of Chumash Indians/Santa Ynez Band of Mission Indians (Cont.)				01-20-2011: Mr. Romero stated that he and the Elders Council would definitely want a meeting with SunPower to hear from the applicant about the project and be able to ask questions about the siting/interactions with areas they consider significant/results of existing cultural resource surveys. He would like a representative of DOE loan programs there at that presentation. Not officially requesting Government-To-Government consultation yet, but will use presentation/meeting w/ SunPower and DOE LGP to determine whether or not to recommend full Government-To-Government consultation to the Business Council and Chairperson Armenta. 02-10-2011: Renee Robins (SunPower) heard from John Larson (URS) that Mr. Romero was trying to get in touch with her. Renee emailed and offered to speak with him informally about the project.
Salinan Nation Cultural Preservation Association Jose Freeman 15200 County Road, 96B Woodland, CA 95695 Phone: (530) 662-5316 Email: joefree@ccio1.com	Salinan	11-30-2010		12-15-2010: A voicemail was left for Jose Freeman. 12-21-2010: Contacted Lynn Alexander (DOE) via voicemail message. Mr. Freeman and his association are going to look at the letter and project information sent and would like to talk more about the project. His association is very concerned about the Carrizzo Plain area, and they are particularly curious as to what BLM thought/said about the project. 12-30-2010: E & E sent an email reminder to Jose Freeman.
Xolon Salinan Tribe Donna Haro 110 Jefferson Street Bay Point, CA 94565	Salinan	11-30-2010	No response to letter received.	
Salinan Nation Cultural Preservation Association Doug Alger, Cultural Resources Coordinator P.O. Box 56 Lockwood, CA 93932 Phone: (831) 385-3450 Cell: (831) 262-9829 Email: fabbq2000@earthlink.net	Salinan	11-30-2010	No response to letter received.	12-15-2010: Line was busy (tried calling three times). 12-30-2010: E & E sent an email reminder to Doug Alger.
Salinan Nation Cultural Preservation Association Gregg Castro, Administrator 5225 Roeder Road San Jose, CA 95111 Phone: (408) 864-4115 Email: glcastro@pacbell.net	Salinan	11-30-2010	No response to letter received.	12-15-2010: Line was busy (tried calling three times). 12-30-2010: E & E sent an email reminder to Gregg Castro.

E-5 Native American Correspondence

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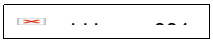
From: Renee Robin [Renee.Robin@sunpowercorp.com]
Sent: Thursday, February 10, 2011 2:33 PM
To: freddyromero1959@yahoo.com
Cc: Chris Baker; Ladd, Karen; John_Larson@URSCorp.com; Alexander, Lynn; Willis, Christina J.
Subject: RE: Contact with the Santa Ynez Band of Chumash Indians
Follow Up Flag: Follow up
Due By: Monday, February 14, 2011 2:00 PM
Flag Status: Red

Hello Mr. Romero – I received a note from my colleague John Larson at URS, that you would like me to be in touch. I am sorry we have not had the opportunity to meet sooner. I have been somewhat constrained in the last few weeks to contact you directly since the DOE has initiated contact with the tribal representative around the potential for government to government consultation for their NEPA/Section 106 compliance.

Nevertheless, I would be pleased to talk with you informally about the CVSR project. Please let me know a convenient time on Friday the 11th or Monday the 14th that I might give you call, and your preferred contact number. You are also welcome to try me at the contact numbers listed below.

Sincerely,



Renée L. Robin, J.D.
Director of Permitting,
Utilities & Power Plants, Americas
SunPower Corporation
1414 Harbour Way South
Richmond, CA 94804 USA
Renee.robin@sunpowercorp.com
510-260-8376 (direct)
510-908-0597 (mobile) ***new***

From: John_Larson@URSCorp.com [mailto:John_Larson@URSCorp.com]
Sent: Thursday, February 10, 2011 1:54 PM
To: Renee Robin
Cc: Chris Baker; freddyromero1959@yahoo.com; KLadd@ene.com
Subject: Contact with the Santa Ynez Band of Chumash Indians

Hi Rene,

This note confirms our discussion today.

On a different project, I met earlier this week with Freddie Romero of the Santa Ynez Band of Chumash Indians.

He requested that I ask you to contact him regarding the California Valley Solar Farm project in San Luis Obispo County. He had been contacted by the federal Department of Energy as part of the NEPA and federal review process. Earlier, he received no response from attempts to contact SunPower or the County.

The contact information is as follows:

Freddie Romero
Santa Ynez Band of Chumash Indians
PO Box 517
Santa Ynez, CA 93460

100 Via Juana Lane
Santa Ynez, CA 93460

805-688-7997
cell: 805-403-2837
reddyromero1959@yahoo.com

Please give him a call to set up a meeting.

Thanks,

John Larson
Santa Maria Office: (805) 361-1110
cell: (805) 455-0015
john_larson@urscorp.com

ecology and environment, inc.
Global Environmental Specialists
401 West A Street, Suite 775
San Diego, California 92101
Tel: (619) 696-0578, Fax (619) 696-0578

March 31, 2011

Ms. Karen Keever
Tribal Elders Council Office
Santa Ynez Band of Chumash Mission Indians
100 Via Juana Lane
Santa Ynez, CA 93460

VIA: FEDEX Priority Overnight
Tracking No. 7969 3149 3486

Transmittal: California Valley Solar Ranch Project,
Record Search Data for Morro Bay – Midway Reconductoring

Dear Ms. Keever,

During our presentation to the Chumash Elder's Council on March 14, 2011, the Council requested copies of records obtained from research at Information Centers. Copies of the records for the California Valley Solar Ranch (CVSR) site were included in the reports provided during our presentation.

Enclosed please find the complete records search data from the Morro Bay-Midway Reconductoring element of the project. This includes a 35 miles of the Morro Bay to Button willow transmission line that extends from the Carrizo Plain Substation to Button willow.

If you have any questions or comments regarding the enclosed, or if I can be of further assistance, please contact me at 619.696.0578 x 4215 or at cwillis@ene.com.

Sincerely,
ECOLOGY AND ENVIRONMENT, INC.

Christina J. Willis
Chief Planner

enclosure

cc: Ms. Lynn Alexander, DOE, w. enclosure

E-6 SHPO Consultation and Request for Concurrence

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Department of Energy
Washington, DC 20585

Mr. Milford Wayne Donaldson
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 95816

APR 14 2011

RE: Section 106 Consultation "No Adverse Effects to Historic Properties Determination," SunPower California Valley Solar Ranch Project and Reconductoring Element

Dear Mr. Donaldson:

The US Department of Energy (DOE) is preparing an Environmental Assessment (EA) under the National Environmental Policy Act for a Federal loan guarantee to High Plains Ranch II LLC, (aka SunPower), to support construction and startup of a 250 megawatt (MW) photovoltaic solar electricity generating facility in southeastern San Luis Obispo County, California. The loan guarantee also includes associated reconductoring (upgrading) of the existing Pacific Gas and Electric (PG&E) 230-kilovolt (kV) Morro Bay-Midway electricity transmission line to convey the generated electricity from the project to the existing Buttonwillow Substation in Kern County, California. Funding through DOE's Loan Guarantee Program constitutes an undertaking subject to compliance with Section 106 of the National Historic Preservation Act and its implementing regulations (36 CFR Part 800). The purpose of this letter is to request concurrence on a finding of no adverse effects to historic properties for the California Valley Solar Ranch (CVSR) Project on the basis of those materials required by 10 CFR Part 800.11d (1) through (3).

The CVSR Project has also undergone a separate environmental review under the California Environmental Quality Act. San Luis Obispo County, as the Lead Agency as defined in CEQA Guidelines Section 15367, issued a Final Environmental Impact Report for the CVSR Conditional Use Permit (CUP) and Twisselman Aggregate Mine CUP/Reclamation Plan (DRC2008-00097, DRC2009-00004) on January 5, 2011. On February 24, 2010, the San Luis Obispo Planning Commission approved the CVSR Conditional Use Permit DRC2008-00097.

1 A description of the undertaking, specifying the Federal involvement, and its area of potential effects (APE), including photographs, maps, drawings, as necessary:

The CVSR Project would be located on an approximately 4,700 acre site in an unincorporated area of eastern San Luis Obispo County, California. The Project would leave approximately 3,200 acres undisturbed and available for grazing. The Project, which is described in greater detail in Table 1 and shown on Figure 1, would be located on the Carrizo Plain, about 2 miles north of the northern boundary of the Carrizo Plain National Monument. SunPower would clear approximately 1,020 acres of the site for construction, however given the mainly flat contour of the area, very little grading would be required. The power generated at the proposed facility would connect into the nearby existing PG&E Morro Bay-Midway transmission line. The Project would also require reconductoring of approximately 35 miles of the Morro Bay-Midway transmission line in San Luis Obispo and Kern Counties.

The APE for direct impacts resulting from the proposed action includes all areas of potential ground disturbing activities. For the CVSR site and interconnection line, the APE would be 4,120 acres. For the reconductoring of the Morro Bay-Midway transmission line, only small portions of

the ROW would be subject to disturbance, such as pull sites or new tower locations; therefore, the direct APE would be 465 acres. The indirect APE for the proposed action includes all areas that could be impacted visually by the CVSR, interconnection line, and the Morro Bay-Midway transmission line. This assessment is necessary as the vista or other rural elements may be required for sacred or ceremonial areas within or adjacent to the proposed action.

2 A description of the steps taken to identify historic properties, including, as appropriate, efforts to seek information pursuant to Part 800.4(b);

Efforts to identify historic properties within the APE included the following eight cultural resources studies, which are enclosed:

California Valley Solar Ranch Project

- Cultural Resources Assessment, California Valley Solar Ranch Project, San Luis Obispo County, California (Lange and Goodwin 2010)
- Results of Follow-up Cultural Resources Survey for California Valley Solar Ranch (LSA Project No. PWR0901A) (Duke 2010)
- Confidential Report: Preliminary Site Assessment of the Bedrock Mortar Site, California Valley, California (Ecology and Environment, Inc. 2010)
- Intensive Pedestrian Survey of Newly Identified Areas of Potential Disturbance. (Ecology and Environment, Inc. 2011)
- Preliminary Report on Archaeological Testing for Inadvertent Discovery, Caliente Switching Station Site #3 (Whitley and Andrews 2011a)
- Data Recovery Plan Site CVSR BRM-1 Caliente Switching Station California Valley San Luis Obispo County, California (Whitley and Andrews 2011b)

Morro Bay-Midway Transmission Line Reconductoring

- Cultural and Paleontological Resources Assessment of the Carrizo-Midway 230-kV Transmission Line Reconductoring Project, Kern and San Luis Obispo Counties, California (ICF International 2010c).
- Addendum 1 to the Cultural and Paleontological Resources Assessment of the Carrizo-Midway 230-kV Transmission Line reconductoring Project, Kern and San Luis Obispo Counties, California (ICF International 2010a).
- Addendum 2 to the Cultural and Paleontological Resources Assessment of the Carrizo-Midway 230-kV Transmission Line Reconductoring Project, Kern and San Luis Obispo Counties, California (ICF International 2010b).
- Addendum 3 to the Cultural and Paleontological Resources Assessment of the Carrizo-Midway 230-kV Transmission Line Reconductoring Project, Kern and San Luis Obispo Counties, California (ICF International 2011).

Cultural Resources Surveys

Intensive level Phase I surveys were conducted for the entirety of the CVSR Project site by LSA Associates (Lange and Goodwin 2010). Five historic-era sites were recorded, although none were recommended to meet the eligibility criteria of the National Register of Historic Places (NRHP).

Intensive level Phase I surveys were conducted for the areas of disturbance for the PG&E Reconductoring Element. A total of 26 resources were either previously recorded or newly recorded as part of this effort (Table 2). Eighteen are recommended to be not eligible for the NRHP, while seven resources are unevaluated. One resource was listed as having an ‘unknown’ eligibility recommendation.

Further areas of impact were identified in the fall of 2010 and Ecology and Environment's archaeologist completed intensive Phase I surveys of these new areas in addition to conducting 'spot checks' on the LSA survey. During these investigations a previously unrecorded site, BRM-1, was recorded. This site was later evaluated through test excavations by ASM Affiliates and has been recommended as eligible for the NRHP.

A total of 24 Project Design Features (PDFs) have been incorporated into the project to guide further work and protect cultural resources during project construction. These PDFs are enclosed for your review and include requiring construction monitoring for all areas of the sight that have the potential for undiscovered and buried cultural resources, evaluation of several resources that have not yet been evaluated, data recovery if avoidance of cultural resources is not feasible, and establishing an inadvertent discoveries plan to ensure proper treatment of cultural resources discovered during construction.

As the lead federal agency for Section 106, DOE transmitted letters describing the CVSR Project to the federally recognized Santa Rosa Rancheria (Tachi Yokut Tribe) and the Santa Ynez Band of Chumash Mission Indians. No response has been received to date from the Santa Rosa Rancheria. The Santa Ynez Band of Chumash Indians requested a presentation regarding the project for their Tribal Elder's Council. DOE and SunPower made a presentation to the Tribal Elder's Council on March 14, 2011. During that meeting, the Santa Ynez Chumash requested a site visit to the proposed site of the Caliente Switching Station. A site visit occurred with five members of the Tribe on April 4, 2011.

DOE also sent letters to the full list of State-recognized Native American contacts, which is attached for your reference. Each tribe was sent a letter that included the project description and an invitation to provide any concerns related to the project; however DOE received no comments to the letters. Follow up phone calls were made to the contacts. Several contacts expressed concern about the project in general, offered their expertise of the project area, or requested to review copies of the cultural resources reports. Representatives from SunPower met with Mr. Fred Collins of the Northern Chumash Tribal Council on January 12, 2011 to discuss his concerns regarding impacts to the flora and fauna in the area.

3) The basis for determining that no historic properties are present or affected.

Based on our review of the project and the information provided above, DOE has determined that no historic properties would be adversely affected by the proposed project.

PG&E has incorporated a number of project design features (PDFs) into the project and site avoidance measures to avoid effects to the resources found within their APE. For the CVSR Project site one resource, LSA-PWR0901SA-S1, while recommended to be not eligible for the NRHP, was recognized as potentially having buried and as yet undiscovered features which could change the NRHP recommendation. Avoidance of this site has been stipulated in PDFs. One resource recommended as eligible for the NRHP, BRM-1, would be affected by construction of the Caliente Switching Station, however PDFs have been incorporated into the project for data recovery excavations prior to project construction. Accordingly, DOE has determined that a finding of "no adverse effect to historic properties" is appropriate for the CVSR project.

DOE requests your concurrence with our conclusions of effect, and specifically on the "no adverse effect to historic properties" determination. Should you require additional information to facilitate your response, please contact me via email at Lynn.Alexander@hq.doe.gov or via surface mail at the following address: U.S. Department of Energy, 1000 Independence Ave., SW, LP-10, Washington, DC 20585. I can also be reached by telephone at 202-287-5656.

Respectfully,

Lynn Alexander
Environmental Protection Specialist
Loan Programs Office

Enclosures:
Table 1 – Sunpower/CVSR Loan Guarantee Application - Project Description
Table 2 – Research and Field Results
Figure 1 – Area of Potential Effect Map
Project Design Features to Project Cultural Resources

California Valley Solar Ranch Project

Cultural Resources Assessment, California Valley Solar Ranch Project, San Luis Obispo County, California, prepared by Lange and Goodwin 2010

Results of Follow-up Cultural Resources Survey for California Valley Solar Ranch (LSA Project No. PWR0901A), prepared by Duke 2010

Confidential Report: Preliminary Site Assessment of the Bedrock Mortar Site, California Valley, California, prepared by Ecology and Environment, Inc. 2010

Intensive Pedestrian Survey of Newly Identified Areas of Potential Disturbance, prepared by Ecology and Environment, Inc. 2011

Preliminary Report on Archaeological Testing for Inadvertent Discovery, Caliente Switching Station Site #3, prepared by Whitley and Andrews 2011

Data Recovery Plan Site CVSR BRM-1 Caliente Switching Station California Valley San Luis Obispo County, California, prepared by Whitley and Andrews 2011

Morro Bay-Midway Transmission Line Reconductoring

Cultural and Paleontological Resources Assessment of the Carrizo-Midway 230-kV Transmission Line Reconductoring Project, Kern and San Luis Obispo Counties, California, prepared by ICF International 2010

Addendum 1 to the Cultural and Paleontological Resources Assessment of the Carrizo-Midway 230-kV Transmission Line reconductoring Project, Kern and San Luis Obispo Counties, California, prepared by ICF International 2010

Addendum 2 to the Cultural and Paleontological Resources Assessment of the Carrizo-Midway 230-kV Transmission Line Reconductoring Project, Kern and San Luis Obispo Counties, California, prepared by ICF International 2010

Addendum 3 to the Cultural and Paleontological Resources Assessment of the Carrizo-Midway 230-kV Transmission Line Reconductoring Project, Kern and San Luis Obispo Counties, California, prepared by ICF International 2011

Native American Heritage Commission Tribal Contact List

Native American Consultation Letters

DOE Tribal Correspondence

Table 1: SUNPOWER/CVSR LOAN GUARANTEE APPLICATION - PROJECT DESCRIPTION

CVSR (Financed with DOE Loan Guarantee)
Development of the CVSR Photovoltaic Generation Facility
• Solar panel arrays, designated as Arrays 1, 2, 4, 5, 6, 7, 8, 9, 10, and 11, arranged in 10 separate areas on the CVSR site. Originally, Array 3 was also planned as part of the CVSR Project but was eliminated to reduce impacts to giant kangaroo rat habitat. Arrays would be mounted on SunPower T0 tracker units. • Electrical equipment, including a direct current (DC) collection system from the solar panels to centralized inverters, and an alternating current (AC), medium-voltage collection system. Several segments of the AC collection system would be underground and the remainder carried on overhead power lines, which would carry electrical output from each array to a new CVSR substation. Inverters would take the DC energy output of the panels and convert it to AC for delivery to the transmission grid via the CVSR Project's medium-voltage collection system, substation, and switchyard. • A CVSR substation, which would step-up voltage collected from the arrays at 34.5-kV to 230-kV, and from which the CVSR's interconnection line would originate. • A 230-kV interconnection line on steel towers between the CVSR substation and the Caliente Switching Station to transmit the generated electrical power to PG&E's 230-kV Morro Bay–Midway transmission • A permanent operations and maintenance (O&M) facility with outdoor storage and a gasoline tank. • An on-site septic system and leach field for sanitary wastewater treatment and disposal, to be used during construction by the Temporary Construction Worker Accommodations Area and then during operations by the O&M building • One outdoor viewing summit that would be accessed by a new hiking trail. • Access roads and fencing. • A water system for water supply and fire safety, which would be comprised of a well, reverse osmosis water treatment equipment within a small building, two brine evaporation ponds, and a water tank. • Temporary facilities, including two temporary covered work areas (for tracker assembly); a portable concrete batch plant for the O&M building foundation tracker motors, inverters; electrical equipment within the substation; a temporary switching station until the permanent switching facility is constructed; and a Temporary Construction Worker Accommodations Area. • Closure and reclamation of two inactive on-site gypsum mines
Reconductoring of the PG&E Morro Bay-Midway Transmission Line
• Reconductoring of approximately 35 miles of the Morro Bay–Midway transmission line, from the proposed Topaz Solar Farm and to the Midway Substation in Kern County. • A new CVSR switching station (the Caliente Switching Station). • A new optical ground wire (both a static line and a fiber optic communication line).

Table 2 Research and Field Results

Cultural Resource Site Number	Description	NRHP Eligibility Recommendation	Project Component	Reference
n/a	Morrow Bay–Midway Transmission Line	Not Eligible	Reconductoring	ICF International 2010c
P-15-4014	Prehistoric Midden site with human remains	Unevaluated	Reconductoring	ICF International 2010c
P-15-1493	Prehistoric Site	Unknown	Reconductoring	ICF International 2010c
P-15-9736	Prehistoric Site	Unevaluated	Reconductoring	ICF International 2010c
N/A	Filos Property; Historic Ranch	Not Eligible	Reconductoring	ICF International 2010c
N/A	Carrizo Plain substation	Not Eligible	Reconductoring	ICF International 2010c
P-15-9737	Historic archaeological site, San Joaquin Light and Power Company's Midway Steam Plant	Unevaluated	Reconductoring	ICF International 2010c
P-15-10840	Isolated chert flake	Not Eligible	Reconductoring	ICF International 2010c
P-15-10841	Isolated chert flake	Not Eligible	Reconductoring	ICF International 2010c
I-5 (LSA-PWR0901A-S1)	Historic well, water trough and tank, and earthen reservoir	Not Eligible	Adjacent to access road for Caliente Switching Station	Lange and Goodwin 2010
I-6	Horse –drawn spreader	Not Eligible	Access road to Caliente Switching Station	ICF International 2010a
Carrisa Highway (SR-58)	Highway was originally part of the nineteenth-century wagon route from Santa Margarita to the placer mines in Pozo, La Panza, and McKittrick.	Not Eligible	CVSR Site	ICF International 2010a
CM-ISO-1H	Horseshoe with nails still attached	Not Eligible	Access road to Caliente Switching Station	ICF International 2010a
CM-ISO-2	Obsidian flake	Not Eligible	Reconductoring	ICF International 2010a
CM-ISO-3	Crypto-crystalline silicate flake	Not Eligible	Access Road	ICF International 2010a
CM-ISO-4	Crypto-crystalline silicate flake	Not Eligible	Access Road	ICF International 2010a
CM-ISO-5	Obsidian Flake	Not Eligible	Access Road	ICF International 2010a
CM-5H	Historic glass and ceramic scatter	Not Eligible	Reconductoring	ICF International 2010b
CM-ISO-6	Prehistoric handstone	Not Eligible	Reconductoring	ICF International 2010b
CM-1H	Rock alignments, historic refuse scatter	Unevaluated	Caliente Switching Station No. 1	ICF International 2010a
CM-2	Bedrock mortar site with a handstone	Unevaluated	Reconductoring	ICF International 2010a
CM-3	Bedrock mortar site	Unevaluated	Reconductoring	ICF International 2010a
CM-4	Possible mining prospect and refuse scatter	Unevaluated	Reconductoring	ICF International 2010a
LSA-PWR0901SA-	1930's Ranch House and associated cattle	Not Eligible	Solar Generation Facility	Lange and Goodwin 2010

Table 2 Research and Field Results

Cultural Resource Site Number	Description	NRHP Eligibility Recommendation	Project Component	Reference
S1	watering features and refuse scatters			
LSA-PWR0901SA-S2	Farm Equipment	Not Eligible	Solar Generation Facility	Lange and Goodwin 2010
LSA-PWR0901SA-S3	Livestock watering, feeding and sanitation area	Not Eligible	Reconductoring	Lange and Goodwin 2010
LSA-PWR0901SA-S4	Historic Refuse Scatter	Not Eligible	No longer in proposed development area	Lange and Goodwin 2010
P-40-041017	Weigh Station along Highway 58	Not Eligible	Solar Generation Facility	Lange and Goodwin 2010
BRM-1	Bedrock Mortars and lithic scatter	Eligible Under Criterion D	Caliente Switching Station Alternative 3	Whitley and Andrews 2011

Project Design Features To Protect Cultural Resources

The following project design features are incorporated into the CVSR Project. High Plains Ranch II, LLC (the Applicant) and Pacific Gas and Electric (PG&E) have committed to these design features to minimize or avoid impacts on cultural resources if the CVSR Project is carried forward.

CULTURAL RESOURCES PROJECT DESIGN FEATURES – CALIFORNIA VALLEY SOLAR RANCH SITE

CVSR CR-1. Ranch complex buffer zone and fencing. Prior to construction, wildlife compatible fencing or other comparable means to visibly delineate a 100 foot-wide "no disturbance" buffer around the recorded Twisselman ranch complex shall be installed. Prior to construction permit issuance, this buffer shall be delineated on all applicable construction plans. In the event construction work must encroach within this buffer area, the following shall be done prior to construction permit issuance:

1. Completion of subsurface testing by a County-approved historic archaeologist in areas proposed for disturbance. Should resources be encountered, the archaeologist and Applicant shall make all efforts to find the least sensitive area to impact. Should resources still need to be impacted, the archaeologist shall prepare a data recovery program, which shall be implemented prior to and during ground-disturbing activities.
2. Prior to construction permit approval, the (revised) plan shall be submitted to the County for approval.
3. Prior to final inspection, the data recovery program results shall be submitted to the County.

CVSR CR-2. Evaluation of unanticipated archaeological finds. Should unanticipated archaeological artifacts or features be encountered, a qualified archaeologist will be retained to evaluate the find.

CVSR CR-3. Map and monitor Pleistocene to recent alluvium near SR-58. Although no prehistoric artifacts or features were identified by the survey, Pleistocene to recent alluvium is located 2,000 to 7,000 feet on either side of Carissa Highway (SR-58) and has the potential for buried cultural resources to varying depths due to the young age (10,000 years to present) of the deposits (Smith, 1964). LSA recommends that the distribution of Pleistocene to recent alluvium be plotted on the main project map and that any trenching or other ground disturbance in areas covered by this alluvium be monitored by a qualified archaeologist.

CVSR CR-4. Construction crew cultural resources training. The monitoring plan shall also include provisions defining education of the construction crew and establishing protocol for treating unanticipated finds. In consultation with a County-approved archaeologist, the Applicant shall provide cultural resources awareness training to all field crews and field supervisors. This training will include a description of the types of resources that may be found in the project area, the protocols to be used in the event of an unanticipated discovery, the importance of cultural resources to the Native American community, and the laws protecting significant archaeological and historical sites. In addition, the Applicant shall provide all field supervisors with maps showing those areas sensitive for potential buried resources. The County Environmental Monitor shall verify implementation of the Plan during construction.

CVSR CR-5. Identification of Human Remains. If human remains or possible human remains are encountered at any stage in project construction or operation, the Applicant shall be responsible for following State Health and Safety Code Section 7050.5 regarding handling, treatment, and disposition of those remains. Upon discovery, the Applicant shall immediately contact the County Coroner and the County Environmental Monitor on how to proceed. If the remains are determined to be prehistoric, per Public Resources Code Section 5097.98, the Coroner will notify the Native American Heritage Commission, which will initiate a formal process to insure proper notification and proper re-internment.

CVSR CR-6. Record and evaluate Carrisa Highway (SR-58) and strip mines prior to ground-disturbing activities. Prior to construction permit issuance, the Applicant shall retain a County-approved architectural historian to evaluate these resources (stretch of the historic-era Carrisa Highway and two idle gypsum mines on the project site), determine whether they are historic, and prepare report to be submitted to the County. This evaluation shall include archival research and (where possible) oral interviews with individuals who have knowledge of the dates of construction, uses, and general history of the resources. If any of the resources are found to be eligible for the California Register of Historical Resources, full recordation and archival research, plus documentation of that work, shall be required.

CVSR CR-7. Cultural Resources Monitoring Plan and Reporting. Prior to issuance of construction permits, the Applicant shall submit a monitoring plan, prepared by a County-approved archaeologist, for review and approval by the County Department of Planning and Building. The intent of this Plan would be to monitor all earth-disturbing activities in areas identified as potentially sensitive for cultural resources, per the approved monitoring plan. The monitoring plan shall include at a minimum:

1. List of personnel involved in the monitoring activities;
2. Inclusion of involvement of the Native American community, as appropriate;
3. Description of how the monitoring shall occur;
4. Description of frequency of monitoring (e.g., full-time, part time, spot checking);
5. Description of what resources are expected to be encountered;
6. Description of circumstances that would result in the halting of work at the project site (e.g., What is considered “significant” archaeological resources?);
7. Description of procedures for halting work on the site and notification procedures; and
8. Description of monitoring reporting procedures.

Prior to construction/ground-disturbing activities, the Applicant shall ensure that any construction-related subsurface excavation in sensitive areas (those with moderate to high potential for buried prehistoric archaeological resources) are tested by a County-approved archaeologist. Should buried resources be identified, further testing or avoidance shall be required; if avoidance is not possible, data recovery shall be required as defined in CVSR CR-10.

As an alternative to testing, monitoring during construction in these sensitive areas could occur. If monitoring is implemented in sensitive areas, the archaeologist should work with a Native American monitor.

Prior to final inspection, a County-approved archaeologist shall prepare a report, who will submit to the County Environmental Monitor summarizing all monitoring activities and design features and confirming that all recommended design features have been met. If the analysis included in the Phase III program is

not complete by the time final inspection or occupancy will occur, the Applicant shall provide to the County Environmental Monitor proof of obligation to complete the required analysis.

CVSR CR-8. Survey Areas of New Fencing. Before any fence post construction takes place, the Applicant shall retain an archaeologist approved by San Luis Obispo County to survey proposed locations of new fencing or other ground disturbance outside of the currently designated Area of Potential Effect. If resources are identified, they shall be avoided or, if avoidance is not possible, evaluated. If any resources are found to be significant, data recovery shall be completed as defined in CVSR CR-10.

Any additional evaluation of data recovery shall be conducted consistent with an evaluation plan that shall be reviewed and approved by the San Luis Obispo County Environmental Monitor prior to work being conducted.

Prior to final inspection, a copy of the archaeologist's report shall be submitted to the County. During construction, as needed, compliance will be verified by the County Environmental Monitor.

CVSR CR-9. Delineate environmentally sensitive areas on a confidential copy of project plans. Prior to construction permit issuance, the Applicant shall delineate on a confidential copy of project plans provided to the County all known archaeological sites on or adjacent to the project property as Environmentally Sensitive Area(s) [ESAs]. To ensure the integrity of these areas from unauthorized disturbance or collection, the delineated areas shall not be labeled with regard to the specific type of cultural resource identified as sensitive.

CVSR CR-10. Cultural Resources Data Recovery Program. Should a Phase III (data recovery) program be necessary, prior to and during ground-disturbing activities, the Applicant shall retain a County-approved archaeologist. The archaeologist responsible for the Phase III program shall be provided with a copy of the previous archaeological investigations completed by the Applicant. The archaeologist shall prepare a work scope to be approved by the County. The Phase III program shall include at least the following:

a. standard archaeological data recovery practices;

b. recommendation of sample size adequate to mitigate for impacts to archaeological site, including basis and justification of the recommended sample size.

c. identification of location of sample sites/test units;

d. detailed description of sampling techniques and material recovery procedures (e.g., how sample is to be excavated, how the material will be screened, screen size, how material will be collected);

e. disposition of collected materials;

f. proposed analysis of results of data recovery and collected materials, including timeline of final analysis results; and

g. List of personnel involved in sampling and analysis.

Prior to issuance of a construction permit, this provision shall be shown on all applicable construction plans. Should a Phase III (data recovery) program be required, the Applicant shall submit to the County Environmental Monitor prior to final inspection, a letter from the consulting archaeologist indicating that all necessary field work, as identified in the Phase III program, has been completed.

CULTURAL RESOURCES PROJECT DESIGN FEATURES – RECONDUCTORING

PG&E CR-1. Pre-construction Worker Education Program. PG&E will design and implement a Worker Education Program that will be provided to all Project personnel who may encounter and/or alter historical resources or unique archaeological properties, including construction supervisors and field personnel. No construction worker will be involved in field operations without having participated in the Worker Education Program.

The Worker Education Program shall include, at a minimum:

- A review of archaeology, history, prehistory and Native American cultures associated with historical resources in the Project vicinity.
- A review of applicable local, state and federal ordinances, laws and regulations pertaining to historic preservation.
- A discussion of site avoidance requirements and procedures to be followed in the event that unanticipated cultural resources are discovered during implementation of the Project.
- A discussion of disciplinary and other actions that could be taken against persons violating historic preservation laws and PG&E policies.
- A statement by the construction company or applicable employer agreeing to abide by the Worker Education Program, PG&E policies and other applicable laws and regulations.

The Worker Education Program may be conducted in concert with other environmental or safety awareness and education programs for the Project, provided that the program elements pertaining to cultural resources are provided by a qualified instructor meeting applicable professional qualifications standards.

PG&E CR-2. Stop work to investigate unanticipated discoveries of cultural resources. If buried cultural resources such as chipped or ground stone, historic debris, or building foundations are inadvertently discovered during site preparation or construction activities, work will stop in that area and within 30 meters (100 feet) of the find until a qualified archaeologist can assess the significance of the find and, if necessary, develop appropriate treatment measures in consultation with PG&E and other appropriate agencies (with the archaeologist's approval, work may continue on other portions of the work area). PG&E will be responsible for ensuring that the archaeologist's recommendations for treatment are implemented. If the discovery can be avoided and no further impacts will occur, the resource will be documented on State of California Department of Parks and Recreation cultural resource records and no further effort will be required. If the resource cannot be avoided and may be subject to further impact, PG&E will evaluate the significance and CRHR eligibility of the resources, and implement data recovery excavation or other appropriate treatment measures if warranted.

PG&E CR-3. Install silt fencing to protect historic resources and prohibit grading along the fenced road segments. Prior to construction, a PG&E cultural resources specialist or PG&E's authorized agent will install standard 2-ft-tall silt fencing along the outside edges of the existing access roads to protect historic resources where they are known to exist (e.g., sites CM-1H, CM-2, CM-3, CM-4H, P-15-4014, and P-15-9736). The locations of silt fencing installation will be mapped on construction plans by PG&E. The fencing will be installed parallel to the road, between the road and the resource. The length of the fencing shall equal the width of the resource area plus 100 feet, such that the fencing extends 50 feet in both directions beyond the width of the resource. PG&E or its authorized agent will inspect the fencing

on a weekly basis to ensure its integrity and that of the cultural resource. PG&E will prohibit grading along the fenced portions of the access roads.

PG&E CR-4. Use minimally invasive equipment to avoid foreign transmission line. PG&E will obtain a clearance on the foreign transmission line that crosses the Morro Bay– Midway 230-kV Transmission Line near Tower 159. The line clearance will eliminate the need to build a crossing structure on site P-15-4014 (a prehistoric midden site with human remains). This would result in the lowest impact on site P-15-4014 but may not be feasible for PG&E in that a clearance on a foreign transmission line would result in temporary power supply reductions to a foreign energy service area.

If obtaining a clearance is not feasible, PG&E will use a truck-mounted bucket on an electrically grounded vehicle to guard the foreign transmission line crossing. Use of a vehicle to protect the crossing will eliminate the need for excavation into site P-15-4014, although the vehicle will still have the potential to crush and displace archaeological materials on the site surface. To minimize or prevent damage to surficial archaeological material, PG&E will retain a qualified archaeologist to mark a safe path (one that does not traverse visible archaeological materials) from the nearest road to the transmission line crossing. The archaeologist will identify the path by conducting an intensive archaeological survey between the road and crossing area. The archaeologist will then guide the vehicle to the work area. The archaeologist will also lead the vehicle out of the work area upon the completion of work at the crossing.

Additionally, PG&E will build a low-impact, scaffold-style crossing structure on the surface of site P-15-4014. This structure will substitute smaller 2 x 4 supports for the minimum of two 46-cm (18-inch)-diameter poles that are typically used to construct crossing structures. To minimize or prevent damage to surficial archaeological material, PG&E will retain a qualified archaeologist to mark a safe path (one that does not traverse visible archaeological materials) from the nearest road to the transmission line crossing. The archaeologist will identify the path by conducting an intensive archaeological survey between the road and crossing area. The archaeologist will then guide the vehicle to the work area. The archaeologist will also lead the vehicle out of the work area upon the completion of work at the crossing.

PG&E CR-5. Avoid site P-15-1493. PG&E will not replace or modify the tower(s) located in the vicinity of P-15-1493. If avoidance is not feasible, PG&E will evaluate P-15-1493 (a prehistoric site) for eligibility to the NRHP and CRHR. If P-15-1493 is found to be ineligible for the NRHP and CRHR, no further work is needed at the site. If P-15-1493 is eligible for the NRHP and CRHR, PG&E will prepare a work plan describing criteria for significance, including a research design, and conduct a test excavation at the site. PG&E shall extend to the USACE, SHPO, and any other consulting parties the opportunity to comment on the work plan prior to its implementation. Should P-15-1493 qualify for listing in the NRHP and CRHR, PG&E will prepare and implement a site-specific archaeological treatment plan at P-15-1493. The USACE, SHPO, and any other consulting parties will review the plan during Section 106 consultation. The plan will describe the proposed construction work and approximate volume of site damage expected, methods for the recovery of archaeological materials, laboratory methods, and reporting of results. PG&E will prepare and implement the plan prior to construction.

PG&E CR-6. Stop work if remains that may be of human origin are encountered and follow State Health and Safety Code Section 7050.5. If human remains or possible human remains are encountered at any stage in the project, work will stop within a 30-meter (100-foot) radius of the find and the county coroner will be notified immediately, as required by state law (California Health and Safety Code 7050.5). The Coroner will determine whether the remains are Native American and archaeological in nature. If the remains are not archaeological and Native American, the Coroner will take possession immediately. If the remains are archaeological and Native American, the Coroner will notify the California Native American Heritage Commission; the Commission will identify the Most Likely

Descendant (MLD) for the remains. With the permission of the land owner or his/her authorized representative, the MLD may inspect the site of the discovery. The MLD shall complete the inspection within 48 hours of notification by the Commission. The MLD may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials. The MLD will decide on the appropriate treatment and disposition of the remains, in consultation with the landowner or his/her representative. PG&E will also retain a professional archaeological consultant with Native American burial experience who will conduct a field investigation of the specific site and consult with the MLD identified by the NAHC. As necessary, the archaeological consultant may provide professional assistance to the MLD including the excavation and removal of human remains. PG&E or its appointed representative will implement design features before the resumption of activities at the site where the remains were discovered.

PG&E CR-7. Survey new areas of disturbance that were previously unexamined. As PG&E identifies new project elements or gains access to previously unexamined areas, PG&E will retain qualified cultural resource specialists to survey the area(s) prior to construction. The survey results will be reported in a cultural resources inventory report that meets the standards promulgated in Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines (48 Federal Register 44716–44742) and the Office of Historic Preservation's (1990) Archaeological Resource Management Reports: Recommended Contents and Format. PG&E will forward the report to the appropriate agencies during Section 106 consultation. Construction in the unexamined areas will not commence until the report is approved by the appropriate agencies.

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
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May 5, 2011 Reply in Reference To: DOE110415A

Lynn Alexander
Loan Programs Office
Environmental Compliance Division
Department of Energy
1000 Independence Ave SW, LP-10
Washington, DC 20585

Re: SunPower California Valley Solar Ranch Project and Reconductoring Element, San Luis Obispo County, California

Dear Ms. Alexander:

Thank you for seeking my consultation regarding the above noted undertaking. Pursuant to 36 CFR Part 800 (as amended 8-05-04) regulations implementing Section 106 of the National Historic Preservation Act (NHPA), the Department of Energy (DOE) is seeking my comments on the effects the proposed undertaking will have on historic properties.

The project consists of providing a Federal loan guarantee to SunPower to construct a 250 megawatt photovoltaic solar electricity generating facility in southeastern San Luis Obispo County. The loan guarantee also includes upgrading 35 miles of an existing PG&E transmission line. The solar array will cover approximately 1020 acres which will require some grading and clearing of vegetation. The Area of Potential Effects will include 4120 acres with an additional 465 acres for the reconductoring portion of the undertaking. The APE will also include the viewshed, although the acreage and exact locations of this portion of the APE have yet to be defined. The vertical extent of the APE has yet to be properly defined. In addition to your letter received April 15, 2011, you have submitted the following document as evidence of your efforts to identify historic properties in the APE:

- *California Valley Ranch Solar Project In San Luis Obispo County and Kern County California: Attachments for State Historic Preservation Officer* (Various Authors, DOE, March 2011)

The DOE has performed a records search at the Central Coastal Information Center and through their consultants, performed a pedestrian survey of the APE by way of 15 meter transects and identified a total of 31 resources within the APE. Of these, the DOE determined that 23 are not eligible, eight are left unevaluated and assumed eligible for the purposes of this undertaking and will be avoided, and one site, BRM-1 is eligible for the National Register of Historic Places. The DOE has undertaken government to government consultation with letters sent to the Santa Rosa Rancheria and the Santa Ynez Band of Chumash Mission Indians. No response has been received from the Santa Rosa Rancheria to date, and the DOE and the applicant made a presentation to

the Santa Ynez Band Tribal Elder's Council on March 14 and a site visit on April 4, 2011. The DOE also sent letters to all contacts as listed by the NAHC, and subsequent requests for more information were provided. In addition to a meeting, one contact asked to discuss concerns regarding impacts to flora and fauna of the area. The DOE has determined that there will be no adverse effects to historic properties.

Based on the documentation submitted I have the following comments:

1. Please define or at a minimum provide an estimate of the ground disturbance depth (a vertical APE) required for grading of the APE.
2. Please define which locations will need new towers for the reconductoring portion of the undertaking, as the potential impacts at these specific locations should be accounted for before arriving at a finding of effects.
3. Survey for the area of all planned components of the undertaking, including fencing mentioned in the Project Design Features CVSR CR-8 should be included in your Area of Potential Effects, identification efforts, and if necessary evaluations in the current consultation.
4. I concur with your determination that site BRM-1, a bedrock mortar site with subsurface deposits, is eligible for the National Register for Criterion D.
5. I **cannot** concur with any of your determinations of *not* eligible at this time. None of these determinations were written addressing the four criteria of eligibility for the National Register of Historic Places.
6. I **cannot** concur with your finding of No Adverse Effects, as under Section 106 the destruction of an eligible historic property, even via data recovery, constitutes an adverse effect to a site, and therefore, pursuant to 36 CFR 800.6, requires the preparation of a Memorandum of Agreement or an alteration of project description to avoid impacts to the site. Additionally, the determinations of eligibility for historic properties within the APE are incomplete.
7. Please be aware that any eligible (or otherwise unevaluated) properties that will be affected by the undertaking and not avoided, should be specifically discussed how that impact is or is not adverse to the qualities that make that property eligible for the National Register.

I look forward to completing this consultation. Thank you for seeking my comments and considering historic properties as part of your project planning. If you have any questions or concerns, please contact Trevor Pratt of my staff at (916) 445-7017 or at email at tpratt@parks.ca.gov.

Sincerely,

Susan K Stratton for

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

Department of Energy
Washington, DC 20585

MAY 26 2011

Mr. Milford Wayne Donaldson
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 95816

RE: Continuing Section 106 Consultation ("No Adverse Effect")
SunPower California Valley Solar Ranch Project and Reconductoring Element

Dear Mr. Donaldson:

Per our pervious correspondence, you are aware that the US Department of Energy (DOE) is evaluating the application of High Plains Ranch II LLC, (aka SunPower), for a federal loan guarantee to support the construction and startup of a 250 megawatt (MW) photovoltaic solar electricity generating facility in southeastern San Luis Obispo County, California. The loan guarantee also includes associated reconductoring (upgrading) of the existing Pacific Gas and Electric (PG&E) 230-kilovolt (kV) Morro Bay-Midway electricity transmission line (Morro Bay-Midway transmission line) to convey the generated electricity from the project to the existing Buttonwillow Substation in Kern County, California. Funding through DOE's Loan Guarantee Program constitutes an undertaking subject to compliance with Section 106 of the National Historic Preservation Act and its implementing regulations (36 CFR Part 800).

In our previous consultation with you, DOE described the proposed undertaking, defined the area of potential effects (APE), summarized the efforts to identify historic properties within the APE, and the basis for determining that no historic properties are present or affected. The DOE concluded that a finding of no adverse effects to historic property was appropriate for the SunPower California Valley Solar Ranch Project and Reconductoring Element. Subsequent correspondence with your office, dated May 5, 2011, included requests for additional information. This letter is formatted to include your specific requests, followed by descriptions of the information provided.

1) **An estimate of the ground disturbance depth (vertical APE) required for grading.**

The grading depth would vary across the site. The deepest cuts are in Array 4 (8 feet), Array 8 (14 feet), and Array 11 (31 feet). Engineering drawings that illustrate the depth of disturbance are included as Attachments 1a and 1b.

2) Define which locations will need new towers for the reconductoring, and assess the impacts of those locations.

Originally up to 10% of the Morro Bay-Midway transmission line towers were proposed to be replaced to accommodate the reconductoring. It has now been confirmed that for the whole of the 35 miles of reconductoring, only four new towers would be constructed. As shown on Attachment 2, two new towers would be constructed along the Morro Bay-Midway transmission line, north of the Caliente Switching Station. In addition, two new towers would be constructed at the Caliente Switching Station. The area surrounding these new towers has been surveyed for cultural resources as part of the *Intensive Pedestrian Survey of Newly Identified Areas of Potential Disturbance, prepared by Ecology and Environment, Inc. 2011*. No cultural resources have been identified in the areas surrounding three of the towers. The fourth tower would be located within the boundaries of BRM-1, however it would be located away from the subsurface deposit and the bedrock mortars. A shovel test pit was dug at the proposed location of the tower and was negative for any cultural materials. Construction of this tower is discussed in detail in Comment 6, below. It is DOEs opinion that this tower would not affect any of the components of the BRM-1 site that contributed to its eligibility for listing on the NRHP.

Thus, the new tower construction for the reconductoring element would not result in any adverse effects to cultural resources.

3) Survey for the area of all planned components of the undertaking, including fencing mentioned in the Project Design Features CVSR CR-8 should be included in your Area of Potential Effects, identification efforts, and if necessary evaluations in the current consultation.

Project Design Feature CVSR CR-8 was written to ensure that any newly identified areas of disturbance would be surveyed and any impacts to cultural resources identified and evaluated before construction could occur. Approximately 4.5 miles of new fencing along the perimeter of the solar generating facility, north of State Route 58 (SR-58), have recently been designed as part of the biological resources habitat mitigation and monitoring plan. SunPower's cultural resources consultant conducted an intensive level survey for these new areas and no cultural resources were found. A copy of this report is enclosed as Attachment 3. A map denoting the new areas of survey is provided on page 4 of the report. These new survey areas are within the identified APE and do not change the DOE's determination of "no adverse effects to historic properties."

4) I concur with your determination that site BRM-1 is eligible for the National Register

No response necessary.

5) I cannot concur with any of your determinations of not eligible at this time. None of these determinations were written addressing the four criteria of eligibility for the National Register of Historic Places.

The only cultural resources that would be affected by the reconductoring element of the CVSR project are BRM-1 and the Morro Bay-Midway transmission line. Our previous correspondence identified that BRM-1 was eligible for the National Register and you have concurred with this determination.

EVALUATION OF THE MORRO BAY-MIDWAY TRANSMISSION LINE

Classification. The Morro Bay-Midway transmission line is a linear resource, a category that also includes canals, roads, railroads, gas lines, and similar properties. It conveys 230 kV of electricity on steel lattice towers approximately 80 miles between the Morro Bay Substation on the Central Coast and the Midway Substation at Buttonwillow, in the southern San Joaquin Valley. Farmer (2007:6-5) states that the line was built between 1943 and 1952 based on a review of historic USGS maps. Within this time range, it seems likely that construction occurred after World War II (1941-1945) when shortages of materials and building restrictions would not have allowed the construction of such an extensive structure. The line was very likely in place by November 1949, when the Carrizo Plain Substation was completed (Fisher n.d., cited in Farmer 2007: 6-6).

Context, Theme, and Period. Within the project area, the Morro Bay-Midway transmission line and the Carrizo Plain Substation function to deliver and distribute electricity to the region. Yet the line is not an isolated structure but one part of a state-wide system. Similarly, construction of the Morro Bay-Midway transmission line was just one step in a series of events related to the development of the electrical infrastructure on the Central Coast.

In 1913, the Midlands County Public Services Corporation (MCPSC) completed construction of a 60 kV transmission line that sent power from the Henrietta Substation in Kings County through Paso Robles, San Miguel, San Luis Obispo, and onto Santa Maria—a total of 137 miles (Baloian et al. 2009). The MSPCS was intimately linked to the San Joaquin Light and Power Corporation (SJLPC), from which it purchased all of its power. In the early 1930s, PG&E acquired the MCPSC and the SJLPC, and by the end of the decade, it had formally integrated the both entities into its system. The Morro Bay-Midway transmission line was built principally to supplement the supply of power provided by the earlier MCPSC-SJLPC line; like many regions in California, the population and economy of the Central Coast experienced exponential growth following WWII. Additionally, the line provided high voltage transmission from the Central Coast into the PG&E power grid once the Morro Bay steam plant began operations in the mid-1950s.

The transmission line relates to two general themes. First, it obviously relates to the development and consumption of electrical power in the United State and particularly in California. From its beginnings in the 1890s into the next century, the growing electrical

industry continually experimented with alternative designs and materials to increase the output and reliability of power in both generation and transmission facilities. With the Sierra Nevada and its vast water resources, California often stood at the forefront of innovation, producing some of the world's most spectacular examples of hydroelectric systems and long distance transmission lines. By the 1930s, the industry had adopted most of the features found in modern plants and transmission lines. For the purposes of evaluation, 1930 serves as a convenient historical marker dividing the experimental and developmental period of the industry (1890-1930) from the technologically modern period (1930-present).

Second, the line most fittingly relates to the economic growth of the Carrizo Plain induced mainly by the rise of grain farming in the region during the first part of the 20th century. As discussed by Lichtenstein et al (2010), homesteaders on the Carrizo Plain began to turn to commercialized farming around 1900; grain cultivation peaked during WWII, but by the 1960s government restrictions on wheat production more or less ended this historical/economic period. In contrast to the first theme, the second is, by definition, limited to a local context.

Application of the NRHP Criteria. A cultural property typically achieves significance under Criteria A and B by being a good representative of a historical theme(s). Particularly for commercial-type structures, a resource gains significance if it was connected to an event that had major importance within the industry, was the first of its kind, and/or if its influence extended beyond the industry. By these accounts, the Morro Bay-Midway transmission line fairs very poorly.

Construction of the line post-dated the MCPSC-SJLPC inter-regional line—the first to transmit electricity over a long distance to the Central Coast—by about 35 years. Although the line is more than 60 years old, it is essentially a modern structure by industry standards. Some transmission lines that post-date 1930 have been considered significant structures. For example, the Boulder Dam-Los Angeles 287.5 kV Transmission Line was judged a significant resource under Criterion A based on its associations with the construction the Boulder/Hoover Dam—an exceptional event in the history of hydroelectricity in the United States—as well as with the growth of Los Angeles—among the most populated metropolises in the nation (Van Wormer and Dolan 1999). By comparison, construction of the Morro Bay-Midway transmission line was a very minor event in the electrical utilities industry. Moreover, although the line has no doubt contributed to the infrastructure and economy of the Carrizo Plain by delivering power to an otherwise remote region, electricity was clearly not the underlying reason for the expansion of grain production during the period 1900-1960. In fact, the emergence of a sufficient customer base with domestic and rural needs (e.g., electrically powered water pumps) for electricity is likely what prompted PG&E to begin service to the area in the late 1940s.

For these reasons, the Morro Bay-Midway transmission line is not considered significant under Criterion A. Farmer (2007) similarly concluded that the line is not significant under this criterion. Similarly, there is no evidence to suggest that the Morro Bay-

Midway transmission line is associated with significant person or, much less, serves as a good representative of such individuals. Thus the line is not considered significant under Criterion B.

Criterion C typically applies to resources with unique or distinctive architectural or aesthetic qualities or (as in this case) with unique or special technical features or methods of construction that reflect the evolution of the technology. Built in the late 1940s, the Morro Bay-Midway transmission line conveys 230 kV of electricity across steel lattice towers. Neither of these features was innovative at the time of construction. The 230 kV level was eclipsed in the early/mid 1920s, while steel towers have been employed since just after the turn of the century (*Edison Electric Institute Bulletin* 1942; Rowe 1907:1239–1240). Because it does not possess distinctive technological architectural characteristics, the Morro Bay-Midway transmission line is not considered significant under Criterion C.

Criterion D is most relevant for archaeological sites but may apply to an existing structure if it can yield information that cannot be had from other sources. However, further examination of the line—given its pedestrian nature—would not produce new information, and more perspective on electrical transmission can be obtain from the study of better examples and the copious literature available on the topic. The Morro Bay-Midway transmission line is not considered significant under Criterion D.

Because the Morro Bay-Midway transmission line is not significant under any of the four NRHP criteria, no assessment of integrity is necessary.

EVALUATION OF 23 SITES WITHIN THE APE

The 23 sites within the APE for which NRHP eligibility determinations had not been completed would be avoided by the proposed project. Formal evaluations of eligibility for inclusion in the NRHP are not required for resources that would not be affected by the proposed action. With the provision of the determination of eligibility information of the Morro Bay-Midway transmission line, DOE's determinations of eligibility for historic properties within the APE are complete.

6) I cannot concur with your finding of No Adverse Effects, as under Section 106 the destruction of an eligible historic property, even via data recovery, constitutes an adverse effect to a site, and therefore, pursuant to 36 CFR 800.6, requires the preparation of a Memorandum of Agreement, or an alteration of project description to avoid impacts to the site. Additionally, the determinations of eligibility for historic properties within the APE are incomplete.

As a result of a site visit with the Santa Ynez Elder's council to discuss impacts to BRM-1, SunPower has decided to alter the design of the Caliente Switching Station to avoid the site. BRM-1 is the NRHP eligible resource that was identified to be affected by construction of the Caliente Switching Station. Specifically, the switching station was relocated 15 feet to the south and 165 feet to the east of its previous location.

Due to the limited room in the area, limited grading would be required in three very small areas (Areas 1, 2, and 3) within the site boundary (Attachment 2). These encroachments are in areas that have not yielded artifacts in shovel test pits (STPs). STP data from four test pits dug in the approximate location of Area 1 show a topsoil deposition of 50, 51, 40 and 24 centimeters. The two STPs in Area 2 show maximum topsoil depths of 31 and 32 centimeters. The southern area of encroachment (Area 3) is very small. The closest STP is less than 10 meters away and showed a maximum deposition of 30 centimeters.

Subsurface testing has revealed that there are no subsurface archaeological deposits in these areas. The extensive STPs dug across the site, and the mapping and collecting of surface artifact and feature data were used to carefully define the maximum extent of BRM-1. The surface component of the site is much larger than the subsurface deposit and has resulted in a much larger site boundary than is necessary for the subsurface component. Additionally, all surface artifacts have been carefully recorded and collected.

Construction of the newly designed Caliente Switching Station would not impact any of the characteristics of the site that contribute to its NRHP eligibility.

Further, the San Luis Obispo County's Conditional Use Permit condition of approval included that a cultural resources monitoring plan be prepared and approved prior to grading. The Monitoring Plan will state the following:

a) The site will be demarcated with temporary fencing (lath and flagging tape) prior to ground disturbance activities occurring in the area.

b) A qualified cultural resources monitor and a Native American monitor will be on site for all ground disturbing activities occurring in topsoil.

c) Grading of the topsoil sediments within the BRM-1 site boundaries will be removed at a rate of 4 inches at a time with the monitors given the opportunity to observe the newly exposed surface with each pass.

d) The monitor's will have stop work authority to redirect or pause machinery if a find is made.

e) If anything is found the monitors will have the time required to record and assess the find.

f) If anything is found the find will be collected and curated along with the collection that resulted from testing and evaluation activities.

g) If the find is a feature, or substantial archaeological deposit the find will be segregated by temporary fencing (lath and flagging tape). The find will be subjected to data recovery excavations and all collected artifacts be treated as in (e) above.

h) A report documenting the results of the monitoring and any required data recovery excavations will be prepared by the cultural resources consultant.

As illustrated on the Attachment 2, one new tower would be constructed at the switching station and one tower would be replaced just east of the switching station. The tower at the Switching Station would be placed within the boundaries of the BRM-1 site (as discussed in Comment 2, above), however; its location was chosen to be removed from the subsurface archaeological deposit and the bedrock mortars. The installation of this tower would be conducted with rubber tired vehicles, the holes for the tower foundations would be dug with a mechanical auger, and would be monitored by a cultural resource and Native American monitor who will be given ample time to record and collect any artifacts that may come up from the auguring.

The site was evaluated as eligible for the NRHP because of the presence of the bedrock mortars, and the data that could be yielded from the intact subsurface archaeological deposit. The grading and tower construction would not encroach upon either the bedrock mortars or the area of subsurface artifact deposit. Since the areas of disturbance within the site boundaries would not encroach on either of the components of the site that contribute to its NRHP eligibility, and stringent monitoring protocols are being provided in the cultural resources monitoring plan that allow for controlled grading and artifact collection if anything is uncovered, there would be no adverse effect on BRM-1.

7) **Please be aware that any eligible (or unevaluated) properties that will be affected by the undertaking and not avoided, should be specifically discussed how that impact is or is not adverse to the qualities that make that property eligible for the National Register.**

Since the construction activities at the BRM-1 site would not impact either of the components contributing to the site's eligibility, the construction of the Caliente Switching Station would not have any adverse effect to the qualities that make the site eligible for the National Register.

The Morro Bay-Midway transmission line has been assessed for it's eligibility for the NRHP and was found to be not eligible for listing as discussed in Comment 5, above. Since it does not meet the eligibility criteria the tower modifications for the reconductoring portion of the project would not have an effect on a historic resource.

Based on the information provided in this letter, and on the entirety of the information that has been presented to the SHPO, no additional eligibility determinations are required for resources that would be avoided and that the CVSR project should have no adverse effects on historic properties.

DOE requests your concurrence with our conclusions of effect, and specifically on the "no adverse effect to historic properties" determination. Should you require additional information to facilitate your response, please contact me via email at Lynn.Alexander@hq.doe.gov or via surface mail at the following address: U.S. Department of Energy, 1000 Independence Ave., SW, LP-10, Washington, DC 20585. I can also be reached by telephone at 202-287-5656.

Respectfully,

Lynn Alexander,
Environmental Protection Specialist
Loan Programs Office

Enclosures:

Attachment 1a and 1b – Grading plans showing maximum depths of disturbance

Attachment 2 – Grading plan for Caliente Switching Station showing the BRM-1 extent

Attachment 3 – ASM cultural resources survey report for new areas of disturbance.

Department of Energy
Washington, DC 20585

Mr. Milford Wayne Donaldson
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 95816

JUN 15 2011

RE: DOE110415A; SunPower California Valley Solar Ranch Project and Reconductoring Element, San Luis Obispo County, California

Dear Mr. Donaldson:

Thank you for your letter of June 9, 2011, in which you concurred with the DOE finding that construction of the SunPower California Valley Solar Ranch Project and Reconductoring Element will result in no adverse effects to historic properties, provided your proposed conditions are met. DOE is in agreement with the proposed conditions in Items 1–4; and with the conditions in the first, third, and fifth bullets under Item 5. We have made the following changes to your proposed conditions in the second and fourth bullets under Item 5:

- For construction in the vicinity of site BRM-1, an archaeological monitor will be continuously present to monitor during grading or other ground disturbing activities that may result in the disturbance of soil down to bedrock. For all other phases of construction in the vicinity of site BRM-1 not resulting in such ground disturbance, including filling, an archaeological monitor will be on call at all times and present at least biweekly or otherwise as needed to verify the resource is not disturbed and to check the placement of the temporary fencing.
- For periods when the cultural resources monitor is on call, if any activity results in the inadvertent disturbance of the site, the cultural resources monitor will be notified immediately and work in the area will cease until the cultural resources monitor can assess the disturbance.
- Once construction in the vicinity of the BRM-1 site is complete, the cultural resources monitor will be present to direct the removal of the temporary fencing surrounding the site.

You may contact me via email at Lynn.Alexander@hq.doe.gov or via surface mail at the following address: U.S. Department of Energy, 1000 Independence Ave., SW, LP-10, Washington, DC 20585. I can also be reached by telephone at 202-287-5656.

Respectfully,

Lynn Alexander,
Environmental Protection Specialist
Loan Programs Office

E-7 SHPO Concurrence Letter

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OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
1725 23rd Street, Suite 100
SACRAMENTO, CA 95816-7100
(916) 445-7000 Fax: (916) 445-7053
calshpo@parks.ca.gov
www.ohp.parks.ca.gov

June 23, 2011 Reply in Reference To: DOE110415A

Lynn Alexander
Loan Programs Office
Environmental Compliance Division
Department of Energy
1000 Independence Ave SW, LP-10
Washington, DC 20585

Re: SunPower California Valley Solar Ranch Project and Reconductoring Element, San Luis Obispo County, California

Dear Ms. Alexander:

Thank you for seeking my consultation regarding the above noted undertaking. Pursuant to 36 CFR Part 800 (as amended 8-05-04) regulations implementing Section 106 of the National Historic Preservation Act (NHPA), the Department of Energy (DOE) is seeking my comments on the effects the proposed undertaking will have on historic properties.

The project consists of providing a Federal loan guarantee to SunPower to construct a 250 megawatt photovoltaic solar electricity generating facility in southeastern San Luis Obispo County. The loan guarantee also includes upgrading 35 miles of an existing PG&E transmission line with the construction of four new towers. All other modifications to the Morro Bay-Midway Transmission Line will involve placing new line on existing towers. Existing roads will be used to access the transmission line for the proposed upgrades and modifications. Travel will be restricted to the existing roads to ensure the avoidance of all archaeological sites within the transmission line corridor. The solar array will cover approximately 1020 acres which will require some grading and clearing of vegetation.

The Area of Potential Effects will include 4120 acres, of which only 1020 will be developed, with an additional 465 acres for the reconductoring portion of the undertaking. The DOE has updated the APE and project description from the original submittal. The updates to the APE include the specific viewshed locations, although the acreage and exact locations of this portion of the APE have yet to be defined. The APE for the array will include grading as much as 31 feet deep in sections, while other cuts are as deep as 14 and eight feet in different areas. In addition to your letters received April 15, 2011, May 27, 2011, and June 15, 2011, you have submitted the following document as evidence of your efforts to identify historic properties in the APE:

- *California Valley Ranch Solar Project In San Luis Obispo County and Kern County California: Attachments for State Historic Preservation Officer* (Various Authors, DOE, March 2011)

The DOE has performed a records search at the Central Coastal Information Center and through their consultants, performed a pedestrian survey of the APE by way of 15 meter transects and identified a total of 31 resources within the APE. Of these, the DOE determined that the Morro Bay-Midway Transmission Line is not eligible, 30 located resources are left unevaluated and assumed eligible for the purposes of this undertaking and will be avoided. Site BRM-1 is eligible for the National Register of Historic Places, as concurred upon by the SHPO in previous correspondence. The DOE has, since the original submittal, revised the site boundary for BRM-1 to better reflect the site as identified by subsurface testing and surface components. This revision of the site boundary along with the redesign of the Caliente Switching Station, places all construction, grading, and filling, outside, but directly adjacent to site BRM-1. The construction of the lattice tower adjacent to the site will use rubber-tired vehicles and hand equipment. The site will be marked and fenced off to prevent excess grading and to keep construction work for the tower confined. The DOE has determined that there will be no adverse effects to historic properties.

The DOE has undertaken consultation with letters sent to the Santa Rosa Rancheria and the Santa Ynez Band of Chumash Mission Indians. No response has been received from the Santa Rosa Rancheria to date. The DOE and the applicant made a presentation to the Santa Ynez Tribal Elder's Council on March 14 and a site visit on April 4, 2011. The DOE has also sent a depiction of the redesign of the Caliente Switching Station to the Santa Ynez Tribal Elder's Council on June 9, 2011. Letters were also sent to all contacts identified by the NAHC, and subsequent requests for more information were provided. In addition to a meeting, one contact asked to discuss concerns regarding impacts to flora and fauna of the area.

In my letter dated June 9, 2011 I had the following comments:

1. I concur with the DOE's determination that the Morro Bay-Carrizo Transmission Line is not eligible for the National Register.
2. I concur with the DOE's determination that there will be no adverse effects to site BRM-1 as the work will occur adjacent to but outside the revised site boundaries. Because of the close proximity of the site, I recommend that temporary fencing be placed around the site boundary as directed by a professional archaeologist and that an archaeological monitor be present during ground disturbing activities in the vicinity. I also recommend offering the consulting Native American tribes the opportunity to monitor any and all ground disturbing activities.
3. Item g (data recovery) of your monitoring plan which was provided on page 6 of your May 26, 2011 letter needs to comply with 36 CFR 800.13. The DOE will notify and continue consultation with the SHPO, appropriate tribes and other consulting parties prior to taking further actions, i.e., data recovery and demolition.
4. Please continue consultation with my office if any further concerns are raised by the Santa Ynez Tribal Elder's Council in regards to the most recent correspondence.

In my June 9, 2011 letter I also requested the DOE add the following conditions to ensure the undertaking will have no adverse effects to historic properties:

- Temporary fencing is placed around site BRM-1 to protect it from construction and grading beyond the current work-plan under the direction of a qualified professional archaeologist.
- An archaeological monitor is present during all phases of construction in the vicinity of site BRM-1, which includes all construction of the Caliente Switching Station, power poles, and other planned facilities on the ridge top in addition to grading and filling of the location.
- The archaeological monitor shall be empowered to stop construction in the area should cultural items be found, until such time as the archaeologist can determine whether it represents a significant deposit or not, pursuant to 36 CFR 800.13;
- The archaeological monitor shall be empowered to stop all work in the area should the monitor determine that the work is impacting site BRM-1 or if the installed fencing is disturbed, ultimately resulting in consultation pursuant to 36 CFR 800.13
- The consulting Native American tribes are invited to monitor construction in the vicinity of site BRM-1

The DOE has since responded modifying some of the conditions I have proposed. I concur, pursuant to 36 CFR 800.5(c) that the implementation of the following conditions, as stated by the DOE in the letter of June 15, 2011 with modifications made via e-mail correspondence and reprinted here, will result in no adverse effects to historic properties as a result of this undertaking:

- Temporary fencing is placed around site BRM-1 to protect it from construction and grading beyond the current work-plan under the direction of a qualified professional archaeologist.
- For the construction in the vicinity of site BRM-1, an archaeological monitor will be continuously present to monitor during grading or other ground disturbing activities that may result in the disturbance of soil down to bedrock. For all other phases of construction in the vicinity of site BRM-1 not resulting in such ground disturbance, including filling, an archaeological monitor will be on call at all times. The environmental inspector will be briefed by the archaeological monitor. The environmental inspector will be present on site during all construction activities, and will monitor the integrity of the protective fencing when in the area. The archaeological monitor will be present at least biweekly or more frequently as needed to verify the resource is not disturbed and to check the placement of the temporary fencing.
- For periods when the archaeological monitor is on call, if any activity results in the inadvertent disturbance of the site, the archaeological monitor will be notified immediately and work in the area will cease until the archaeological monitor can assess the disturbance and will follow procedures pursuant to 36 CFR 800.13
- The archaeological monitor shall be empowered to stop all work in the area should the monitor determine that the work is impacting site BRM-1 or if the installed fencing is disturbed, ultimately resulting in consultation pursuant to 36 CFR 800.13

- Once construction in the vicinity of the BRM-1 site is complete, the archaeological monitor will be present to direct the removal of the temporary fencing surrounding the site.
- The consulting Native American tribes are invited to monitor construction in the vicinity of site BRM-1

Be advised that under certain circumstances, such as unanticipated discovery or a change in project description, the DOE may have additional future responsibilities for this undertaking under 36 CFR Part 800. Thank you for seeking my comments and considering historic properties as part of your project planning. If you have any questions or concerns, please contact Trevor Pratt of my staff at (916) 445-7017 or at email at tpratt@parks.ca.gov.

Sincerely,

Susan K Stratton for

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer

F NCRS Forms and Correspondence

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F-1 NCRS Form and Correspondence

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Department of Energy
Washington, DC 20585

NRCS Templeton Service Center
Attn: Margy Lindquist, District Conservationist
65 S. Main Street, Suite 106
Templeton, CA 93465-8703

APR 14 2011

SUBJECT: NRCS Farmland Rating (Form AD-1006) for California Valley Solar Ranch Project, San Luis Obispo and Kern Counties, California

Dear Ms. Lindquist,

The US Department of Energy (DOE) is evaluating whether or not to provide a Federal loan guarantee to High Plains Ranch II LLC, (aka SunPower), to support construction and startup of the California Valley Solar Ranch Project (CVSR Project or the proposed action), a commercial 250-megawatt solar photovoltaic electricity generating project located in southeastern San Luis Obispo County, California. The CVSR Project would also include the reconductoring (upgrading) of the Pacific Gas and Electric Company (PG&E) 230-kilovolt (kV) Morro Bay–Midway transmission line to convey the generated electricity from the project site to the existing Buttonwillow Substation in Kern County. DOE is preparing an environmental review of the CVSR Project in compliance with the National Environmental Policy Act (NEPA), and farmland conversion review in compliance with the Farmland Protection Policy Act (FPPA).

The proposed CVSR site is located on about 4,700 acres of land in the northern Carrizo region in eastern San Luis Obispo County, immediately north of the California Valley subdivision. It would include such components as solar arrays, an electrical transmission interconnection line, a CVSR substation, access roads, operation and maintenance facilities, and one public viewing area. A 35-mile segment of PG&E's existing Morro Bay–Midway transmission line in San Luis Obispo and Kern counties would be reconductored to increase line capacity and the Twisselman aggregate mine would be established nearby on the site of an existing borrow pit to produce aggregate base for access road construction. The re-establishment of the Twisselman mine is not part of the proposed action (i.e., would not be financed with DOE loan guarantee funds), but is addressed as a connected action in the EA.

Enclosed please find a Table of Project Components (Table 1), a Project Map (Figure 1), a table presenting the NRCS rating for soils for the CVSR Project (Table 2) and Farmland Conversion Rating Impact (Form AD-1006). Please return the NRCS Form and any comments to me at the following address: U.S. Department of Energy, 1000 Independence Ave., SW, LP-10, Washington, DC 20585, or by email at Lynn.Alexander@hq.doe.gov. I can also be reached by telephone at 202-287-5656.

Respectfully,

Lynn Alexander
Environmental Protection Specialist
Loans Office Program

Table 1: SUNPOWER/CVSR LOAN GUARANTEE APPLICATION - PROJECT DESCRIPTION

CVSR (Financed with Loan Guarantee)

Development of the CVSR Photovoltaic Generation Facility

- Solar panel arrays, designated as Arrays 1, 2, 4, 5, 6, 7, 8, 9, 10, and 11, arranged in 10 separate areas on the CVSR site. Originally, Array 3 was also planned as part of the CVSR Project but was eliminated to reduce impacts to giant kangaroo rat habitat. Arrays would be mounted on SunPower T0 tracker units.
- Electrical equipment, including a direct current (DC) collection system from the solar panels to centralized inverters, and an alternating current (AC), medium-voltage collection system. Several segments of the AC collection system would be underground and the remainder carried on overhead power lines, which would carry electrical output from each array to a new CVSR substation. Inverters would take the DC energy output of the panels and convert it to AC for delivery to the transmission grid via the CVSR Project's medium-voltage collection system, substation, and switchyard.
- A CVSR substation, which would step-up voltage collected from the arrays at 34.5-kV to 230-kV, and from which the CVSR's interconnection line would originate.
- A permanent O&M facility with outdoor storage and a gasoline tank.
- An on-site septic system and leach field for sanitary wastewater treatment and disposal, to be used during construction by the Temporary Construction Worker Accommodations Area and then during operations by the O&M building.
- One outdoor viewing summit that would be accessed by a new hiking trail.
- Access roads and fencing.
- A water system for water supply and fire safety, which would be comprised of a well, reverse osmosis water treatment equipment within a small building, two brine evaporation ponds, and a water tank.
- Temporary facilities, including two temporary covered work areas (for tracker assembly); a portable concrete batch plant for the O&M building foundation; tracker motors, inverters; electrical equipment within the substation; a temporary switching station until the permanent switching facility is constructed; and a Temporary Construction Worker Accommodations Area.
- Closure and reclamation of two inactive on-site gypsum mines in accordance with the Surface Mining and Reclamation Act.
- Conservation, in perpetuity, off-site farmland located within San Luis Obispo County at a 1:1 for direct permanent loss of farmland based on final design and engineering (at least 1,500 acres) through establishment of an open space easement or other farmland conservation mechanism.

Construction of a New Interconnection Line and Interconnection Facility

- A 230-kV interconnection line on steel towers between the CVSR substation and the Caliente switching station to transmit the generated electrical power to PG&E's 230-kV Morro Bay–Midway transmission line.
- Roadway improvements from the project switchyard area to the Aggregate Mine.

Reconductoring of the PG&E Morro Bay—Midway Transmission Line

- Approximately 35 miles of the existing PG&E Morrow Bay-Midway 230-kV electricity transmission line would be reconductored, in part to accommodate the electricity from the CVSR project.
- A new CVSR switching station (the Caliente switching station).
- A new optical ground wire (both a static line and a fiber optic communication line).
- The reconductoring activities necessary to deliver the CVSR's full capacity would be limited to equipment upgrades to existing infrastructure. This work would take place within currently developed transmission line rights-of-way owned by PG&E.
- These upgrades would involve replacing old conductors with new conductors, replacing up to 4 transmission line towers, reinforcing the foundations and increasing the height of about 85 towers by 20 feet, and modifying current access roads.
- Conservation, in perpetuity, of farmland at a 1:1 for direct permanent loss of farmland through establishment of an open space easement or other farmland conservation mechanism.

"CONNECTED ACTION" (Not Financed with DOE Loan Guarantee)

Re-Establishment of the Twisselman Aggregate Surface Mine

- To produce aggregate base for project access road construction, a nearby, existing 23.2-acre aggregate surface mine (the "Twisselman Mine") would be re-established on the site of an existing borrow pit.
- No new structures, paving, or landscaping would be required in connection with re-establishment of the Aggregate Mine.

Table 2 Soil Types and NRCS Ratings for Proposed Action

Soil Type	Acreage		NRSC Rating
CVSR SITE			
Polonio loam, 0 to 2% slopes	867		Prime Farmland if Irrigated [(1)]
Polonio gravelly loam, 0 to 2% slopes	195		Prime Farmland if Irrigated [(1)]
Polonio-Thomhill complex, 2 to 9% slopes	609		Prime Farmland if Irrigated [(1)]
Yeguas-Pinspring complex, 0 to 2% slopes	52		Prime Farmland if Irrigated [(1)]
Yeguas-Pinspring complex, 2 to 5% slopes	7		Prime Farmland if Irrigated [(1)]
Thomhill loam, 2 to 5% slopes	635		Prime Farmland if Irrigated [(1)]
Subtotal Prime Farmland if Irrigated		**2,364**	
Polonio clay loam, 2 to 9% slopes		**913**	Farmland of Statewide Importance
Kilmer-Hillbrick complex, 50 to 75% slopes	4		Not Prime Farmland
Beam-Panoza-Hillbrick complex, 50 to 75% slopes	5		Not Prime Farmland
Panoza-Beam complex, 15 to 30% slopes	628		Not Prime Farmland
Panoza-Beam complex, 30 to 50% slopes	84		Not Prime Farmland
Panoza-Beam complex, 50 to 75% slopes	22		Not Prime Farmland
Seaback-Panoza-Jenks complex, 9 to 15% slopes	239		Not Prime Farmland
Chicote complex, 0 to 2% slopes	150		Not Prime Farmland
Chicote complex, 2 to 5% slopes	1		Not Prime Farmland
Pits	289		Not Prime Farmland
Subtotal Not Prime Farmland		**1,421**	
CVSR Site Total		**4,698**	
INTERCONNECTION LINE			
Sorrento Loam, 2 to 9% slopes	3		Prime Farmland if Irrigated
Polonio-Thomhill complex, 2 to 9% slopes	21		Prime Farmland if Irrigated
Padres sandy loam, 2 to 9% slopes	12		Prime Farmland if Irrigated
Subtotal Prime Farmland if Irrigated		**36**	
Aramburu-Temblor complex, 30 to 50% slopes	2		Not Prime Farmland
Panoza-Beam complex, 15 to 30% slopes	27		Not Prime Farmland
Panoza-Beam complex, 30 to 50% slopes	2		Not Prime Farmland
Seaback-Panoza-Jenks complex, 9 to 15% slopes	1		Not Prime Farmland
Subtotal Not Prime Farmland		**32**	
Interconnection Line Total		**68**	
CALIENTE SWITCHING STATION			
Aramburu-Temblor complex, 30 to 50% slopes	7		Not Prime Farmland
Beam-Panoza-Hillbrick complex, 50 to 75% slopes	1		Not Prime Farmland
Caliente Switching Station Total		**8**	

Table 2 Soil Types and NRCS Ratings for Proposed Action (continued)

Soil Type	Acreage		NRSC Rating
[redacted]			[redacted]
Buttonwillow clay, drained	80		Prime Farmland if Irrigated
Kimberlina fine sandy loam, 0 to 2% slopes	84		Prime Farmland if Irrigated
Kimberlina gravelly sandy loam, 2 to 5% slopes	73		Prime Farmland if Irrigated
Kimberlina sandy loam, 2 to 5% slopes	56		Prime Farmland if Irrigated
Lokern clay, drained	72		Prime Farmland if Irrigated
Panoche clay loam, 0 to 2% slopes	103		Prime Farmland if Irrigated
Panoche clay loam, 2 to 5% slopes	39		Prime Farmland if Irrigated
Yeguas-Pinspring complex, 0 to 2% slopes	4		Prime Farmland if Irrigated
Yeguas-Pinspring complex, 2 to 5% slopes	57		Prime Farmland if Irrigated
Polonio gravelly loam, 2 to 9% slopes	7		Prime Farmland if Irrigated
Sorrento loam, 2 to 9% slopes	0		Prime Farmland if Irrigated
Thomhill loam, 2 to 5% slopes	13		Prime Farmland if Irrigated
Subtotal Prime Farmland if Irrigated		**588**	
Polonio clay loam, 2 to 9% slopes	25		Farmland of Statewide Importance
Panoche clay loam, saline-alkali, 0 to 2% slopes	63		Farmland of Statewide Importance
Subtotal Farmland of Statewide Importance		**88**	
Aido clay 30 to 50% slopes	19		Not Prime Farmland
Aido clay, 9 to 30% slopes	29		Not Prime Farmland
Aramburu-Temblor complex, 30 to 50% slopes	40		Not Prime Farmland
Aramburu-Temblor complex, 50 to 75% slopes	3		Not Prime Farmland
Aramburu very channery clay loam, 30 to 50% slopes	18		Not Prime Farmland
Aramburu very shaly clay loam, 15 to 30% slopes	34		Not Prime Farmland
Aramburu very shaly clay loam, 30 to 50% slopes	95		Not Prime Farmland
Aramburu very shaly clay loam, 50 to 75% slopes	8		Not Prime Farmland
Beam-Panoza-Hillbrick complex, 50 to 75% slopes	18		Not Prime Farmland
Cymric loam, 5 to 30% slopes	72		Not Prime Farmland
Elkhills gravelly sandy loam, 15 to 50% slopes	16		Not Prime Farmland
Elkhills gravelly sandy loam, 9 to 15% slopes	8		Not Prime Farmland
Hillbrick-Rock outcrop complex, 15 to 50% slopes	8		Not Prime Farmland
Kilmer-Hillbrick complex, 15 to 50% slopes	20		Not Prime Farmland
Lokern clay, saline-alkali, drained	12		Not Prime Farmland
Panoza-Beam complex, 15 to 30% slopes	82		Not Prime Farmland
Panoza-Beam complex, 30 to 50% slopes	22		Not Prime Farmland
Polonio loam, 2 to 9% slopes	20		Not Prime Farmland
Seaback-Panoza-Jenks complex, 15 to 30% slopes	23		Not Prime Farmland
Seaback-Panoza-Jenks complex, 9 to 15% slopes	35		Not Prime Farmland
Water	1		Not Prime Farmland
Subtotal Not Prime Farmland		**581**	
[redacted]			[redacted]

Source: NRCS 2003.

Notes:

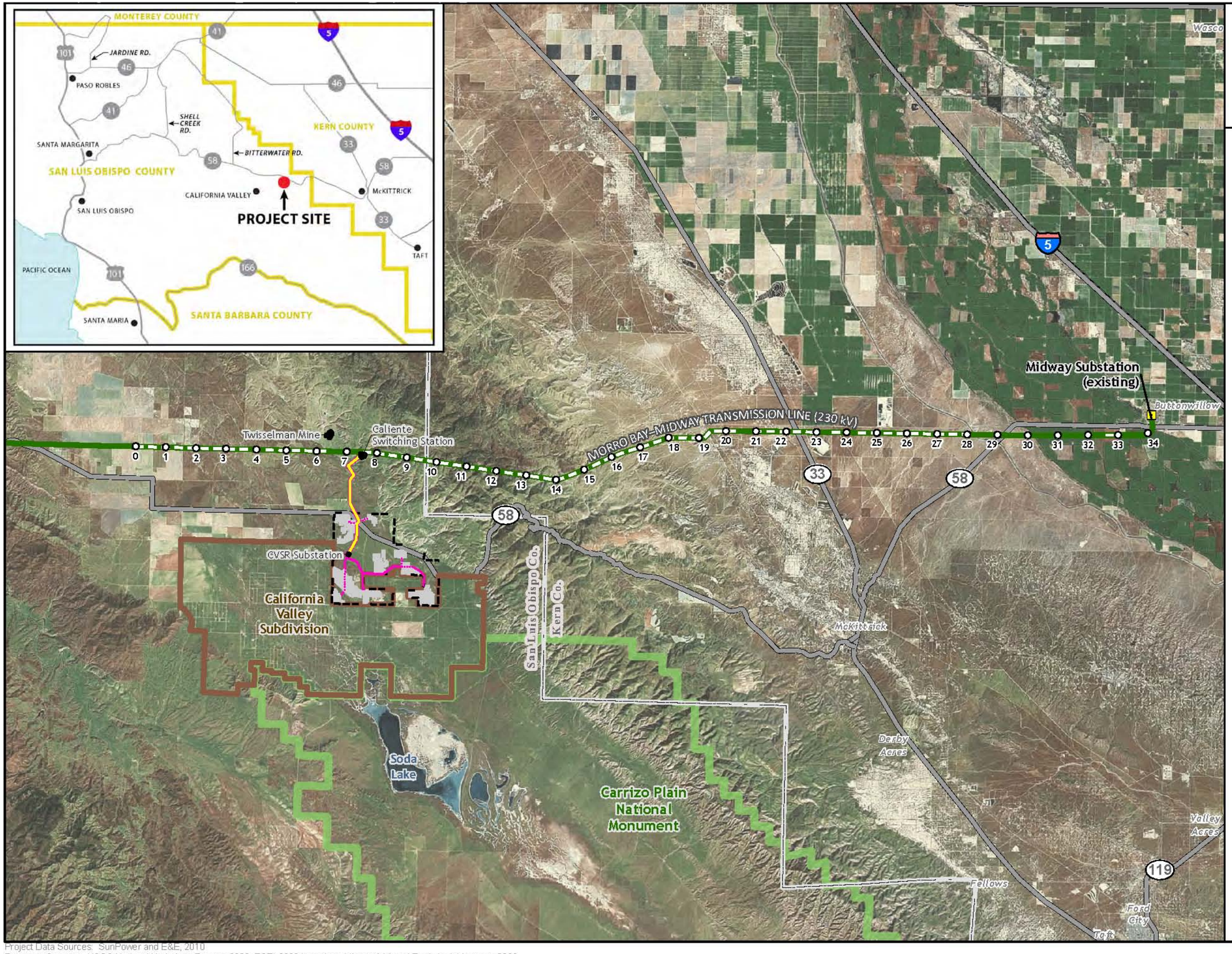
[1] Represents area within 250-foot ROW.

Prime Farmland if Irrigated: Lands which lacks the irrigation or water supply necessary to qualify as Prime Farmland

Farmland of Statewide Importance: Lands of statewide importance for production of food, feed, fiber, forage, and oil seed crops.

Not Prime Farmlands : Lands with severe limitations. Generally unsuitable for cultivation; use restricted mainly to grazing, pasture, and rangeland

Figure 1
Project Overview
California Valley Solar Ranch Project

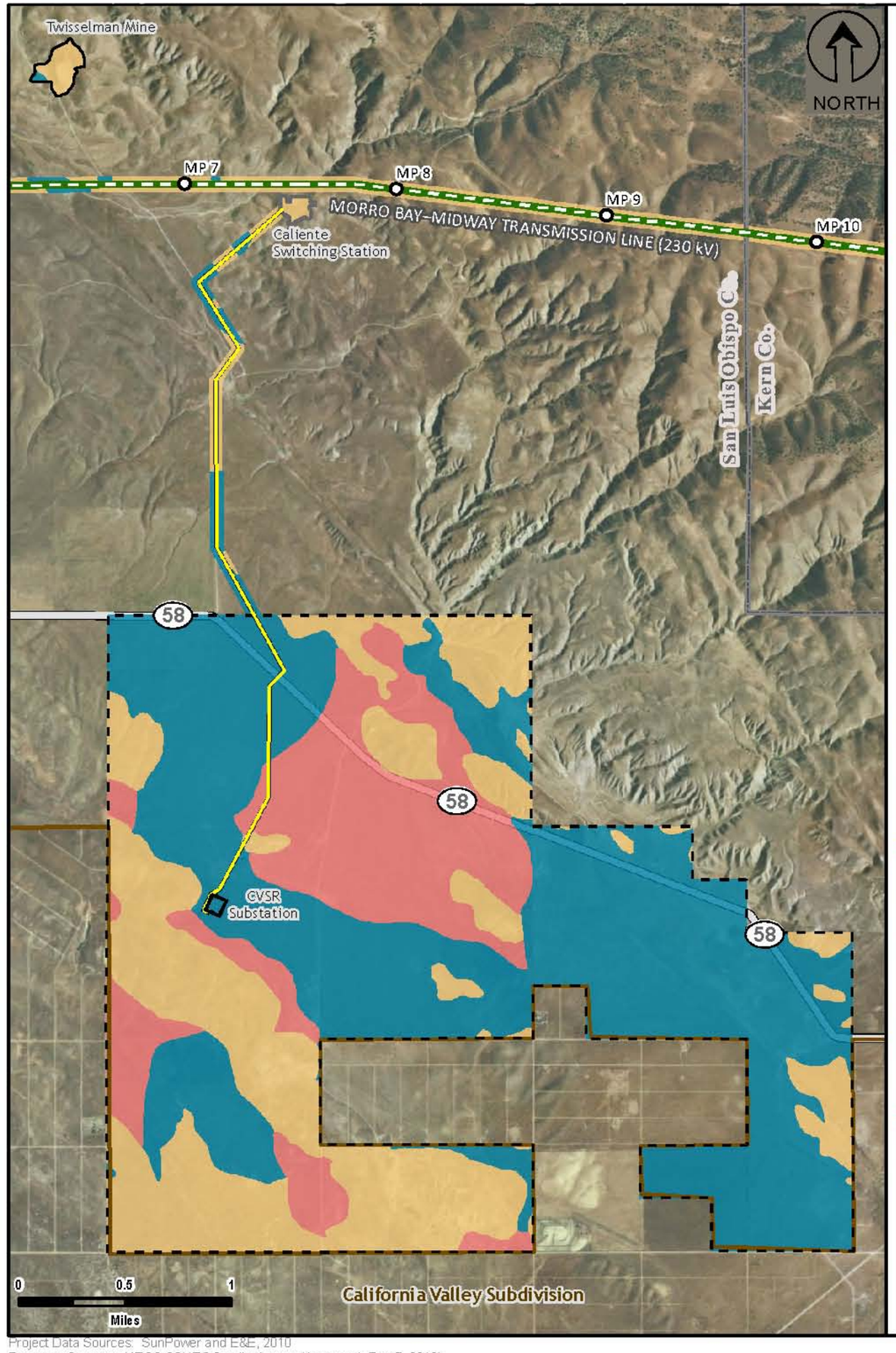


- CVSR site perimeter
- Solar array
- Interconnection line
- Collection line, overhead
- Collection line, underground
- Existing transmission line
- Segment of existing transmission line to be reconductored
- Milepost
- Existing substation
- Major road
- County boundary
- National monument
- California Valley Subdivision (mostly undeveloped)

NORTH

0 1 2 3 4 5
Miles

Project Data Sources: SunPower and E&E, 2010
Basemap Sources: USGS National Hydrology Dataset 2009, ESRI 2009 basedata; Microsoft Virtual Earth Aerial Imagery 2009 (http://resources.esri.com/arcgisonlineservices/virtualearth)
Other transmission line data: National Renewable Energy Laboratory & FEMA, 1993



CVSR site perimeter
Interconnection line
Existing transmission line
Segment of existing transmission line to be reconductored
Milepost

California Valley Subdivision (mostly undeveloped)

NRCS farmland designations
Prime farmland if irrigated
Farmland of statewide importance
All other areas not prime farmland

Figure 2
Natural Resource Conservation Service Farmland Designations
California Valley Solar Ranch Project

Project Data Sources: SunPower and E&E, 2010
Basemap Sources: NRCS SSURGO soils dataset (Accessed: Dec 7, 2010)
ESRI Virtual Aerial data 2009 (http://resources.esri.com/arcgisonlineservices/virtualearth)

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request 4/14/11
Name Of Project California Valley Ranch Solar Project	Federal Agency Involved U. S. Department of Energy
Proposed Land Use 4,870	County And State San Luis Obispo County, California

PART III *(To be completed by Federal Agency)*	Alternative Site Rating			
	Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	4,870.0			
B. Total Acres To Be Converted Indirectly	0.0			
C. Total Acres In Site	4,870.0	0.0	0.0	0.0

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*	Maximum Points				
1. Area In Nonurban Use					
2. Perimeter In Nonurban Use					
3. Percent Of Site Being Farmed					
4. Protection Provided By State And Local Government					
5. Distance From Urban Builtup Area					
6. Distance To Urban Support Services					
7. Size Of Present Farm Unit Compared To Average					
8. Creation Of Nonfarmable Farmland					
9. Availability Of Farm Support Services					
10. On-Farm Investments					
11. Effects Of Conversion On Farm Support Services					
12. Compatibility With Existing Agricultural Use					
TOTAL SITE ASSESSMENT POINTS	160	0	0	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100	0	0	0	0
Total Site Assessment *(From Part VI above or a local site assessment)*	160	0	0	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	0	0	0	0

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes ☐ No ☐

Reason For Selection:

(See Instructions on reverse side) **Form AD-1006 (10-83)**

This form was electronically produced by National Production Services Staff

F-2 NRCS Form AD-1066 Completed by NRCS

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U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*		Date Of Land Evaluation Request 04/14/11	
Name of Project California Valley Ranch Solar Project		Federal Agency Involved U.S. Department of Energy	
Proposed Land Use 4,870		County and State San Luis Obispo County, California	
PART II *(To be completed by NRCS)*		Date Request Received By NRCS 04/15/11	Person Completing Form: Marav Lindquist
Does the site contain Prime, Unique, Statewide or Local Important Farmland? *(If no, the FPPA does not apply - do not complete additional parts of this form)*	YES ☑ NO ☐	Acres Irrigated 98,898	Average Farm Size 492
Major Crop(s) wine grapes, broccoli, strawberries	Farmable Land In Govt. Jurisdiction Acres: 299,572 % 14	Amount of Farmland As Defined in FPPA Acres: 270,40[illegible] % 13	
Name of Land Evaluation System Used CA Storie Index	Name of State or Local Site Assessment System none	Date Land Evaluation Returned by NRCS 05/05/11	

PART III *(To be completed by Federal Agency)*	Alternative Site Rating			
	Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	4,870			
B. Total Acres To Be Converted Indirectly	0			
C. Total Acres In Site	4,870			
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	2,401			
B. Total Acres Statewide Important or Local Important Farmland	913			
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted	1.2			
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value	Data not			
PART V (To be completed by NRCS) Land Evaluation Criterion Relative Value of Farmland To Be Converted (Scale of 0 to 100 Points)	65			

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(Criteria are explained in 7 CFR 658.5 b. For Corridor project use form NRCS-CPA-106)*	Maximum Points	Site A	Site B	Site C	Site D
1. Area In Non-urban Use	(15)				
2. Perimeter In Non-urban Use	(10)				
3. Percent Of Site Being Farmed	(20)				
4. Protection Provided By State and Local Government	(20)				
5. Distance From Urban Built-up Area	(15)				
6. Distance To Urban Support Services	(15)				
7. Size Of Present Farm Unit Compared To Average	(10)				
8. Creation Of Non-farmable Farmland	(10)				
9. Availability Of Farm Support Services	(5)				
10. On-Farm Investments	(20)				
11. Effects Of Conversion On Farm Support Services	(10)				
12. Compatibility With Existing Agricultural Use	(10)				
TOTAL SITE ASSESSMENT POINTS	160				
PART VII ***(To be completed by Federal Agency)***					
Relative Value Of Farmland *(From Part V)*	100				
Total Site Assessment *(From Part VI above or local site assessment)*	160				
TOTAL POINTS ***(Total of above 2 lines)***	260				

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? YES ☐ NO ☐

Reason For Selection:

Name of Federal agency representative completing this form:	Date:

(See Instructions on reverse side)

Form AD-1006 (03-02)

STEPS IN THE PROCESSING THE FARMLAND AND CONVERSION IMPACT RATING FORM

Step 1 - Federal agencies (or Federally funded projects) involved in proposed projects that may convert farmland, as defined in the Farmland Protection Policy Act (FPPA) to nonagricultural uses, will initially complete Parts I and III of the form. For Corridor type projects, the Federal agency shall use form NRCS-CPA-106 in place of form AD-1006. The Land Evaluation and Site Assessment (LESA) process may also be accessed by visiting the FPPA website, http://fppa.nrcs.usda.gov/lesa/.

Step 2 - Originator (Federal Agency) will send one original copy of the form together with appropriate scaled maps indicating location(s)of project site(s), to the Natural Resources Conservation Service (NRCS) local Field Office or USDA Service Center and retain a copy for their files. (NRCS has offices in most counties in the U.S. The USDA Office Information Locator may be found at http://offices.usda.gov/scripts/ndISAPI.dll/oip_public/USA_map**,** or the offices can usually be found in the Phone Book under U.S. Government, Department of Agriculture. A list of field offices is available from the NRCS State Conservationist and State Office in each State.)

Step 3 - NRCS will, within 10 working days after receipt of the completed form, make a determination as to whether the site(s) of the proposed project contains prime, unique, statewide or local important farmland. (When a site visit or land evaluation system design is needed, NRCS will respond within 30 working days.

Step 4 - For sites where farmland covered by the FPPA will be converted by the proposed project, NRCS will complete Parts II, IV and V of the form.

Step 5 - NRCS will return the original copy of the form to the Federal agency involved in the project, and retain a file copy for NRCS records.

Step 6 - The Federal agency involved in the proposed project will complete Parts VI and VII of the form and return the form with the final selected site to the servicing NRCS office.

Step 7 - The Federal agency providing financial or technical assistance to the proposed project will make a determination as to whether the proposed conversion is consistent with the FPPA.

INSTRUCTIONS FOR COMPLETING THE FARMLAND CONVERSION IMPACT RATING FORM

(For Federal Agency)

Part I: When completing the "County and State" questions, list all the local governments that are responsible for local land use controls where site(s) are to be evaluated.

Part III: When completing item B (Total Acres To Be Converted Indirectly), include the following:

1. Acres not being directly converted but that would no longer be capable of being farmed after the conversion, because the conversion would restrict access to them or other major change in the ability to use the land for agriculture.
2. Acres planned to receive services from an infrastructure project as indicated in the project justification (e.g. highways, utilities planned build out capacity) that will cause a direct conversion.

Part VI: Do not complete Part VI using the standard format if a State or Local site assessment is used. With local and NRCS assistance, use the local Land Evaluation and Site Assessment (LESA).

1. Assign the maximum points for each site assessment criterion as shown in § 658.5(b) of CFR. In cases of corridor-type project such as transportation, power line and flood control, criteria #5 and #6 will not apply and will, be weighted zero, however, criterion #8 will be weighed a maximum of 25 points and criterion #11 a maximum of 25 points.

2. Federal agencies may assign relative weights among the 12 site assessment criteria other than those shown on the FPPA rule after submitting individual agency FPPA policy for review and comment to NRCS. In all cases where other weights are assigned, relative adjustments must be made to maintain the maximum total points at 160. For project sites where the total points equal or exceed 160, consider alternative actions, as appropriate, that could reduce adverse impacts (e.g. Alternative Sites, Modifications or Mitigation).

Part VII: In computing the "Total Site Assessment Points" where a State or local site assessment is used and the total maximum number of points is other than 160, convert the site assessment points to a base of 160.
Example: if the Site Assessment maximum is 200 points, and the alternative Site "A" is rated 180 points:

$$\frac{\text{Total points assigned Site A}}{\text{Maximum points possible}} = \frac{180}{200} \text{ X } 160 = 144 \text{ points for Site A}$$

For assistance in completing this form or FPPA process, contact the local NRCS Field Office or USDA Service Center.

NRCS employees, consult the FPPA Manual and/or policy for additional instructions to complete the AD-1006 form.

F-3 NRCS Farmland Conversion Rating Form and Supporting Documentation

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ecology and environment, inc.
Global Environmental Specialists
401 West A Street, Suite 775
San Diego, California 92101
Tel: (619) 696-0578, Fax (619) 696-0578

June 1, 2011

NRCS Templeton Service Center
Attn: Margy Lindquist, District Conservationist
65 S. Main Street, Suite 106
Templeton, CA 93465-8703

Subject: NRCS Farmland Conservation Impact Rating for California Valley Solar Ranch Project, San Luis Obispo and Kern Counties, California

Dear Ms. Lindquist

The US Department of Energy (DOE) is evaluating whether or not to provide a Federal loan guarantee to High Plains Ranch II LLC, (aka SunPower), to support construction and startup of the California Valley Solar Ranch Project (CVSR Project or the proposed action), a commercial 250-megawatt solar photovoltaic electricity generating project located in southeastern San Luis Obispo County, California. The CVSR Project would also include the reconductoring (upgrading) of the Pacific Gas and Electric Company (PG&E) 230-kilovolt (kV) Morro Bay–Midway transmission line to convey the generated electricity from the project site to the existing Buttonwillow Substation in Kern County. DOE is preparing an environmental review of the CVSR Project in compliance with the National Environmental Policy Act (NEPA), and farmland conversion review in compliance with the Farmland Protection Policy Act (FPPA).

On April 14, 2011, the DOE submitted to the Natural Resources Conservation Service (NRCS) Form AD-1066. The NRCS completed the land evaluation portion of Form AD-1006 on May 5, 2011, and determined that 3,314 of the 4,804 acre Project Area are farmlands of Statewide or Local Importance. Accordingly, NRCS assigned a land evaluation score of 65 to the Project Area.

Please find the enclosed a Farmland Conversion Impact Rating form (Form AD 1066), with parts VI and VII completed. The Final Form AD-1066, along with the supporting documentation, confirms the score of 144 points for the CVSR Project.

If you have any questions regarding this project, I can be reached at 619.696.0548 x 4215 or via email at cwillis@ene.com.

Respectfully,

Christina J. Willis

Christina J. Willis, Chief Planner

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*		Date Of Land Evaluation Request 04/14/11	
Name of Project California Valley Ranch Solar Project		Federal Agency Involved U.S. Department of Energy	
Proposed Land Use 4,870		County and State San Luis Obispo County, California	
PART II *(To be completed by NRCS)*		Date Request Received By NRCS 04/15/11	Person Completing Form: Marav Lindquist
Does the site contain Prime, Unique, Statewide or Local Important Farmland? *(If no, the FPPA does not apply - do not complete additional parts of this form)*	YES ☑ NO ☐	Acres Irrigated 98,898	Average Farm Size 492
Major Crop(s) wine grapes, broccoli, strawberries	Farmable Land In Govt. Jurisdiction Acres: 299,572 % 14	Amount of Farmland As Defined in FPPA Acres: 270,40[illegible] % 13	
Name of Land Evaluation System Used CA Storie Index	Name of State or Local Site Assessment System none	Date Land Evaluation Returned by NRCS 05/05/11	

PART III *(To be completed by Federal Agency)*	Alternative Site Rating Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	4,870			
B. Total Acres To Be Converted Indirectly	0			
C. Total Acres In Site	4,870			
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	2,401			
B. Total Acres Statewide Important or Local Important Farmland	3,314			
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted	1.2			
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value	Data not			
PART V (To be completed by NRCS) Land Evaluation Criterion Relative Value of Farmland To Be Converted (Scale of 0 to 100 Points)	65			

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(Criteria are explained in 7 CFR 658.5 b. For Corridor project use form NRCS-CPA-106)*	Maximum Points	Site A	Site B	Site C	Site D
1. Area In Non-urban Use	(15)	3			
2. Perimeter In Non-urban Use	(10)	7			
3. Percent Of Site Being Farmed	(20)	0			
4. Protection Provided By State and Local Government	(20)	20			
5. Distance From Urban Built-up Area	(15)	15			
6. Distance To Urban Support Services	(15)	10			
7. Size Of Present Farm Unit Compared To Average	(10)	10			
8. Creation Of Non-farmable Farmland	(10)	10			
9. Availability Of Farm Support Services	(5)	2			
10. On-Farm Investments	(20)	1			
11. Effects Of Conversion On Farm Support Services	(10)	1			
12. Compatibility With Existing Agricultural Use	(10)	0			
TOTAL SITE ASSESSMENT POINTS	160	79			
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100	65			
Total Site Assessment *(From Part VI above or local site assessment)*	160	79			
TOTAL POINTS *(Total of above 2 lines)*	260	144			

Site Selected: CVSR Site (Site A)	Date Of Selection 2009	Was A Local Site Assessment Used? YES ☐ NO ☐

Reason For Selection:

Selected because of location within a high solar resource area; proximity to transmission infrastructure; compatible topography; and, sufficient size to satisfy power purchase agreement with PG&E.

Name of Federal agency representative completing this form: U.S. Department of Energy	Date: June 1, 2011

(See Instructions on reverse side)

Form AD-1006 (03-02)

STEPS IN THE PROCESSING THE FARMLAND AND CONVERSION IMPACT RATING FORM

Step 1 - Federal agencies (or Federally funded projects) involved in proposed projects that may convert farmland, as defined in the Farmland Protection Policy Act (FPPA) to nonagricultural uses, will initially complete Parts I and III of the form. For Corridor type projects, the Federal agency shall use form NRCS-CPA-106 in place of form AD-1006. The Land Evaluation and Site Assessment (LESA) process may also be accessed by visiting the FPPA website, http://fppa.nrcs.usda.gov/lesa/.

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Step 3 - NRCS will, within 10 working days after receipt of the completed form, make a determination as to whether the site(s) of the proposed project contains prime, unique, statewide or local important farmland. (When a site visit or land evaluation system design is needed, NRCS will respond within 30 working days.

Step 4 - For sites where farmland covered by the FPPA will be converted by the proposed project, NRCS will complete Parts II, IV and V of the form.

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Step 6 - The Federal agency involved in the proposed project will complete Parts VI and VII of the form and return the form with the final selected site to the servicing NRCS office.

Step 7 - The Federal agency providing financial or technical assistance to the proposed project will make a determination as to whether the proposed conversion is consistent with the FPPA.

INSTRUCTIONS FOR COMPLETING THE FARMLAND CONVERSION IMPACT RATING FORM

(For Federal Agency)

Part I: When completing the "County and State" questions, list all the local governments that are responsible for local land use controls where site(s) are to be evaluated.

Part III: When completing item B (Total Acres To Be Converted Indirectly), include the following:

1. Acres not being directly converted but that would no longer be capable of being farmed after the conversion, because the conversion would restrict access to them or other major change in the ability to use the land for agriculture.
2. Acres planned to receive services from an infrastructure project as indicated in the project justification (e.g. highways, utilities planned build out capacity) that will cause a direct conversion.

Part VI: Do not complete Part VI using the standard format if a State or Local site assessment is used. With local and NRCS assistance, use the local Land Evaluation and Site Assessment (LESA).

1. Assign the maximum points for each site assessment criterion as shown in § 658.5(b) of CFR. In cases of corridor-type project such as transportation, power line and flood control, criteria #5 and #6 will not apply and will, be weighted zero, however, criterion #8 will be weighed a maximum of 25 points and criterion #11 a maximum of 25 points.

2. Federal agencies may assign relative weights among the 12 site assessment criteria other than those shown on the FPPA rule after submitting individual agency FPPA policy for review and comment to NRCS. In all cases where other weights are assigned, relative adjustments must be made to maintain the maximum total points at 160. For project sites where the total points equal or exceed 160, consider alternative actions, as appropriate, that could reduce adverse impacts (e.g. Alternative Sites, Modifications or Mitigation).

Part VII: In computing the "Total Site Assessment Points" where a State or local site assessment is used and the total maximum number of points is other than 160, convert the site assessment points to a base of 160.
Example: if the Site Assessment maximum is 200 points, and the alternative Site "A" is rated 180 points:

$$\frac{\text{Total points assigned Site A}}{\text{Maximum points possible}} = \frac{180}{200} \text{ X } 160 = 144 \text{ points for Site A}$$

For assistance in completing this form or FPPA process, contact the local NRCS Field Office or USDA Service Center.

NRCS employees, consult the FPPA Manual and/or policy for additional instructions to complete the AD-1006 form.

Farmland Conversion Impact Rating for the California Valley Solar Ranch Project

Supporting Documentation for NRCS Form AD-1006

As stipulated in the Farmland Protection Policy Act (FPPA), federal agencies must identify and take into account the adverse effects of their activities on the preservation of farmland. The criteria developed by the Secretary of Agriculture include a land evaluation for which the NRCS provides the score based on the relative value of the farmland, and a site assessment for which the federal agency considers criteria other than the agricultural value of the land. A summary of the Farmland Conversion Impact Rating (FCIR) of the California Valley Solar Ranch (CVSR) Project is provided below.

LAND EVALUATION

NRCS completed the land evaluation portion of the AD-1006 on May 5, 2011, and determined that 3,314 of the 4,804 acres in Project Area are Statewide Important or Local Important Farmland. Accordingly, NRCS assigned a land evaluation score of 65 to the Project Area. The land evaluation score represents the relative value of agricultural production of the farmland to be converted, to other farmland in the same local government jurisdiction.

SITE ASSESSMENT

The site assessment portion of the FCIR is based on 12 factors, independent of the agricultural value of the land, that determine the suitability of a site for protection as farmland. In each of the 12 factors a number rating system is used to determine which sites deserve the most protection from conversion to nonfarm uses. The higher the number value given to a proposed site, the more protection it will receive. Each criterion is allotted a maximum score of 10, 15, or 20, depending upon its relative importance. Table 1 lists the maximum possible scores for each criterion and summarizes the assigned scores to the Project Site being considered for the CVSR Solar Farm project. A summary of how each score was determined for the project site is discussed in the sections below.

Table 1. Farmland Conversion Impact Rating Site Assessment Criteria

Criterion	Maximum Points	Assigned Points
1. Area in Non-Urban Use	15	3
2. Perimeter in Non-Urban Use	10	7
3. Percent of Site being Farmed	20	0
4. Protection Provided by State and Local	20	20
5. Distance from Urban Built-up Area	15	15
6. Distance to Urban support Services	15	10
7. Size of Present Farm Unit compared to Average	10	10
8. Creation of Non-Farmable Farmland	10	10
9. Availability of Farm Support Services	5	2
10. On-Farm Investments	20	1
11. Effects of Conversion on Farm Support Services	10	1
12. Compatibility with Existing Agricultural Use	10	0
Totals	**160**	**79**

1 Area in Non-Urban Use

This criterion considers the amount of land in non-urban use within a one-mile radius of the CVSR Project Area. According to the site assessment guidelines, "non-urban" land uses include agricultural land, rangeland, forest, golf courses, unpaved parks and recreational areas, mining sites, farm storage, water bodies, rural roads and roads without houses or buildings, open space, wetlands, fish productions, and pasture or hayland. Google Earth aerials were used to estimate the total land area within a one-mile radius of (but excluding) the project site. Approximately 32% of the area within one-mile of the Project Area are "non-urban uses". Therefore, in consideration of the point system below, a score of 3 is assigned for this criterion.

Scoring for Criterion 1

Percent Non-Urban Use within One Mile	Points
90 percent or greater	15
85 to 89 percent	14
80 to 84 percent	13
75 to 79 percent	12
70 to 74 percent	11
65 to 69 percent	10
60 to 64 percent	9
55 to 59 percent	8
50 to 54 percent	7
45 to 49 percent	6
40 to 44 percent	5
35 to 34 percent	4
30 to 34 percent	3
25 to 29 percent	2
21 to 24 percent	1
20 percent or less	0

2. Perimeter in Non-Urban Use

This criterion considers the amount of land adjacent to the project site that is in non-urban use.

The majority of the site is located in a predominantly rural area, adjacent to agricultural lands and open spaces. The non-urban land uses that border the project area include 0.5 miles of Highway 58 along the northwest boundary. Approximately 12 miles of the California Valley Solar Subdivision abut the southern boundary of the Project Area. A score of 7 was assigned for this criterion because more than 65 percent of perimeter of this site is adjacent to land that is in non-urban use.

Scoring for Criterion 2

Percent of Perimeter in Non-urban Use	Points
90 percent or greater	10
82 to 89 percent	9
74 to 81 percent	8
65 to 73 percent	7

Scoring for Criterion 2

Percent of Perimeter in Non-urban Use	Points
58 to 64 percent	6
50 to 57 percent	5
42 to 49 percent	4
34 to 41 percent	3
27 to 33 percent	2
21 to 26 percent	1
20 percent or less	0

3 Percent of Site Being Farmed

This factor evaluates how much of the site has been farmed or managed for agricultural purposes for more than five of the last ten years. Land that has been left to grow native vegetation without management or harvest is considered abandoned and therefore not considered farmed. The CVSR Project has not been farmed for the last 21 years. Instead, it has been marginally grazed with an average 50 heads of cattle or about one cow per 80 acres (0.1 animals per acre). The CVSR Project Site is not irrigated. There is however active cotton production within the Morro Bay- Midway transmission line right-of-way between MP 30.8 and MP 35 as well as active grazing between MP 1 and MP 30.8 and near the Caliente Switching station. The active agricultural areas comprise less than 20% of the total Project Area, therefore, a score of 0 is awarded for this criterion.

Scoring for Criterion 3

Percent Being Farmed	Points
90 percent or greater	20
86 to 89 percent	19
82 to 85 percent	18
78 to 81 percent	17
74 to 77 percent	16
70 to 73 percent	15
66 to 69 percent	14
62 to 65 percent	13
58 to 61 percent	12
54 to 57 percent	11
50 to 53 percent	10
46 to 49 percent	9
42 to 45 percent	8
38 to 41 percent	7
35 to 37 percent	6
32 to 34 percent	5
29 to 31 percent	4
26 to 28 percent	3
23 to 25 percent	2
20 to 22 percent	1
20 percent or less	0

4 Protection Provided by State and Local Government

This factor evaluates the extent to which state and local government and private programs protect the site from conversion. State programs considered for this criterion include tax relief, "right to farm" laws, agricultural districting, land use controls such as agricultural zoning, development rights, Governor's Executive order, and voluntary or mandatory state programs. The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, is a voluntary state program that was enacted to keep agricultural land from being converted to urban land uses. No Williamson Act lands are within Project Area. In addition, the San Luis Obispo County General Plan designates all land parcels within Project Area for agricultural use. The CVSR site and Caliente switching station site are not currently under Williamson Act contract. A small part of the land proposed for the interconnection line would pass through 0.5 mile of a parcel (APN 072-121-018) which is currently under Williamson Act contract and is currently used for grazing. There is also land under Williamson Act contract within the existing Morro Bay–Midway transmission line ROW from milepost (MP) 1.5 to MP 3, MP 7.3 to MP 10, MP 16 to MP 17, MP 17.5 to MP 18, and MP 30.8 to MP 35. However, according to the San Luis Obispo County Land Use Ordinance, the agricultural designation allows many land uses with a land use permit, including energy generation (San Luis Obispo County 2010). The Project Proponent has applied for a CUP to allow a solar facility as a permitted use on the site.

According to the site assessment criteria guidelines, if the Project Area has *ever been* subject to any state and local government or private programs or policies, it should receive the maximum score of 20. Otherwise, a score of 0 should be awarded. While a small portion of the Project Area is under a Williamson Action contract, the Project Area nonetheless received a score of 20 for this criterion.

Scoring for Criterion 4

Protection Provided by State or Local Government	Points
Site is protected	20
Site is not protected	0

5 Distance from Urban Built-up Area

This criterion determines the proximity of the site to existing urban or build-up areas characterized by a minimum population of 2,500.

The nearest urban areas to the project site with populations greater than 2,500 are Arroyo Grande, Atascadero, and Taft, which are 25 to 40 miles from the Project Site. Therefore, in consideration of the point system below, a score of 15 points has been assigned.

Scoring for Criterion 5

Distance from an Urban or Built-Up Area	Points
The site is 2 miles or more from an urban build-up area	15
The site is more than 1 miles but less than 2 miles from an urban built-up area	10
The site is less than 1 mile, but is not adjacent to an urban built- up area	5
The site is adjacent to and urban built-up area	0

6 Distance to Urban Support Services

This criterion determines the extent of existing infrastructure that could facilitate non-agricultural development. Facilities that could promote nonagricultural use include water and sewer lines, gas and power lines, roads, fire and police protection, and schools. The fewer facilities that are in place, the more difficult it is to develop the area. Therefore, a higher score is awarded for a site that is further away from such facilities. The following assessment scaling is used for this criterion:

Scoring for Criterion 6

Distance from Urban Support Services	Points
None of the services exist nearer than 3 miles from the site	15 points
Some of the services exist more than 1 miles but less than 3 miles from the site	10 points
All of the services exist with 1/2 mile of the site	0 points

There are no water, sewer, or gas services present at the Project Site. The closest police station is in San Luis Obispo, over 40 miles west of the Project Site. The nearest fire station is located at 13080 Soda Lake Road, California Valley, west of project site, approximately 3.5 miles away from Project Area. PG&E's Morro Bay to Midway 230-kV transmission line is aligned north of the CVSR Project Site and Carrisa Plains Elementary School is located 5.6 miles west of the Project Area. As indicated, some of the facilities are within 1 to 3 miles of the project site, while others are beyond the 3-mile radius. Accordingly a score of 10 is assigned to this criterion for the Project Area.

7 Size of Present Farm Unit Compared to Average

This criterion determines how much protection the site should receive, according to its size in relation to the average farming unit size within the county. The following point system is designed so that larger parcels of lands would receive a higher score, as they possess more agricultural use value.

Scoring for Criterion 7

Parcel Size Compared to Average County Size	Points
Same size of larger than average (100 percent)	10
95 percent of average	9
90 percent of average	8
85 percent of average	7
80 percent of average	6
75 percent of average	5
70 percent of average	4
65 percent of average	3
60 percent of average	2
55 percent of average	1
50 percent or below county average	0

According to the USDA 2007 Census of Agriculture, the average farm size in San Luis Obispo County is 492 acres (as shown on the CVSR form). The CVSR Project Area encompasses 4,870 acres of land which is larger than the county's average farm unit. Therefore, a score of 10 is assigned to this criterion for the Project Area.

8 Creation of Non-Farmable Farmland

This criterion considers how the proposed project would affect the remaining portions of the farm. Conversions that make the rest of the property non-farmable include any development which blocks accessibility to the rest of the site such as highways, railroads, dams, or development along the front of the site restricting access to the rest of the property.

The CVSR Project would require only a portion of some properties within the Project area boundaries. However, as the proposed project is fully compatible with agricultural land use on lands adjacent to it, the remaining portions of land not included within the fenced areas may still be used for agricultural uses, including grazing. Approximately 3,233 acres of the CVSR site would be left undisturbed, of which 2,450 would be preserved as open space and wildlife corridors. The Applicant would implement a controlled grazing plan to manage annual grassland fuel load and height for fire deterrence, such as having sheep and/or goats graze in the array area and removing vegetation that would otherwise increase the risk of a grass fire. Implementation of this grazing plan would constitute a continuation of the existing agricultural use for the CVSR site. Therefore, according to the point system below, a score of 10 is assigned for this criterion the CVSR Project.

Scoring for Criterion 8

Amount of Land Not Including the Site Which Becomes Non-farmable	Points
25 percent or greater	10
23 to 24 percent	9
21 to 22 percent	8
19 to 20 percent	7
17 to 18 percent	6
15 to 16 percent	5
13 to 14 percent	4
11 to 12 percent	3
9 to 10 percent	2
6 to 8 percent	1
5 percent or less	0

9 Availability of Farm Support Services

This factor is used to assess whether there are adequate support facilities, activities, and industry to maintain the existing agricultural business. The more support facilities that are available to the agricultural operation, the more feasible it is to continue farming. There are a few support facilities and agricultural businesses adjacent to the proposed CVSR Project site and nearby in the community of California Valley. Accordingly, a score of 2 is awarded to this criterion for the Project Area.

Scoring for Criterion 9

Percent of Services Available	Points
100 percent	5
75 to 99 percent	4
50 to 74 percent	3
25 to 49 percent	2

Scoring for Criterion 9

Percent of Services Available	Points
1 to 24 percent	1
No services	0

10 On-Farm Investments

This factor assesses the quantity of agricultural facilities such as barns, storage buildings, fruit trees and vines, field terraces, drainage, irrigation, waterways, or other soils and water conservation measures on the proposed site. If a significant agricultural infrastructure exists on site, the site should receive the highest amount of points towards protection from conversion or development.

Based on aerial images in Google Earth, there appear to be few scattered agricultural facilities on the proposed site. There are agricultural facilities to the northwest of Project Area, which borders Highway 58. Based on these aerial images, approximately 5 to 9 percent on-farm investment exists at the project site. Therefore, in accordance with the scoring system below, a score of 1 has been assigned to the project site.

Scoring for Criterion 10

Amount of On-farm Investment	Points
As much or more than necessary to maintain production	20
95 to 99 percent	19
90 to 94 percent	18
85 to 89 percent	17
80 to 84 percent	16
75 to 79 percent	15
70 to 74 percent	14
65 to 69 percent	13
60 to 64 percent	12
55 to 59 percent	11
50 to 54 percent	10
45 to 49 percent	9
40 to 44 percent	8
35 to 39 percent	7
30 to 34 percent	6
25 to 29 percent	5
20 to 24 percent	4
15 to 19 percent	3
10 to 14 percent	2
5 to 9 percent	1
0 to 4 percent	0

11 Effects of Conversion on Farm Support Services

This factor determines whether there are other agriculturally related activities, businesses, or jobs dependent upon the working of the pre-converted site in order to remain in production. The more people and farming activities relying upon this land, the more protection it should receive.

As discussed above, there are not extensive support services and facilities in or near CVSR Solar Farm project site. As a result, conversion of proposed farmlands would represent a minimal effect on other farms in the area by reducing the overall demand for support services. However, considering the large size of land to be converted, there may still be a 5 to 9 percent reduction in demand for support services in the area. Accordingly, a score of 1 point is awarded to this criterion for the Project Area.

Scoring for Criterion 11

Amount of Reduction of Support Services if Converted	Points
Substantial reduction (100 percent)	10
90 to 99 percent	9
80 to 89 percent	8
70 to 79 percent	7
60 to 69 percent	6
25 to 29 percent	5
20 to 24 percent	4
15 to 19 percent	3
10 to 14 percent	2
5 to 9 percent	1
0 to 4 percent	0

12 Compatibility with Existing Agriculture Use

This factor determines if the conversion of the proposed agricultural site will eventually cause the conversion of neighboring farmland as a result of incompatibility with the new use of the land. The more incompatible the proposed conversion with agriculture, the more protection the site receives.

Unlike residential uses, which are often intolerant of the noise, dust, and smell associated with nearby farmland, the proposed CVSR project is fully compatible with nearby agricultural operations. Therefore, a score of 0 is assigned to this criterion.

Scoring for Criterion 12

Compatibility with Existing Agricultural Use	Points
Proposed project is incompatible with existing agricultural use of surrounding farmland	10
Proposed project is tolerable of existing agricultural use of surrounding farmland	9 to 1
Proposed project is compatible with existing agricultural use of surrounding farmland	0

13 References

San Luis Obispo County. 2010. Land Use Ordinance, Title 22 of the San Luis Obispo County Code, Articles 1 through 8. May.

_____. 2011a. California Valley Solar Ranch Conditional Use Permit and Twisselman Reclamation Plan and Conditional Use Permit: Final Environmental Impact Report. Prepared by Aspen Environmental Group. San Francisco, California. January.

SunPower. 2009a. Conditional Use Permit Application for the California Valley Solar Ranch Project. Prepared for the County of San Luis Obispo Department of Planning and Building. Prepared by High Plains Ranch II, LLC (A wholly owned subsidiary of SunPower Corporation, Systems). January 14. http://www.slocounty.ca.gov/planning/environmental/EnvironmentalNotices/sunpower/SunpowerApp.htm.

G Comments on the Draft EA and DOE Responses

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G Comments on the Draft EA and DOE Responses

1.0 Introduction

This appendix contains responses to comments that the U.S. Department of Energy (DOE) received on the Draft Environmental Assessment (Draft EA), published on April 15, 2011. DOE developed the Draft EA to assist in determining whether to issue a loan guarantee to the Applicant to support the construction and operation of the California Valley Solar Ranch (CVSR) project. DOE prepared the Draft EA in accordance with the *National Environmental Policy Act* (NEPA), the Council on Environmental Quality regulations that implement NEPA (40 CFR Parts 1500 to 1508), and the Department's procedures for implementing NEPA (10 CFR Part 1021), as applicable.

This appendix includes:

- A narrative that generally describes the public-comment-and-response process.
- A Comment-Response Table that summarizes the comments received and provides DOE's response to the comments.
- A copy of each of the five comment letters DOE received on the Draft EA.

1.1 Background

The proposed action that is the subject of DOE's EA is whether DOE should issue a loan guarantee for the CVSR project, a commercial 250-megawatt solar photovoltaic (PV) electricity project located within unincorporated portions of southeastern San Luis Obispo County, California. The loan guarantee also includes associated reconductoring (upgrading) of the existing Pacific Gas and Electric (PG&E) 230-kilovolt (kV) Morro Bay-Midway electricity transmission line to convey the generated electricity from the project to the existing Buttonwillow Substation in Kern County, California. The EA describes alternative sites, operating parameters, and other project alternatives that were eliminated because they did not meet the criteria or objectives of the proposed action, as well as the "no action" alternative, i.e., not issuing the loan guarantee. The EA assesses the cumulative impacts from the CVSR and other past, present, or reasonably foreseeable future actions, including the Topaz Solar Farm and Panoche Valley Solar Farm projects, and the accompanying expansion of roads and other infrastructure(See Tables 4.1 and 4.2 of the EA). The EA evaluates the potential environmental impacts from the CVSR project and concludes that the proposed action's environmental impacts will be less than significant.

1.2 Draft Environmental Assessment and Comments

DOE issued the Draft EA on April 15, 2011, for public comment. The Department announced the availability of the Draft EA for public review and comment in the *The Tribune* in San Luis Obispo, California and the *Bakersfield Californian* in Bakersfield, California. This announcement began a 30-day comment period, which ended on May 16, 2011.

DOE received comment letters on the Draft EA from the following organizations.

- the Center for Biological Diversity (CBD);
- the Defenders of Wildlife (DOW);
- Kern County Minority Contractors Association (KC);
- North County Watch (NC); and
- the Sierra Club (SC).

These organizations sent their comment letters to DOE by U.S. Post and electronic mail.

1.3 DOE's Consideration of Public Comments

DOE considered all of the public comments provided on the Draft EA, both individually and collectively. DOE's response to each comment is provided in the Comment-Response Table. DOE's responses vary, and include explaining DOE policy, refering to specific information in the EA, answering technical questions, explaining technical issues, and providing clarification.

In response to some comments, DOE is providing updated and more detailed information in the Final EA. The Final EA also incorporates new information obtained since publication of the draft EA.

Principal areas in which the Final EA differs from the Draft EA, based on comments include:

- Inclusion of additional information from biological surveys completed during the spring survey season (Section 3.8.3 and Appendix D);
- Supplementation of portions of the EA based on the U.S. Fish and Wildlife Service's Biological Opinion that was the result of consultation under Section 7 of the Endangered Species Act (*see* Section 3.8 of the EA and Appendix D);
- Further discussion of cultural resources in Section 3.9 of the EA as a result of the completion of consultation under Section 106 of the National Historic Preservation Act; and

2.0 Methodology for Developing Comment-Response Table

DOE reviewed all of the public comments provided on the Draft EA. In order to focus DOE's responses, DOE categorized the comments received and, as appropriate, grouped the comments. This approach enabled the Department to consider, individually and collectively, all comments it received on the Draft EA and to respond to those comments. The following list describes key aspects of DOE's approach to reviewing, categorizing, capturing, and responding to public comments on the Draft EA for the proposed action:

- DOE reviewed each of the comment letters to identify comments. After identifying each comment, DOE grouped the individual comments into categories.
- When commenters submitted identical or similar comments, DOE grouped the comments and prepared a single summary response for the group of comments.
- Subject matter experts reviewed each response to ensure technical and scientific accuracy, clarity, and consistency, and to ensure that the response addressed the comment(s).

- DOE developed a Comment-Response Table that includes: (1) a summary of the comment(s); (2) the comment number(s); and (3) DOE's response.
- To the extent practicable, the Comment-Response Table quotes the language of the comments. In some cases, DOE also summarized or paraphrased an individual comment or group of comments.

3.0 How to Use the Comment-Response Table

The Comment-Response Table has three columns labeled Summary of Comment, Comment Number, and DOE's Response. The following is a description of each column.

- **Summary of Comment:** The left hand column quotes or summarizes the public comment(s), as described in Section 2 of this Appendix, above. Each comment response is also assigned a Response number (e.g., "Response G-1" for the first comment response in the General Comments section of the Table).
- **Comment Number:** The center column references the source of the comment using the following scheme: Each comment letter was assigned reference letters that abbreviated the commenter's name. Individual comments within the document were assigned a reference number marked within the margin of the document. For example, the comment document received from North County Watch was assigned the reference letters of NC. A total of 31 unique comments were identified within this letter; therefore, the comment reference numbers for those comments are NC-1, NC-2, NC-3, and so on.
- **DOE Response:** The right hand column contains DOE's responses.
- **Abbreviations and Acronyms.** A list of abbreviations and acronyms is included at the end of the Comment Response Table.

The five comment letters DOE received, marked within the right-hand margin of the letter to show the comment numbers, are reproduced in the final part of this Appendix.

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CALIFORNIA VALLEY SOLAR RANCH
DOE RESPONSE TO COMMENTS ON DRAFT EA

Summary of Comment	Comment No	DOE Response
GENERAL		
G-1: DOE and the U.S. Army Corps of Engineers (the Corps) should "deny" approval of the project.	NC-3	The proposed action that is the subject of DOE's Environmental Assessment (EA) is whether DOE should issue a loan guarantee for the California Valley Solar Ranch (CVSR) project. DOE is not otherwise involved in approving the CVSR Project. Governmental agencies with approval authority, including San Luis Obispo County, have approved the CVSR Project. Approval from the Corps is not required for the proposed action, because the Corps determined there are no "waters of the United States" on the CVSR or Twisselman Mine sites (Appendix D-4 and D-5, respectively). The Corps, therefore, has no jurisdiction to approve or disapprove any actions related to the CVSR Project.
G-2: DOE should prepare an Environmental Impact Statement (EIS), because the development of the CVSR would result in significant impacts to the human environment. The CVSR Project would have (1) significant impacts on an ecologically critical area containing multiple federally listed threatened and endangered species, and (2) significant cumulative impacts on listed species and wildlife corridors. Due to the intensity of these impacts, the National Environmental Policy Act (NEPA) regulations require DOE to complete a full EIS for	SC-8 DOW-2 DOW-3 DOW-4 CBD-73	The EA evaluates the potential environmental impacts from the CVSR Project and concludes that, in view of its Project Design Features (Appendix B), the proposed action's environmental impacts would be less than significant. In accordance with NEPA and DOE's implementing regulations, federal agencies prepare an EA in order to determine whether or not a given federal action would result in significant impacts. If the EA finds that the proposed action would result in significant impacts, the federal agency must prepare an EIS. On the other hand, if the EA finds no significant impacts would result from the proposed action, the federal agency would issue a finding of no significant impact (FONSI). In consultation with relevant state and federal agencies (e.g., the U.S. Fish and Wildlife Service [USFWS]), DOE concluded in the EA that issuing a loan guarantee for the CVSR Project would not result in significant environmental impacts. In reaching this conclusion, DOE considered the full range of impact intensity criteria developed by the Council on Environmental Quality (CEQ). DOE concluded that: • even in the overall context of the CVSR's beneficial impacts (e.g., the development of over 250 megawatts (MW) of solar electric generation capacity in the absence of fossil fuels), the potential impacts from the proposed action would not be significant;

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CALIFORNIA VALLEY SOLAR RANCH
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Summary of Comment	Comment No	DOE Response
the CVSR.		• the proposed action would not create significant impacts on unique environmental characteristics (including, but not limited to, the Carrizo Plain National Monument [CPNM]); • to the maximum extent feasible, uncertainly has been eliminated as to these findings; • no significant cumulative impacts would result from the proposed action (including, but not limited to, impacts from the proposed action in the context of similar potential DOE-financed projects in the area, e.g., the Topaz Solar Farm); • the proposed action would not result in significant adverse impacts to endangered or threatened species and their habitat, and the proposed action complies in all respects with environmental laws including, but not limited to, the completion of consultation with the USFWS under Section 7 of the Endangered Species Act and USFWS' resulting finding in the Biological Opinion that the project is not likely to jeopardize the continued existence of the species discussed or to adversely modify or destroy designated critical habitat (Appendix D-3, p. 102).
G-3: DOE's Draft EA leaves substantial questions as to whether the CVSR Project would have a significant impact on the environment. The Draft EA does not provide all of the information necessary for decision makers and the public to adequately review the proposed project, therefore, the impacts of the project cannot be fully analyzed or potentially mitigated appropriately or fully. For this reason DOE should	CBD-8 CBD-9 CBD-18 CBD-20	DOE analyzed the potential environmental impacts from the proposed action (Chapter 3 of the EA), including the Project Design Features incorporated into the proposed action to reduce the intensity of any potentially significant impacts (see Appendix B and the Biological Opinion contained in Appendix D-3). The EA's discussion of potential impacts and the detailed description of the Project Design Features document DOE's consideration of these issues. On the basis of reasonable predictions derived from analysis of available data (along with expertise from other federal agencies), the EA explains why the proposed action's impacts are not significant. In addition, the EA, along with the Biological Opinion in Appendix D-3, describe how Project Design Features incorporated into the project reduce potential species impacts to a less-than-significant level. These Project Design Features are enforceable conditions on implementation of the proposed action. On the basis of reasonably available scientific data, DOE has made these findings with the level of certainty required by NEPA. DOE has appropriately relied upon scientific and expert resources, along with enforceable

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Summary of Comment	Comment No	DOE Response
prepare an EIS for the CVSR Project.		conservation measures, to eliminate or reconcile any high degree of uncertainty. In connection with this proposed action, DOE also undertook consultation with the USFWS under section 7 of the Endangered Species Act. The USFWS concluded, as a result of consultation, that the proposed action is not likely to jeopardize the continued existence of the species discussed or to adversely modify or destroy designated critical habitat (Appendix D-3, p. 102). The USFWS reached this finding based upon analysis showing that the proposed action would not impede the survival and recovery of protected species (Appendix D-3, p. 103). In addition, the CVSR Project underwent state environmental impact review under the California Environmental Quality Act (CEQA) in connection with land-use authorizations from San Luis Obispo County. In that process, the CVSR Project was the subject of local and statewide public review and comment. DOE understands that, as a result of that input, the project sponsors redesigned the project to substantially reduced its footprint and potential environmental impacts. The description of the proposed action contained in Chapter 2 of the EA reflects this redesign. That description and the Project Design Features (Appendix B) constitute the project DOE assessed in the EA.
G-4: Agencies responsible for permitting projects such as the CVSR should require proponents to design their projects in the most sustainable manner possible, avoiding impacts to sensitive ecological resources, and where avoidance is not possible, minimizing and compensating for such impacts.	DOW-1	Section 1.1 of the EA explains the framework within which DOE will determine whether to issue a loan guarantee to support the design, construction, and startup of the CVSR. DOE is not responsible for permitting the construction and operation of the CVSR. DOE considered the proposed action, including the Project Design Features described in Appendix B, and determined that the proposed action would not result in significant environmental impacts. The proposed action, with the Project Design Features, avoids and, to the extent necessary, reduces any potentially significant impacts from the proposed action.

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Summary of Comment	Comment No	DOE Response
G-5: The Carrizo Plain is an ecologically critical area that is home to numerous threatened and endangered species. The CVSR Project site is located only two miles from the northern boundary of the CPNM and contains many of the same imperiled species and ecological characteristics as the lands within the monument. The ecological characteristics of the Carrizo Plain, including the presence of numerous threatened and endangered wildlife species, warrant the preparation of a full EIS.	DOW-5	The Carrizo Plain is a defined ecological region in California. The region as a whole does not have a protected status. The CPNM is located two miles south of the CVSR Project. The land between the CPNM and the CVSR is currently held by private land-owners as part of the California Valley Subdivision. Currently, this area is undeveloped, unprotected, and zoned for residential use. The U.S. Department of the Interior's Bureau of Land Management's (BLM) CPNM Resource Management Plan (RMP) was analyzed in an EIS and resulted in a Record of Decision signed by BLM on April 12, 2010. Pursuant to the CPNM RMP, recreation, protection of sensitive natural and cultural resources, livestock grazing, energy and mineral development, and motorized vehicle routes are allowed uses within the approximately 204,107 acres making up the CPNM. Of this area, about 62,400 acres of the CPNM will be managed for wilderness characteristics, and these areas are largely off-limits for other uses. The area of the CPNM closest to the CVSR boundary will be managed for a variety of the allowed-uses, with areas located further to south and directly to the east of Soda Lake being managed for wilderness characteristics. In preparing the EA, DOE considered the CVSR's proximity to the CPNM and any direct and indirect effects on the CPNM that might result from the proposed action (see, e.g., Sections 2.1 and 3.1 of the EA). Specifically, the EA evaluates the potential for the proposed action to affect the unique environmental values in the Carrizo Plain ecological region and the CPNM. This includes an examination of the protected species that inhabit the region, including the CPNM, most notably the San Joaquin kit fox (SJKF) and giant kangaroo rat (GKR) (Section 3.8.3.2 of the EA, "Special Status Species"). The EA concludes that impacts to these species during construction and operations would not be significant. Several factors lead to this conclusion. First, the project's micro-siting would avoid impacts to densely populated areas. Second, the project preserves large blocks of habitat both onsite and offsite (see esp., Section 3.8.2.3 of the EA, Habitat Conservation). Finally, other Project Design Features lead to an avoidance of significant impacts (Section 3.8.3.2 of the EA [pp. 3-83, 3-84] and Appendix B). In addition, the Biological Opinion examined the indirect effects of the CVSR Project on the

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Summary of Comment	Comment No	DOE Response
		SJKFs' movements, and in particular, their movements relative to wildlife corridors throughout the Carrizo Plain ecological region and the CPNM. See Biological Opinion, pp. 48–55 (Appendix D-3). The Biological Opinion concluded that, with the implementation of Project Design Features, such as the redesign of the solar arrays and use of animal-friendly fencing to accommodate movement of SJKF, the population of this protected species would not suffer significant adverse affects (Appendix D-3, p. 88).
G-6: The DOE must be concerned with the adequacy of the NEPA review, and DOE may not use deadlines for funding under the American Recovery and Reinvestment Act (ARRA) of 2009 (ARRA 2009) as an excuse for rushed and inadequate NEPA review.	CBD-12	DOE analyzed the scope of potential environmental impacts arising from the proposed action in the same manner as it has for other proposed actions not subject to ARRA funding deadlines. DOE works diligently to issue loan guarantees in compliance with certain statutory deadlines in the ARRA 2009, but statutory deadlines do not dictate the quality or pace of environmental reviews under NEPA. DOE is committed to thoroughly complying with NEPA, and DOE's funding decisions are contingent on proper and complete NEPA compliance. Indeed, in passing the ARRA 2009, Congress specifically directed federal agencies to assure that their use of appropriated funds complied with NEPA. In light of this directive, DOE has selected projects for ARRA 2009 loan guarantees under Title XVII of the Energy Policy Act (EPAct) of 2005—such as the CVSR—that are in the advanced stages of environmental permitting and feature inherently minimal environmental impacts. DOE has analyzed the direct, indirect, and cumulative impacts of construction and operation of the CVSR in compliance with NEPA.
G-7: Twisselman Mine is not a borrow pit, is under enforcement action and operates out of compliance.	NC-28	Section 1.2 indicates that the Applicant submitted an application for the Twisselman aggregate mine Conditional Use Permit (CUP)/Reclamation Plan (DRC2009-00004) to San Luis Obispo County on January 13, 2009 to allow development of the aggregate mine. Thereafter, the San Luis Obispo Planning Commission approved the CUP for the Twisselman aggregate mine on May 26, 2011. This decision was appealed on June 9, 2011, and the San Luis Obispo Board of Directors is scheduled to review the CUP in August 2011. If the Board of Directors approves the CUP, the mine operator will be required to comply with a number of conditions including the reimbursement of costs attributed to unpermitted export of material from the mine; payment of fees; and acquisition of conservation land or implementation of equivalent mitigation

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Summary of Comment	Comment No	DOE Response
		alternatives. Regardless, the proposed establishment of the Twisselman aggregate mine is not part of the proposed action (i.e., would not be financed with DOE loan guarantee funds). The potential environmental impacts from the proposed establishment of the Twisselman aggregate mine are addressed in this EA as a connected action, however, the mine is not subject to approval by DOE.
G-8: This project should be required to have MBE/WBE/DBE/SBE/ DVBE/SEC-3 contracting goals as a condition of receiving federal loan guarantee for construction and start up. Kern Minority Contractors Association is based in Kern County and can assist SunPower in locating local MBE/WBE/DBE/SBE/ DVBE/SEC-3 sub-contractors for this project.	KMCA-1	Comment noted. The DOE's loan guarantee program does not require that the Applicant have MBE/WBE/DBE/SBE/DVBE/SEC-3 contracting goals. This request is outside the scope of the DOE's NEPA review process.
PROJECT ALTERNATIVES		
PA-1: DOE's description of the purpose and need for the proposed action is unreasonably narrow. DOE should broaden its statement of purpose and need to encompass a range of renewable energy sources or	DOW-26 CBD-10	The purpose and need for the EA, as stated in Section 1.1, is to "comply with DOE's mandate under the EPAct of 2005 by selecting eligible projects that meet the goals of the Act. DOE is using the NEPA process to assist in determining whether to issue a loan guarantee to the Applicant to support the CVSR Project." DOE's role has been defined by Congress in EPAct of 2005. DOE's purpose and need statement flows directly from its Congressional direction and statutory authority, and DOE's proposed action is limited by the loan guarantee application received from a private party. NEPA does not require that agencies disregard the needs and

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Summary of Comment	Comment No	DOE Response
efficiency programs that would allow for a meaningful exploration of other fossil-fuel reducing alternatives.		goals of the parties applying for the agency action; nor does it require DOE to consider technologies from other energy sources that the Applicant has not proposed to employ. DOE's actions under the EPAct of 2005 are limited to issuing a loan guarantee to support the funding for the eligible project as proposed by the Applicant. Thus, the EA's purpose and need statement takes into account the statutory purposes of the legislation underlying DOE's actions as well as the needs and goals of the loan guarantee Applicant.
PA-2: The CVSR Project has undergone one or more revisions since the preparation of the Draft EA, and DOE has not analyzed the project that will actually be developed. The public cannot meaningfully comment on the potential impacts of the proposed action, because DOE did not analyze the project that will actually be developed.	DOW-28	The EA analyzes the CVSR Project as proposed to DOE, which is the project that was ultimately approved by San Luis Obispo County. Section 2.1 of the EA describes the proposed action. Appendix B describes Project Design Features that include avoidance and conservation measures incorporated into the proposed action as necessary to reduce the intensity of any potentially significant impacts. The CVSR Project received governmental authorization to proceed chiefly in the form of a CUP issued by San Luis Obispo County. As part of the CUP approval process, the CVSR Project was the subject of state-level environmental review under CEQA. Section 1.2 of the EA describes the CEQA review process. During the CEQA review process, the CVSR Project was modified as described in Chapter 2 of the EA. The EA evaluates the CVSR Project as proposed to DOE and as modified through the CEQA review process. Thus, DOE analyzed the project that would be developed if DOE issues a loan guarantee, and DOE's EA provided the public with an opportunity to comment on the proposed action.
PA-3: DOE failed to consider a range of reasonable alternatives to the CVSR Project in the Draft EA. DOE failed to evaluate alternatives to the size and scale of the proposed project that would minimize adverse consequences on sensitive species and	DOW-9 DOW-27 CBD-5 CBD-6 CBD-69 CBD-70 CBD-71 CBD-72 NC-26	DOE's analysis of alternatives is closely tied to the purpose and need for agency action. Under EPAct of 2005, DOE has authority to either issue or deny loan guarantees for eligible applicant projects. In the context of loan guarantees, an alternative is not feasible if no applicant proposes it; nor is it feasible for DOE to select a proposal and then prescribe to its proposer that it pursue a different project hypothesized by DOE. In light of DOE's authority under the loan guarantee program, DOE has properly focused the EA on either issuing a loan guarantee or not issuing a loan guarantee (i.e., the "no action alternative"). The EA describes the alternatives considered by the Applicant in Sections 2.2 and 2.3. Section 2.2 describes alternative sites, operating parameters, and other project alternatives that

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Summary of Comment	Comment No	DOE Response
wildlife connectivity. Alternatives that should have been considered include alternative siting on previously degraded land, distributed generation, offsetting greenhouse gas (GHG) emissions by funding other types of projects, energy conservation measures, and training programs.	DOW-29	were eliminated because they did not meet the criteria or objectives of the proposed action. In accordance with NEPA requirements for an EA, Section 2.3 describes the "no action" alternative, i.e., not issuing the loan guarantee. In addition to the resulting project modifications discussed in Response PA-2 and Chapter 2 of the EA, the CEQA review process involved a review of a variety of locations, orientations, layouts, and technologies for the CVSR Project. DOE is aware that multiple revisions were made to the scale and configuration of the CVSR Project in response to public input received during the CEQA review process, and DOE lists and discusses these project changes in the EA (Table 2-1). The Defenders of Wildlife and Center for Biological Diversity participated in the CEQA process.
PA-4: If DOE rejects an alternative from consideration, it must explain why a particular option is not feasible and was, therefore, eliminated from further consideration.	CBD-68	The scope of DOE's evaluation of alternatives is described in Sections 2.2 and 2.3. Section 2.2 describes, among other things, alternative sites, operating parameters, and other project alternatives that were considered by the Applicant but were eliminated from consideration because they did not meet the criteria or objectives of the proposed action.
PA-5: The reconductoring component is included as part of the Topaz Solar Project in the Topaz Solar Project Draft EIS. The EA description of the reconductoring differs significantly from the Topaz Solar Project Draft EIS description of reconductoring.	CBD-1	The DOE proposed action is to issue a federal loan guarantee to support the construction and start up of the CVSR Project. The CVSR Project includes the construction, operation, maintenance, and decommissioning of the CVSR and the reconductoring of the Pacific Gas & Electric (PG&E) 230-kilovolt Morro Bay–Midway transmission line. EA sections 2.1.2.4 and 2.1.2.10 accurately describe the reconductoring and explain that the point of connection for the CVSR Project would be the Caliente switching station. Both the CVSR and the Topaz Solar Project would rely upon reconductoring of the Morro Bay-Midway transmission line to deliver electricity to market. The Topaz Solar Project described the reconductoring because the project would rely upon the reconductoring, but DOE's analysis of whether to provide a loan guarantee for the reconductoring is part of the CVSR EA. The only difference between the description of the reconductoring in the Topaz Solar Draft EIS and the CVSR EA is the number of towers that would be replaced. Specifically, Section 2.1.2.10 identified that the proposed reconductoring

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		would include the replacement of four transmission line towers (two along the alignment and two near the Caliente switching station). This information was not available at the time the Topaz Solar Draft EIS was published, and the Draft EIS acknowledged that the number of towers to be replaced was unknown and assumed the number would be 10 percent of the existing towers.
PA-6: As organizations have emphasized in comments on the various large-scale industrial solar proposals in sensitive habitats throughout California, planning should be done before site specific projects are approved in order to ensure that resources are adequately protected from sprawl development and project impacts are first avoided, then minimized and lastly mitigated.	CBD-7	Section 1.1.2 describes how the proposed action is being developed in a manner consistent with the long-range planning goals established for San Luis Obispo County. This section of the EA contains information on how the proposed action would support San Luis Obispo County's objectives to help meet state and federal renewable energy goals and support the renewable energy goals stated in the San Luis Obispo General Plan as well as other policies in the Plan designed to protect San Luis Obispo County's environment and economy. As described, San Luis Obispo County has the goal of locating solar facilities in high solar resource areas, thereby optimizing the best available solar energy within proximity to transmission lines with minimal environmental degradation. These plans were in place prior to the selection of the current CVSR Project site. As such, the CVSR Project is consistent with the County's long-range plans and policies for energy development, which are intended to balance the needs for additional renewable energy generation with sustainable with development. Section 1.4 describes the community outreach activities that informed the local and regional communities and other stakeholders about the proposed action, comments from whom have been integrated into the CVSR Project Design Features (Appendix B). The Project Design Features include extensive measures to avoid and minimize impacts. Section 2.1.2.1 has been modified to include a listing of the extensive changes that were incorporated into the project design to avoid and minimize impacts in response to public and agency participation in the environmental review process. As discussed in Response G-1, it should be noted that the proposed action that is the subject of DOE's EA is whether DOE should issue a loan guarantee for the CVSR Project. DOE is not otherwise involved in approving the CVSR Project.

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PA-7: Alternatives that accomplish the same goals but with little or no impacts to special status species are not considered. Missing in the DEIS [sic] analysis is consideration of alternatives that would accomplish the same goals but with little or no impacts to special status species. The Westlands Competitive Renewable Energy Zone (defined by the Renewable Energy Transmission Initiative stakeholder group), 5,000 acres of degraded farmland in Central San Joaquin Valley located on north-south transmission lines, is an example of an alternative that is not considered that would accomplish the same goals without impacts on special status species and habitats.	NC-14 NC-15	The EA describes the alternatives considered in Sections 2.2 and 2.3. Section 2.2 describes alternative sites, operating parameters, and other project alternatives that were eliminated because they did not meet the criteria or objectives of the proposed action. The Westlands Clean Renewable Energy Zone is within the Westlands Water District (WWD) in Kern, King and Fresno Counties. The EA notes that the Applicant considered several alternative sites located within the boundaries of the WWD (Section 2.2), which were deemed as infeasible alternatives due to the lack of available transmission capacity and the inability to develop comparable capacity to the CVSR Project within the terms of the Applicant's existing Power Purchase Agreement (PPA) with PG&E or in the foreseeable future. In addition, the 93 projects listed in the attached spreadsheet provided by North County Watch lists sites that are presently under development for solar power generation by various private entities; as such, none of these sites would be feasible for development and construction of the CVSR Project. As discussed in Response PA-3, DOE has authority to either issue or deny loan guarantees for eligible applicant projects. In the context of loan guarantees, an alternative is not feasible if no applicant proposes it; nor is it feasible for DOE to select a proposal and then prescribe to its proposer that it pursue a different project set forth by DOE. In light of DOE's authority under the loan guarantee program, DOE has properly focused the purpose and need of the EA on either issuing a loan guarantee or not issuing a loan guarantee (i.e., the "no action alternative").
PA-8: A spreadsheet containing 93 projects currently in the permitting process that would have little or no environmental	NC-15	As discussed in Response PA-3, DOE has authority to either issue or deny loan guarantees for eligible applicant projects. In the context of loan guarantees, an alternative is not feasible if no applicant proposes it; nor is it feasible for DOE to select a proposal and then prescribe to its proposer that it pursue a different project set forth by DOE. In light of DOE's authority under

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impacts was provided as an example of projects that accomplish the same goals without impacts on special status species and habitat.		the loan guarantee program, DOE has properly focused the purpose and need of the EA on either issuing a loan guarantee or not issuing a loan guarantee (i.e., the "no action alternative"). The scope of DOE's evaluation of alternatives is described in Sections 2.2 and 2.3. Section 2.2 describes, among other things, alternative sites, operating parameters, and other project alternatives that were eliminated from consideration in the EA, because they did not meet the criteria or objectives of the proposed action. The commenter notes that the projects listed on the attachment are sited on lands with little or no environmental impacts. DOE notes that the attachment provides information only on whether or not California Department of Fish and Game (CDFG) incidental take permits would be required, and does not identify all environmental impacts that would result from implementation of each project. The majority of projects included on the table have not completed their environmental analysis, and sufficient information is not available to determine the significance of impacts to all environmental resources. The spreadsheet also does not specify the timeframe within which the proposed projects would be operational, and does it identify any transmission infrastructure improvements that would be required. These projects, currently proposed for development within CDFG Region IV, are independent of the proposed action. Each project would contribute to the state's renewable portfolio standard (RPS) goals.
PA-9: The EA incorporates by reference numerous misstatements of fact from the EIR's alternatives analysis, which DOE should correct in the context of an EIS.	NC-16	Section 2.2 describes the alternatives considered by the Applicant as part of the analysis conducted for the environmental impact report (EIR) under CEQA. The CEQA review process, see Responses PA-2 and PA-3, along with Section 1.2, entailed a review of a variety of locations, orientations, layouts, and technologies for the CVSR Project. As discussed earlier, DOE is aware that multiple revisions were made to the scale and configuration of the CVSR Project in response to public input received during the CEQA review process. Specifically, Section 2.2 notes that the Applicant considered several alternative sites comparable to the proposed CVSR site in terms of size, land characteristics, and proximity to transmission infrastructure; however, none of these sites proved superior to the proposed CVSR Project site in terms of the avoidance or minimization of environmental effects and the full utilization of solar resources. The EA does not incorporate the findings of the EIR by reference, nor does the

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		EA contain factual misstatements. The EA analyzes the CVSR as proposed to DOE, which is the project that was ultimately approved by San Luis Obispo County.
PA-10: EA incorrectly cites the EIR by concluding that lands in the WWD are infeasible as alternatives due to lack of available transmission capacity and the ability to develop transmission capacity within the terms of the PPA or within the foreseeable future; because assembling a comparable site within the WWD would require a minimum of ten years due to the fact that the land is currently under Williamson Act contracts; and due to reduced insolation values for production of solar energy pursuant to the PPA.	NC-17	Section 2.2 describes the alternatives considered by the Applicant as part of the analysis conducted for the EIR, which included lands within the WWD. As discussed in Response PA-7, Section 2.2.1 describes the Applicant's rationale, developed pursuant to CEQA during San Luis Obispo County's approval process for the CVSR's CUP, for eliminating this alternative site from consideration. In addition, as discussed in Response PA-3, DOE has authority to either issue or deny loan guarantees for eligible applicant projects. In the context of loan guarantees, an alternative is not feasible if no applicant proposes it; nor is it feasible for DOE to select a proposal and then prescribe to its proposer that it pursue a different project set forth by DOE. In light of DOE's authority under the loan guarantee program, DOE has properly focused the EA on either issuing a loan guarantee or not issuing a loan guarantee (i.e., the "no action alternative").
PA-11: Construction of an alternative within the WWD could meet the goal of helping PG&E meet the state's 33 percent renewable energy target because 800 MW of transmission capacity exists with upgrades in the WWD according to the EIR [sic], the	NC-18	As discussed in Response PA-3, DOE has authority to either issue or deny loan guarantees for eligible applicant projects. In the context of loan guarantees, an alternative is not feasible if no applicant proposes it; nor is it feasible for DOE to select a proposal and then prescribe to its proposer that it pursue a different project hypothesized by DOE. In light of DOE's authority under the loan guarantee program, DOE has properly focused the EA on either issuing a loan guarantee or not issuing a loan guarantee (i.e., the "no action alternative").

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insolation difference with Carrizo is minor according to the EIR [sic], and during the January 27, 2011 Planning Commission hearing, the Applicant stated that they could construct a solar facility within the WWD within five to seven years.		
PA-12: Statistics for the comparison of rooftop photovoltaic (PV) potential to the CVSR Project's potential are limited to San Luis Obispo and Kern Counties in 2016 instead of including the entire PG&E service territory. These statistics are not sourced or dated and the parameters of the study are excluded. The commenter stated that the RETI engineering contractors, Energy & Environmental Economics and Black & Veatch, estimated 2,922 MW of distributed PV capacity within the PG&E service territory, a figure that represents a generating capacity of more than 30 times the	NC-19	This comment refers to findings contained within the EIR for the CVSR Project CUP and Twisselman Mine CUP/Reclamation Plan prepared by San Luis Obispo County and certified by the San Luis Obispo Planning Commission on February 24, 2011. This certification was upheld by the San Luis Obispo Board of Supervisors on April 19, 2011. As discussed in Response PA-3, the EA describes the alternatives considered in Sections 2.2 and 2.3. Section 2.2 describes alternative sites, operating parameters (e.g., other technologies including distributed PV generation), and other project alternatives that were eliminated because they did not meet the criteria or objectives of the proposed action. Because distributed rooftop PV generation would not meet the purpose and need for the proposed action, it is not considered to be a feasible alternative and was eliminated it from consideration.

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PA-13: The EIR [sic] fails to note that decreased power generation due to reduced insolation values that may be incurred in a distributed generation alternative would likely be compensated or cancelled out by eliminating the line loss that would occur with the CVSR Project.	NC-20	See Response PA-12.
PA-14: There are no large scale central station solar power plants greater than 20 MW in California. The EIR [sic] failed to note that examples of this type of facility are more limited than large-scale commercial PV.	NC-21	In addition to the technologies addressed in Response PA-12, Section 2.2 discussed the use of alternative solar thermal technologies for the proposed action, along with a description of their associated land-use and water requirements. See Response PA-12 regarding San Luis Obispo County EIR for the CVSR Project CUP.
PA-15: The EIR [sic] is incorrect in stating that generating 250 MW of energy through distributed PV would require deployment of PV at more than double the rate of PV under the California Solar Initiative Program. No incentives beyond those already	NC-22	See Response PA-12

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available are necessary to build 250 MW of distributed PV because the distributed PV projects are being built under long-term PPAs between the developer and the utility within the framework of the RPS program.		
PA-16: The EIR [sic] compared the cost of generating energy with the CVSR Project using California Energy Commission (CEC) data to the cost of generating energy using distributed generation (both residential and commercial) using California Public Utilities Commission (CPUC) data from a 2009 study. The cost assumptions from the CPUC study were incorrect and are obsolete. An EIS needs to be prepared comparing actual and current figures of distributed PV to the Applicant's estimated cost for CVSR.	NC-23	See Response PA-12

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PA-17: The EIR [sic] dismissed distributed PV as an alternative using insufficient rationale The EIR [sic] stated that both utility-scale and distributed generation technology would be needed to meet the state's RPS goals. This statement is irrelevant to the requirement to assess whether an alternative meets the project objectives and the environmental impacts of the alternative.	NC-24	See Response PA-12
PA-18: The DOE analysis should note that distributed PV and/or central station solar projects in the Westlands Clean Renewable Energy Zone are feasible alternatives that would achieve the goals of the project without the environmental impacts that would result from the proposed project.	NC-25	See Responses PA-3, PA-10 and PA-12.
PA-19: The $65–85 million dollar investment in reconductoring and the construction of 2 substations would be borne by ratepayers and is an unnecessary expense	NC-27	Comment noted.

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because siting can be in areas requiring fewer upgrades.		
CLIMATE CHANGE, OTHER EFFECTS		
CC-1: DOE fails to identify which, if any, fossil fuel plants would be shut down as a result of the CVSR Project's operation. As such, GHG reduction claims in the Draft EA are speculative. Furthermore DOE does not discuss how to minimize and off-set emissions during construction of the project, for example by using more efficient equipment or vehicles. DOE should account for emission of GHGs due to the manufacturing process that are not accounted for or off-set and address GHG impacts from recycling project components at the end of their useful life.	CBD-11 CBD-15 CBD-64 NC-29	The EA discusses GHG emission aspects of the CVSR Project – both the GHG emissions that would be generated during the Project's construction and the GHG emissions that potentially would be avoided through solar generation of electricity. The EA does not claim that issuing a loan guarantee to the CVSR Project would result in the shutdown of a fossil fuel plant. On February 18, 2010, CEQ issued draft guidance to direct federal agencies on how to consider climate change and GHG emissions during the NEPA process. See CEQ, Memorandum for Heads of Federal Departments and Agencies, Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions (Feb. 18, 2010). The CEQ draft guidance recommends agencies quantify cumulative GHG emissions over the life of the project and discuss measures, including reasonable alternatives, to reduce emissions and consider applicable federal, state or local goals for reducing energy conservation or GHG emissions. The CEQ draft guidance further recommends that agencies consider whether climate change impacts warrant consideration due to their potential effect on the agency's analysis of environmental effects. The EA quantifies GHG emissions that potentially would be avoided through generation of electricity through solar energy rather than fossil fuel combustion (Section 3.5.3.2 of the EA, esp. Table 3.5-6). Annualized over the 25-year life of the project, the EA estimates over 8,300,000 metric tons of GHG potentially could be displaced by the CVSR's operation. While the EA does not claim that issuing a loan guarantee to the CVSR Project would result in a fossil fuel plant's being shut down, the availability of energy from a solar source would (under California's renewable portfolio standard) potentially displace energy consumed by Californians that would otherwise be generated from burning fossil fuels at existing or newly constructed facilities. California's RPS now requires that 33 percent of the electricity consumed in the State by 2020 come from renewable sources, such as solar facilities.

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		Most of the CVSR potential GHG emissions are transportation-related. Section 3.3.3.2 identifies the transportation-related activities associated with CVSR's construction that would give rise to GHG emissions, and Section 3.5.3.2 quantifies GHG emissions from construction of the CVSR. Most of the potential GHG emissions are transportation-related. Section 3.3.3.2 describes mechanisms to minimize transportation-related GHG emissions, including providing dedicated shuttle buses, free lunches to those that use the shuttle buses, and use of aggregate material from a the nearby (rather than a distant) Twisselman mine. Because NEPA requires analysis of only reasonably foreseeable impacts from a proposed action, the EA does not speculate as to the GHG impacts from CVSR Project component manufacturing or end-of-life recycling. Any estimate as to the GHG emissions from these activities would be speculative at best, because such emissions indirectly related to the proposed action cannot be calculated in a definitive manner.
CC-2: The EA's analysis of the project's impact on global climate change is limited to a consideration of the expected reduction of GHGs resulting from the project. In doing so, the Draft EA fails to completely address the risks associated with global climate change as NEPA's "hard look" standard requires. Specifically, DOE fails to consider whether habitat fragmentation, loss of landscape-scale connectivity for terrestrial wildlife, and introduction of predators and invasive species associated with	CBD-13 CBD-14 CBD-62 DOW-32 DOW-33	The EA (chiefly Sections 3.3 and 3.5) discusses GHG emission aspects of the CVSR Project. The EA includes a reasonably foreseeable impact analysis and quantifies potential impacts from the GHG emissions resulting from the proposed action. NEPA requires the analysis of reasonably foreseeable impacts from a proposed action but not speculative potential impacts. The future impacts from global climate change upon the Carrizo Plain are unknown and, therefore, are not reasonably foreseeable in that they cannot be reasonably quantified or described in a definitive way. The Project Design Features (Appendix B) that diminish fragmentation and preserve connectivity would facilitate protected species' adaptation to the potential effects of climate change.

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the proposed action may actually impede an effective climate change adaptation strategy.		
AGRICULTURAL RESOURCES		
AG-1: The project fails to consider and analyze the substantial conversion of agricultural lands proposed for biological mitigation; biological mitigation could result in an additional 7,300 acres of agricultural lands being removed from production. This project and the Topaz Solar Ranch project will have considerable cumulative effects on agricultural lands on the Carrizo Plain.	NC-13	Section 3.2.3.1 of the EA concludes that implementation of the proposed action, which includes the habitat conservation, preservation and restoration measures contained in the Project Design Features (Appendix B), would not result in significant impacts to agricultural resources. DOE's finding is based upon an assessment of the extent to which the proposed action would permanently convert Prime or Unique farmland to a non-agricultural use or otherwise conflict with a Williamson Act contract. With respect to the Project Design Features that preserve habitat in and around the CVSR Project site for species protection, Section 3.8.3.2 of the EA, Habitat Conservation, presents the CVSR Project's overall habitat conservation strategy, which maintains the baseline physical resources (e.g., soil and water quality conditions) that define agricultural resources. This strategy balances the competing needs of biological and agricultural resources by conserving and restoring habitat on previously degraded agricultural areas (e.g., approximately 5,200 acres of land that has been actively dry-farmed or periodically tilled), while also preserving the baseline soil and water quality conditions necessary for agricultural use. While such preservation could affect the agricultural usage of those mitigation lands, it would not degrade the physical baseline conditions that define agricultural resources (i.e., soil and water quality). Because federal and state farmland resource qualities are based upon the preservation of the underlying physical characteristics necessary to support agriculture—not whether or not the land is in fact in use for agricultural production—the Project Design Features would not result in the conversion of agricultural lands to a non-agricultural use. In addition, wildlife habitat preservation is among the open-space uses compatible with lands subject to a Williamson Act contract. Nonetheless, livestock grazing of the mitigation lands would also be allowed, when and where it is deemed beneficial for the habitat needs of affected species, thus preserving

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		agricultural usage of some preserved habitat lands. Easements created for mitigation of impacts to protected species would permanently protect the soils and the rural character of mitigation lands, thus balancing the competing needs of biological and agricultural resources. Regarding the CVSR Project's cumulative effects on agricultural lands in the Carrizo Plain, Section 4.4.2, Agricultural Resources, presents the cumulative environmental effects that could result from implementing the CVSR Project. This analysis included the Topaz Solar Farm as one of the reasonably foreseeable projects that could contribute to the cumulative effects scenario (see Table 4-2). The EA found that the Topaz Solar Farm and the associated Solar switching station would be subject to the same County of San Luis Obispo requirements as the CVSR Project and, as such, must coordinate construction activities with agricultural owners and mitigate for the loss of farmland through permanent preservation of offsite farmlands of an equivalent type at a ratio of 1:1. The EA also found that because neither the Topaz nor CVSR Projects would affect Natural Resources Conservation Service designated Prime Farmland, impacts would be long-term, but minor. Thus, no significant cumulative impacts associated with agricultural resources would be anticipated.
WATER RESOURCES		
WR-1: Water demand for dust control would exceed 39 acre-feet per year (AFY). A comment letter submitted to the CEC on January 21, 2010 for the Ridge Crest Solar Power Project states that the Ridge Crest Solar Power Project would require 2,800 gallons per day per acre for dust control. Based on the water usage estimates and construction	NC-30	Section 2.1.3.3, along with Table 2.2, presents the volume of water that would be required during construction of the CVSR. As shown on Table 2.3, a total of 41 AFY would be used during construction for dust control, concrete manufacturing, panel washing, sanitary uses, landscaping, reverse osmosis reject water and water for the temporary construction worker accommodation area. Of this total, 22.4 AFY would be used for dust control purposes. This information was verified by Fluor Corporation, a construction and engineering company that has been in operation since 1912. The comments in WR-1 refer to the proposed project addressed in the County's Final EIR, as opposed to the proposed action addressed in the EA. Section 1.2 notes that during the course of the CEQA EIR process for approval of the CVSR's CUP, the project benefitted from public comment and was modified to reduce its potential impact. It also notes that the EA incorporated modifications to the project as a result of the CEQA EIR process. The comments in WR-1

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schedule contained in the CVSR EIR [sic] (39 AFY and 250 days, respectively), the project would allow a 2,800 acre per day application rate for 18 acres per day, or 6.2 miles of roadbed. Based on the San Joaquin Valley Air Pollution Control District (APCD) regulations for minimum water application rates for fugitive dust control require 1800 gallons of water per mile for unpaved roads that are 24 feet wide. At the rates suggested by the San Joaquin Valley APCD and based on the access road land disturbance acreages and water usage estimated contained in the EIR [sic] (192 acres and 39 AFY), the project would allow for 12.5 applications of water per year.		concerning the amount of acreage to be disturbed for project roadways, as well as the total amount of ground disturbance at the CVSR site, reflect the initial project proposed in the San Luis Obispo County's EIR, as opposed to the proposed action addressed in the EA. Section 2.1.3.2, along with Table 2-2, presents the total area of ground disturbance for the CVSR Project. As shown in Table 2-2, roadways for the CVSR Project would occupy a total of 77 acres (i.e., 61 acres within the array boundaries and 17 acres outside the array boundaries). Roads within the CVSR site are also described in Section 2.1.2.6, Access Roads and Fencing. Therefore, the CVSR would not require 192 acres for roads, as comment WR-1 contends. As shown on Table 2-2, the CVSR would disturb a total of 1,605 acres, not the 1,900 acres as comment WR-1 contends—this includes 104 acres of permanent disturbance, 1,394 acres of temporary disturbance at the CVSR site, plus 107 acres of disturbance. Further, DOE believes there are reasons why a comparison of water use by the Solar Millennium Ridgecrest Solar Power Project, a 250 MW solar-thermal project in Kern County, California, and the CVSR Project is misleading. For instance, according to the CEC Staff Assessment and Draft EIS for the Solar Millennium project, construction would require grading more than half of the 4,000 acre project site. The CVSR Project will not require that extent of grading because of differences between the CVSR and the Ridgecrest Solar project technologies and construction methodologies. Thus, it is not reasonable to compare the construction water use between the two.
WR-2: The water usage estimates for operation are unrealistic. According to the Applicant, panel washing twice a year will consume 4.9 AFY of water. Reverse Osmosis (RO)	NC-31	Section 2.1.3.11 presents the projected water use during operations of the CVSR Project. These projections include an upward adjustment factor of 25 percent, and are based upon peer-reviewed studies and the Applicant's experience with panel washing of its own PV systems. Table 2-7 indicates that 5.3 AFY would be required for panel washing, including 1.8 AFY of reject water that would be produced using the reverse osmosis system. Section 2.1.2.7 notes that for the CVSR Project, the large high pressure reverse osmosis system would have 75

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generates approximately 30% reject water as brine. No estimate of how much water will be processed through the RO system is provided. Because the well water for the site is brackish and has 4,940 mg/L TDS (total dissolved solids), the panel washing water will have to be purified in the RO system. Assuming a conservative 25% reject water loss, panel washing demands will require 5.9 AFY.		percent efficiency, thus producing 25 percent reject water. The amount of water that would be processed through the reverse osmosis system to meet water demands during operation is presented on Table 2-8. This estimate of 25 percent reject water generation was derived from data in a University of Nevada, Las Vegas research study, with an upward adjustment factor of 25 percent. The Applicant's reject water generation estimate is also supported by the Applicant's experience with panel washing at its own solar installations. The Applicant currently monitors and/or provides operations and maintenance services for more than 50 ground-mounted solar PV systems in California including systems with the same technology as the CVSR. In 2010, of those systems, more than 35 did not require any panel washing, 9 were washed once, 6 were washed twice, and none received more than 2 washings. In addition, the Applicant's 14 MW T20 system at Nellis Air Force Base in Nevada has never been washed since it was commissioned in 2007. On an annual basis, the Applicant's California-based solar module cleaning team averaged 0.25 gallons per panel per wash in 2010. Therefore, based on field experience and with a 25% upward adjustment factor, the conservative estimate for total water usage for panel washing is less than 800,000 gallons per year or 2.5 AFY.
WR-3: The Draft EA fails to evaluate the impact of the proposed project on the ephemeral and intermittent streams and the ecosystem processes that they provide both on and off of the proposed project site. The EIS will need to include an analysis of these issues.	CBD-63	Section 3.7.2 presents the CVSR Project's potential impacts to ephemeral and intermittent streams, and summarizes information detailed in the CVSR Biological Resources Assessment Report (H. T. Harvey & Associates, 2010b available at https://lpo.energy.gov/?page_id=1514#cvsr.). Based upon this analysis, DOE has concluded that through implementation of the Project Design Features (Appendix B) the impacts to aquatic resources from the CVSR Project would not be significant. Specifically, the EA found that 37 ephemeral streams occur on the CVSR site, 5 unnamed intermittent streams (blue line streams) cross the CVSR site, and several ephemeral and intermittent streams are present in the Morro Bay–Midway transmission line reconductoring alignment. In addition, Section 3.7.3.2 states that project access roads would cross ephemeral stream corridors at approximately 22 locations.

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		The EA found that impacts to habitats within ephemeral streams and other sensitive aquatic resources occurring within the CVSR site and project vicinity would be avoided to the maximum extent practicable through implementation of the Project Design Features (Appendix B), which include minimization of disturbance within stream channels, maintenance of existing hydrologic patterns with respect to runoff supporting seasonal wetlands, and implementation of drainage and erosion control project design features. In addition, the Applicant would prepare a Storm Water Pollution Prevention Plan and an Erosion Control and Sediment Transport Plan in order to minimize erosion and sedimentation from activities such as road grading, construction of the switching station, and tower installation. These measures ensure that water quality would not be degraded during the wet season. Impacts to these resources would, therefore, not be significant.
BIOLOGICAL RESOURCES		
BIO-1: The CVSR Project site is over 4,000 acres. Adverse environmental impacts would accrue to the entire site even though arrays will only occupy approximately 1,900 acres. The project will have a significant impact on the numerous endangered and threatened species. The Carrizo Plain is core habitat for numerous endangered species, including the GKR, SJKF. Mitigation should be based on the full project area, because the whole site has the potential for being occupied GKR habitat and no	NC-1 CBD-36	Based upon DOE's analysis in sections 3.8.3 and 4.4.7, which address the CVSR Project's direct, indirect, and cumulative impacts on biological resources, including GKR and SJKF, DOE has concluded that the CVSR Project would not significantly impact biological resources. Most recently, these sections have been supplemented with the results of the USFWS Biological Opinion (Appendix D-3), which concludes that implementation of the CVSR Project would not jeopardize the continued existence of threatened or endangered species, nor adversely modify or destroy designated critical habitat, under the federal Endangered Species Act. See Biological Opinion, p. 102 (Appendix D-3). The analysis of impacts on biological resources considers—both within the EA and the Biological Opinion—Project Design Features that were incorporated into the project to avoid or reduce potential species impacts so that they are not significant. These Project Design Features, which are enforceable conditions on implementation of the CVSR Project, are described in Appendix B. The Biological Opinion (Appendix D-3) assesses the effects of the CVSR Project on the SJKF, GKR, Tipton kangaroo rat, the blunt-nosed leopard lizard (BNLL), Kern mallow, California tiger salamander (CTS), and designated critical habitat for vernal pool fairy shrimp and longhorn fairy shrimp and identified compensation measures, including final compensation

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data are provided to show that no indirect impacts will occur. The project will result in significant unavoidable and unmitigable impacts to numerous threatened and endangered species.		ratios for these species. In the Biological Opinion, issued on June 24, 2011, the USFWS concluded that the CVSR Project would not jeopardize the continued existence of protected species or adversely modify or destroy designated critical habitat. The USFWS reached this finding based upon analysis showing that the CVSR Project would not impede the survival and recovery of protected species (Appendix D-3, p. 102). Specifically, the CVSR Project would compensate for the permanent loss of GKR and SJKF habitat at a ratio of at least 4:1 and 5:1, respectively (Appendix D-3, page 38 to 39). The compensation would result in over 9,000 acres of land being conserved and managed in perpetuity for these species. For the PG&E reconductoring, all permanent losses to suitable habitat for GKR, SJKF, Tipton kangaroo rat, and Kern mallow would be compensated for at a 3:1 ratio, and temporary losses of suitable habitat would be mitigated at a 1:1 ratio. All losses to suitable habitat for CTS would be compensated at a 3:1 ratio (Appendix D-3, page 42). During the Section 7 consultation process, the USFWS determined the CVSR Project is not likely to adversely affect the California jewel-flower, San Joaquin wooly threads, and the Kern primrose sphinx moth (KPSM), and concurred with the DOE's determination that the CVSR Project is not likely to adversely affect the Valley elderberry longhorn beetle, mountain plover and California condor. With implementation of the Project Design Features, which include the compensation requirements identified by the USFWS in the Biological Opinion, the CVSR Project would not jeopardize any protected species and would not result in significant impacts to threatened and endangered species.
BIO-2: Biological impacts of the proposed action are significant and unmitigable and the analysis of these impacts is inadequate. The analyses fails to adequately identify the impacts related to the project's	CBD-3 NC-4 DOW-34	Section 3.8.3.2 discusses impacts on special status species, migratory birds and raptors, and other species. Additional information has been added regarding specific species to clarify the discussion. See Response BIO-1. The Biological Opinion (Appendix D-3) prepared by USFWS concludes that the CVSR Project would not impede the survival and recovery of protected species (Appendix D-3, page 102). Section 3.8.1 identifies and discusses the "Recovery Plan for Upland Species of the San Joaquin Valley" as a plan applicable to the CVSR site and notes that the CVSR site is one of three

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substantial adverse effects on biological resources and habitat modification to one of three core areas for the special-status species identified in the Recovery Plan for the Upland Species of the San Joaquin Valley. These species include, but are not limited to the GKR, SJKF, blunt-nosed leopard lizard, golden eagle, whitetailed kite, and California condor.		remaining core areas for the SJKF. The Biological Opinion (Appendix D-3, p. 100) discusses the "Recovery Plan for Upland Species of the San Joaquin Valley" in more detail. The strategy in the Recovery Plan for SJKF and GKR includes the establishment and maintenance of viable complexes of SJKF and GKR populations on private and public lands throughout their geographic ranges, especially the core populations on the Carrizo Plain Natural Area. While the CVSR does impact approximately 1,800 acres of habitat either occupied or suitable for these species on the Carrizo Plain, the conservation measures would result in a net increase of lands of the same status and condition by protection, restoration, and management of lands that are currently unsuitable and/or unmanaged. The measures incorporated into the CVSR Project include the conservation of approximately 9,000 acres of SJKF habitat in the Carrizo Plain, and relate to the recovery action of habitat protection, thus contributing to the recovery goal of establishing a viable SJKF population on private lands within the Carrizo Plain. The impacts to Tipton kangaroo rat, blunt-nosed leopard lizard, Kern mallow, and CTS would occur along the reconductoring route of the CVSR Project, and are individually and collectively small in scope and duration and are mostly temporary in nature. The recovery strategy for Tipton kangaroo rat requires consolidating and protecting blocks of suitable habitat for the species. The Proposed Action includes purchase of credits for Tipton kangaroo rat habitat at the Kern Water Bank, thus contributing to the recovery strategy by contributing to the protection of large blocks of suitable habitat. The recovery actions for BNLL include conducting range-wide surveys for the presence of the species, protecting additional habitat for the species in key portions of its range, and protecting habitat in other areas of its range. Avoidance measures incorporated into the CVSR Project include surveys for the species which would provide additional details on the presence of blunt-nosed leopard lizard, while the compensation measures provide habitat protection for the species at a USFWS-approved conservation bank. These measures relate to the recovery actions of conducting surveys for the species and protecting habitat; thus the CVSR Project contributes toward the recovery actions for the species.

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		The primary goal of the recovery strategy for Kern mallow is to protect 90 percent of the remaining occupied habitat. The CVSR Project includes avoidance, minimization, restoration of affected sites, and compensation of Kern mallow habitat at the Kern Water Bank, thus contributing to the recovery strategy by contributing to the protection of large blocks of suitable habitat. As discussed in Response BIO-1, with implementation of the Project Design Features, which include the compensation requirements identified by the USFWS in the Biological Opinion (Appendix D-3), the CVSR Project would not jeopardize any protected species and would not result in significant impacts to threatened and endangered species.
BIO-3: Protocol level surveys were not performed for the federally threatened KPSM although host plants are known to occur on the project site. It is impossible to evaluate the potential impact of the CVSR based on lack of pertinent survey data and an insufficient number of years of surveys. Multiple years of surveys are particularly important in arid regions because of the unpredictable and variable precipitation patterns. The Draft EIS needs to include the results of the KPSM surveys. The proposed avoidance measures are inadequate because protocol level surveys were never	NC-6 CBD-21 CBD-44 DOW-17	Section 3.8.3.2 discloses that no KPSM were detected on or near the CVSR site. Absence of the species indicates that the CVSR would have no effect on KPSM. Although the species' larval host plants, *Camissonia* spp., occurs in 14 locations on the CVSR site, no KPSM larvae were detected on individual plants during the focused surveys conducted between January and April 2011 (H.T. Harvey and Associates 2011). See Response BIO-4. The Biological Opinion (Appendix D-3, p. 2) also describes focused surveys conducted for KPSM during the flight season, as well as larval surveys. No USFWS-approved protocol exists for conducting surveys for this species; however, focused surveys for KPSM were conducted in 2011 as described in the Biological Opinion. The KPSM was not detected during any of these surveys. Additional information and measures to minimize effects to these species were subsequently developed during the consultation period, including having a USFWS-approved biologist/botanist survey the CVSR Project site prior to construction. If *Camissonia* is detected the project would avoid impacts. Based on previous surveys that have not detected this species and the proposal to survey and avoid impacts, the USFWS determined that the CVSR Project would not likely have an adverse effect on the KPSM. No critical habitat for this species occurs within the CVSR Project site; therefore, none would be affected. Regardless of the absence of KPSM, the Applicant has nonetheless designed the CVSR to avoid and minimize impacts to the areas supporting *Camissonia*. Most *Camissonia* on site is located in areas where no construction activities other than habitat management would occur. For

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performed for the species.		*Camissonia* that cannot be avoided, a qualified biologist would determine if each plant is occupied by larval KPSM. If the plant is not occupied, it would be transplanted to a suitable site by the biologist. If a plant is occupied, no construction activities would occur within 50 feet of the plant until the KPSM has been allowed to mature and leave on its own volition, at which time the plant would be transplanted to a suitable site.
BIO-4: Failure to conduct adequate surveys prior to the environmental analysis of the project effectively eliminates the most important function of surveys - using the information from the surveys to avoid and minimize harm caused by the project and reduce the need for mitigation. Without understanding the scope of harm before it occurs, it is difficult to quantify an appropriate amount and type of mitigation. Many "mitigation measures" for rare species include preconstruction surveys. The EIR [sic] relies on those post-hoc surveys rather than information gathered as part of the environmental analysis.	NC-7 NC-8 CBD-19	Section 3.8.2 presents the findings of surveys conducted for the CVSR Project. Appendix D-1 lists all surveys conducted for the CVSR Project, and Table G-1 lists the dates of all surveys conducted. As described in the Biological Opinion (Appendix D-3), protocol-level surveys were conducted for all species for which protocols exist. These protocol level surveys were prepared in compliance with the survey methodologies accepted by the USFWS and/or CDFG. These protocols generally establish a time-frame for surveying, the seasons during which surveys can be initiated, the number of site visits, environmental conditions and qualifications of the biologist(s) that are considered adequate for evaluating impacts on the species. Thus, DOE's use of protocol level surveys, where available, ensures that adequate information was obtained for purposes of evaluating impacts on the species. DOE evaluated impacts on special status species in consultation with USFWS. In addition, in some cases, the EA also states that additional surveys would be undertaken at the pre-construction stage to determine where the species are located at that time of construction in order to ensure avoidance. Completion of these supplemental studies is not necessary in order to determine impacts. Rather, pre-construction surveys provide additional information that is used to further avoid or reduce impacts to sensitive species.

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BIO-5: Surveys for BNLL, GKR, and CTS are inadequate.	NC-11	Section 3.8.3.2 and Appendix D-3 describe the protocol-level and focused surveys that were conducted for BNLL, GKR, and other special status species populations in 2009 and 2010. See Response BIO-4. Appendix B describes Project Design Features that have been incorporated into the CVSR Project to reduce impacts on BNLL and GKR. For example, CVSR-BIO-129 requires the Applicant to conduct protocol and focused pre-construction surveys for BNLL and implement avoidance measures, if necessary; CVSR-BIO-134 requires the Applicant to complete focused pre-construction surveys for GKR burrows and precincts and implement avoidance measures, if necessary. As discussed in the Biological Opinion (Appendix D-3, p. 79), during larval surveys conducted at the suggestion of the CDFG, potential CTS eggs and an embryo were observed within an ephemeral pond along the reconductoring route. However, during follow-up surveys conducted on April 22, 2011, May 12, and June 9, 2011 no CTS larvae were observed. However, the presence of CTS is assumed and pre-construction surveys would be conducted in the areas where reconductoring would occur to ensure that CTS are not significantly affected by reconductoring activities. No recovery plan for the CTS in the vicinity of the CVSR Project has been developed; however, the primary cause of decline of the CTS has been habitat loss and fragmentation. As discussed in the Biological Opinion (Appendix D-3, pp. 100–101), direct effects of the CVSR Project would only temporarily impact CTS upland habitat along the reconductoring route, and measures incorporated into the project design include avoidance, minimization, restoration of affected sites, and the purchase of credits at a USFWS approved conservation bank. Thus, USFWS has concluded that the CVSR Project would not contribute to the loss or fragmentation of CTS habitat, and the CVSR Project protects habitat in perpetuity from human disturbance.

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BIO-6: GKR precincts were surveyed in two 1-day studies in 2009 and 2010, with each grid sector surveyed in less than one day. These studies provided an accurate snapshot of where GKR were and were not on the day it was taken, but should not be used as predictors of where GKR will be – or would be if they could, absent the development of their habitat – years hence. Signs of occupancy, as well as actual occupancy, can vary greatly throughout the year. The studies are not adequate to support these assumptions of impacts or the mitigations proposed for them, and the EA therefore should not rely on the County EIR's findings in this regard.	SC-2	Section 3.8.2.3 identifies GKR habitat that would be affected by the CVSR Project. Appendix D-1 lists the biological resource reports that have been completed for the CVSR. Response BIO-4 addresses the adequacy of surveys conducted for the CVSR Project. Additionally, as described under Project Design Feature CVSR-BIO-134, pre-construction surveys would be completed for GKR and burrows or precincts would be flagged and avoided or, if avoidance is unfeasible, GKR would be relocated. As shown on Table G-1, focused surveys for GKR on the CVSR site and the Twisselman aggregate mine site were conducted by multiple mammalogists over 17 days in November 2009 (10 days) and September 2010 (7 days). These surveys provide accurate information on the spatial distribution of GKR, a means for estimating a range of population sizes and densities, and differentiated between currently occupied (active precincts), recently occupied (inactive precincts), and currently unoccupied habitat. See response to BIO-4 for additional information on the adequacy of surveys conducted for the CVSR Project. According to the Biological Opinion (Appendix D-3), all lands proposed for conservation have been or will be surveyed for listed species (see page 97). The conserved habitats are suitable for GKR as described in the project description and are either occupied or likely would become occupied because they are located adjacent to occupied habitat and would likely be colonized following restoration. In addition, the Biological Opinion concludes based on previous experiences to restore lands altered by agricultural activities that it is reasonable to assume the proposed restoration of offsite habitats for GKR will be successful given the adjacency to occupied lands and the propensity for these species to disburse and occupy suitable unoccupied habitats (Appendix D-3, p. 98).
BIO-7: In the Draft EA, on the basis of surveys conducted in 2009 and 2010 and the Applicant's proposed continuing surveys for this species, DOE concludes that	CBD-43 DOW-14	Response BIO-4 addresses the adequacy of surveys conducted for the CVSR Project. The Biological Opinion concluded that impacts to BNLL occur along the reconductoring route. Impacts are individually and collectively small in scope and duration and are mostly temporary in nature (Appendix D-3, p. 93). The recovery actions for BNLL include conducting range-wide surveys for the presence of the species, protecting additional habitat for the species in key portions of its range, and protecting habitat in other areas of its range (USFWS 1998).

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"adverse effects on BNLL from construction and operation of the proposed action would be negligible and not be significant. Protocol surveys for BNLL were not completed in all of the proposed project areas. By failing to execute protocol level surveys over the whole site, the DOE loses the opportunity to identify presence of the species on-site and avoid potential impacts to this declining and fully protected species, for which the State cannot issue a "take" permit.		Avoidance measures incorporated into the project design include surveys for the species which would provide additional details on the presence of blunt-nosed leopard lizard, while the compensation measures provide habitat protection for the species at a USFWS-approved conservation bank. These measures relate to the recovery actions of conducting surveys for the species and protecting habitat; thus the CVSR Project contributes toward the recovery actions for the species. Overall, impacts to the BNLL would be minimal and limited to a small amount of its habitat. This is not expected to result in a significant effect to the species as a whole or to populations in the project vicinity (Appendix D-3, p. 93).
BIO-8: The Draft EA for the proposed project fails to provide adequate identification and analysis of all of the impacts of the proposed project on the SJKF, GKR, longhorn fairy shrimp, golden eagles and other rare plants and animals.	CBD-4	Section 3.8.2.3 describes existing special-status species based on scientific literature, database searches, and surveys conducted for the CVSR Project. The assessment of impacts for special-status species, including SJKF, GKR, longhorn fairy shrimp, and golden eagles, is located in Section 3.8.3.2. As described in Response G-3, the EA explains why the CVSR Project's impacts are not significant based on reasonable predictions derived from the analysis of available data and drawing on the expertise of other federal agencies. In addition, the EA, along with the Biological Opinion in Appendix D-3, describes how Project Design Features reduce potential species impacts so that they are not significant. In compliance with NEPA regulations, DOE has relied upon reasonably available scientific data, scientific and expert resources, and enforceable conservation measures to eliminate or reconcile any high degree of uncertainty.

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BIO-9: Many of the mitigation plans identified in the Draft are not provided for public review. The Fire Safety Plan, Habitat Restoration and Revegetation Plan, Decommissioning Plan, Grazing Plan, Groundwater Monitoring and Reporting Plan, Water Supply Contingency Plan, Drought Management Plan, and Habitat Management Plan, among others, are unavailable. In the absence of a plan or draft plan, it is not possible to evaluate or determine the efficacy of mitigation. Without public disclosure of the plans during the NEPA process, there is no way to evaluate whether the Draft EA has put adequate plans in place to protect the environment.	CBD-23	Project Design Features are defined as those specific means, measures, or practices that have been incorporated into the CVSR Project to avoid or reduce adverse impacts; they can also be described as required best management practices. The proposed design features are listed in Appendix B. Most of these features were identified in DOE's draft Solar Programmatic EIS and were derived from comprehensive reviews of solar energy development activities; published data regarding solar energy development impacts; existing, relevant mitigation guidance; and standard industry practices. Many of these measures are accepted practices known to be effective when implemented properly at the project level. The project design features also define the contents of site specific plans that are subject to review and approval by San Luis Obispo County prior to the issuance of a construction permit. A number of these plans are subject to consultation with other agencies and groups including but not limited to Native American tribes, State Water Resources Control Board, CDFG, and the USFWS. Project construction cannot commence until their adequacy has been confirmed by San Luis Obispo County and any other agencies or interested parties designated in the EA. Many of these plans have been drafted by the Applicant and are currently in the process of being submitted to and reviewed by the County and other resources agencies. When the plans are finalized, all regulatory requirements will have been satisfied. Information on the status of the conditions of approval that must be met prior to starting construction is currently available on the San Luis Obispo County's website at http://www.slocounty.ca.gov/planning/environmental/EnvironmentalNotices/sunpower.htm This webpage is intended to provide the public useful information relating to the project including, but not limited to, the status of specific plans submitted to the County of San Luis Obispo Planning in compliance with Conditions of Approval for the CVSR Project for items needed prior to construction permit issuance. It also lists specific permits that have been issued by other resource agencies. In addition, Status Sheets for the CVSR and Twisselman Mine project are available at http://www.slocounty.ca.gov/Assets/PL/SunPower+-+High+Plains+Solar+Ranch/SunPower-OngoingStatusReport.pdf, and provide a brief history and status of the projects.

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BIO-10: The analysis is inadequate regarding substantial interference with the movement of any native resident or migratory wildlife corridors.	NC-5	Section 3.8.3.2 discusses potential impacts on wildlife movement corridors and pathways. The PV arrays were designed to incorporate movement pathways for SJKF, pronghorn antelope, and other species between the arrays, maintaining connectivity within and through the site. Additionally, to compensate for impacts on special-status species, the Applicant would obtain mitigation land, which would preserve movement corridors in the vicinity of the CVSR (CVSR-BIO-116 for impacts on vegetative communities; BIO-123 for impacts on state and federally threatened, endangered, proposed or candidate plant species; BIO-128 for KRSM; BIO-135 for GKR, SJKF, and San Joaquin antelope squirrel; BIO-140 for special-status plants; and BIO-144 for burrowing owl). Criteria for mitigation land includes "location (e.g., habitat corridor, part of a large block of existing habitat, adjacency to source populations, proximity to solar facilities or other potential sources of disturbance)," and all mitigation land is subject to approval by both San Luis Obispo County and, where required by the Biological Opinion, USFWS. The Biological Opinion (Appendix D-3, p. 101), concludes that the CVSR Project as proposed would result in some limitations on movement of SJKF but is not expected to preclude north and south movements as sufficient corridors of suitable dispersal habitat occur and would remain around the project.
BIO-11: The Draft EA is incorrect in its determination that "The CVSR site ranges from medium-high to low permeability for SJKF and pronghorn antelope and from low to high for tule elk." The permeability of a vast majority of the proposed project site is high for SJKF It is mostly high to medium high permeability for pronghorn. The proposed project area is also a core area	CBD-29	Section 4.4.7 addresses the permeability of the CVSR site, including the difference in wildlife permeability between the CVSR site and the Topaz Solar Farm site. This assessment is consistent with the Final EIR for the CVSR CUP/Twisselman Mine CUP and Restoration Plan approved by the San Luis Obispo Planning Commission on April 19, 2011. According to the Biological Opinion (Appendix D-3, p. 87), there is a permeable habitat corridor extending from the Carrizo Plain northward that provides connectivity with the Antelope Plain on the eastern edge of the San Joaquin Valley and the Salinas Valley (Penrod et al. 2010, ESRP unpublished data). There is also a habitat corridor between the southern end of the Carrizo Plain and western Kern County through low-elevation passes and dry washes approximately 35 miles south of the CVSR Project. The western and eastern edges of the Carrizo Plain are bordered by steep mountain ranges that present topographic barriers for SJKF. The CVSR Project is located at the northeast edge of a 7-miles wide permeable corridor for SJKF movement and dispersal, (Penrod et al. 2010, ESRP unpublished data). Most of the interconnection line, substation, Caliente

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for pronghorn. It is mostly medium-high to high permeability for Tule elk and is partially in a core area for Tule elk. The Draft EA misleads decision-makers and the public in its representation of the potential impacts on the SJKF and charismatic reintroduced ungulates.		switching station, and Twisselman aggregate mine are outside of the most suitable SJKF corridors (Penrod et al. 2010, ESRP unpublished data); the interconnection line, would not impede SJKF movement. The focus of the connectivity analysis in the CVSR Biological Assessment was on local SJKF movement within the central portion of the Plain (H. T. Harvey & Associates 2010b, available at https://lpo.energy.gov/?page_id=1514#cvsr.). Because the 10 arrays are not contiguous, opportunities exist for SJKF to move north and south, or east and west through the site during daily movement activities or during dispersal. Both adults and juvenile SJKFs are known to mover through a variety of partially disturbed habitats such as farm lands, oil fields, and areas with low density roads and highways (Haight et al. 2002). The installation and maintenance of escape dens along the margins of the arrays would increase the probability of successful movement of SJKFs through the CVSR Project (H.T. Harvey et al. 2010). Thus, the larger areas bordered by arrays would also be expected to function as suitable foraging habitat for SJKF, and would not pose a barrier to SJKF movement as their home range is considerably larger than the areas under consideration. As a compensatory measure there would be land acquisition and protections for managed and restored habitat adjacent to and around the project site that would provide additional (due to restoration) opportunities for breeding, feeding, sheltering, and dispersal of SJKF. The impacts to existing suitable SJKF habitat, combined with the conservation restoration measures of the CVSR Project, would result in an overall net increase of suitable habitat available to the SJKF in the Carrizo Plain. Therefore, the overall impacts compared to the acreage to be restored and protected offsite is expected to be minimal, and opportunities for dispersal to the north would still be available (Appendix D-3, page 88). Regarding pronghorn antelope and tule elk, as well as other species, Section 3.8.3.2, explains that the PV arrays were designed to incorporate movement pathways for these species between the arrays, maintaining connectivity within and through the site. In addition, CVSR-BIO-13 (Appendix B), describes the pronghorn antelope-friendly fencing plan that 1) identifies and maintains likely and feasible movement pathways, 2) removes non-essential interior fencing, 3)

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		involves retaining and constructing fencing to deter pronghorn antelope from entering the site of the arrays, and 4) incorporates fencing modifications designed to enable movement by pronghorn antelope through the Project site. The pronghorn antelope-friendly fencing plan would also benefit tule elk.
BIO-12: Identification of movement corridors and linkages are absent for the GKR and must be identified and analyzed for impacts as well as conservation opportunities.	CBD-37	In the analysis of impacts on species due to fragmentation in Section 3.8.3.2, the EA considered the life history characteristics of the species. The GKR has limited long distance dispersal capability (Williams and Kilburn 1991), and the analysis of impacts on wildlife movement corridors and linkages focused on species whose life histories warranted a broader scale of analysis. Nonetheless, movement corridors would be preserved through project design. The areas between arrays 4 and 5, 6 and 7, and between arrays 8, 9 and 11 are sufficiently large to support significant populations of GKRs and each of these areas are connected to large areas of suitable habitat allowing for population expansion and dispersal. Similarly sized areas in the San Joaquin Valley that appear to be completely isolated by incompatible land use continue to support viable populations of GKRs. Thus, the CVSR has been designed such that large contiguous habitat areas supporting the greatest densities of GKRs within the CVSR site would be preserved and managed as GKR habitat, and offsite mitigation lands would be established. Indirect effects on this species could result from the array structures excluding GKRs; however, a minimum of GKR habitat would be affected and impacts would be compensated. Additionally, PV arrays would use foundations and supporting structures that preserve most of the existing habitat for GKR. The Biological Opinion (Appendix D-3, p. 91) discloses that there would be a loss of suitable habitat (both occupied and unoccupied) of the GKR due to the CVSR Project, representing 0.7 percent of the total remaining habitat of the species. However, as a compensatory measure, there will be habitat protection, restoration, and management of offsite lands that will provide for the continued viability of the species within the project vicinity and will result in a net increase (approximately 60 percent) of habitat suitable for the species. See Response BIO-10.

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BIO-13: The Draft EA fails to provide adequate baseline information on and description of the environmental setting for the SJKF, BNLL, GKR, KPSM, golden eagles, rare plants, and other species, particularly with regard to the reconductoring component. An EIS is required to fully identify the baseline conditions of the site. Those baseline conditions should be used to evaluate the impacts of the proposed project.	CBD-16	Sections 3.8.1 and 3.8.2 present the environmental baseline for biological resources, both the regulatory framework and the affected environment, which were used to define impacts. See Response to Comment BIO-4 for an explanation of surveys for the CVSR Project. The Biological Opinion (Appendix D-3) provides additional information regarding the occurrence of species on or near the CVSR Project. Extensive baseline information on all special status species affected by the CVSR Project is also discussed in the Biological Opinion prepared by USFWS.
BIO-14: The proposed mitigation ratios for SJKF are inadequate and unjustified. This site is a core area for the SJKF, and as such a minimum 5:1 mitigation ratio should be required for development of the area.. The SJKF mitigation lands are proposed as mitigation for impacts on a multitude of other species – golden eagles, migratory/special status species birds, bats, badger, SJKF, and rare plants. The Draft EA fails	CBD-22	In Section 3.8.3, the effects of the CVSR on special-status species is discussed in consideration of Project Design Features that would be employed to avoid and minimize impacts including mitigation ratios. With the exception of a designated critical habitat unit for vernal pool species that extends into the southwest portion of the CVSR site, critical habitat has not been designated for any of the species known to occur or with potential to occur within the CVSR site. The Biological Opinion (Appendix D-3, pp. 38–39) describes mitigation ratios to compensate for impacts on special-status species, which were developed in consultation with the USFWS and/or CDFG. See Response BIO-1. The CVSR Project mitigation ratio for SJKF is 5:1; for reconductoring, the mitigation ration is 3:1 for permanent losses and 1:1 for temporary losses to suitable SJKF habitat. The Biological Opinion also contains an explanation of the conservation strategy including, but not limited to, requirements that the USFWS approve all conservation lands and that the Applicant establish an endowment to fund the annual management and monitoring of conservation lands. Section 3.8.3.2 has been modified to include a discussion on Umbrella and Keystone Species.

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to require that acquired mitigation lands be habitat for these affected species. Because any acquired habitat is already inhabited by the same species for which mitigation is sought, this mitigation strategy ensures a net decrease in habitat for affected species. The Draft EA fails to require that acquired mitigation lands be habitat for these affected species. Mitigation strategy must assure that mitigations focus on affected species. Because mitigation for impacts to SJKF may not meet the mitigation needs for affected rare plants, mitigation cannot be "nested." Such a realistic strategy is essential to prevent future listings under the Endangered Species Act.		The SJKF has been designated by the USFWS as an umbrella species (USFWS 1998). An umbrella species is a species with large area requirements for which protection of the species offers protection to other species that share the same habitat. The broad distribution and requirement for relatively large areas of habitat means conservation of SJKF habitat provides an umbrella of protection for other species that require less habitat (e.g., GKR, short-nosed kangaroo rat, and Tulare grasshopper mouse). The GKR has been designated by the USFWS as a keystone species (USFWS 1998). A keystone species is a species that exerts an impact on its community that is both strong and disproportionate to its abundance. Burrowing by GKRs provides refuges and living places for many small animals. In addition, the areas over and around these burrows provide a favored microhabitat for the growth of California jewel-flower and San Joaquin woolly-threads. GKRs are generally the most abundant mammal in their community, and are the favored prey of SJKF. Therefore, a multi-species compensation strategy that focuses on mitigation ratios for these two species in particular provides adequate compensation for other species. The Biological Opinion (Appendix D-3, p. 99) includes further information about the benefit of multi-species compensation strategies that focus on umbrella species such as the SJKF and keystone species such as the GKR. SJKF have large area requirements relative to the other listed species, and function as an umbrella species. The GKR is a keystone species that has been correlated with increased plant and animal diversity within communities they inhabit. The community-building activities of kangaroo rats also have an effect on the abiotic features of the landscape, such as soil-building dynamics. Fluctuations in the population of the GKR may indicate changes in the biotic and abiotic health of the landscape, possibly due to stochastic events that were undetected otherwise. The keystone nature of the GKR enables compensatory mitigation for the species to potentially benefit other listed species in the region. Because site conditions vary, one, both, or neither of these species may occur with the other listed species, but in the vast majority of the cases the habitat would be suitable for the other listed species if SJKF and/or GKR are present. The Biological Opinion (Appendix D-3, p. 38) also explains that the primary focus of the conservation measures would be placed on the permanent conservation of lands (fee title

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		acquisition, conservation easement and management plan, etc.) that provide high value habitat for listed species. These lands would provide a significant contribution to regional preservation efforts by preserving and restoring lands that currently provide very low value in key areas within a regional context. All such lands would be managed to optimize suitability to the appropriate listed species. Therefore, enhancing suitable habitat would result in a net increase in higher quality habitat, ultimately benefiting listed species. The Biological Opinion concludes that the overall conservation strategy of the CVSR would minimize project effects and would result in permanent protection of suitable habitat for the listed species on lands where these habitats are currently vulnerable to conversion to incompatible land uses such as dryland farming or viticulture.
BIO-15: CDFG has pointed out that the proposed M3 array layout will result in substantial impacts to the GKR, and that the reconfigured array appears to have reduced, but not eliminated, significant connectivity issues affecting other species. In light of these significant impacts, the effectiveness of the proposed mitigation measures must be subject to closer scrutiny.	SC-1	Section 1.2 and Response PA-2 note that subsequent to the time the Applicant submitted its initial CUP application to San Luis Obispo County, the project design evolved based on input received from the County, interested federal and state agencies (including CDFG), and community members as well as findings of special studies commissioned by the Applicant, including biological surveys, wetlands and jurisdictional water surveys, cultural resource surveys, visual simulations, and groundwater and well analyses. While the project design evaluated in this EA and described in detail in Chapter 2 is similar to that analyzed in the EIR, the current project design incorporates all measures developed during the EIR process to avoid, minimize, and/or mitigate for adverse effects of the CVSR Project on the human and natural environment. See Response BIO-1, BIO-2, BIO-6, BIO-12, and BIO-14.

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BIO-16: Proposed mitigation levels are inadequate to ensure the recovery of special status species, and because of the cumulative effects of the CVSR and the Topaz Solar Farm, not enough suitable habitat and mitigation lands can be identified to reach a level of insignificance.	NC-10 DOW-31	Section 3.8.3 addresses the CVSR Project's direct and indirect impacts on biological resources, including GKR and SJKF. Appendix B includes Project Design Features that have been incorporated into the design of the CVSR Project. See Response BIO-1. As part of the Section 7 consultation process, the USFWS identified, in the Biological Opinion (Appendix D-3), compensation ratios for the permanent loss of GKR of at least 4:1 and a ratio 5:1 for the loss of SJKF habitat (Appendix D-3, page 38 to 39). For the PG&E reconductoring, all permanent losses to suitable habitat for GKR, SJKF, Tipton kangaroo rat, and Kern mallow would be compensated for at a 3:1 ratio, and temporary losses of suitable habitat would be mitigated at a 1:1 ratio. All losses to suitable habitat for CTS would be compensated at a 3:1 ratio (Appendix D-3, page 42). Section 3.8 has been revised to include these ratios. With implementation of the Project Design Features, which include the compensation requirements identified by the USFWS in the Biological Opinion, the CVSR Project would not jeopardize any protected species and would not result in significant impacts to threatened and endangered species. Section 3.8.1 identifies and discusses the "Recovery Plan for Upland Species of the San Joaquin Valley" as a plan applicable to the CVSR site and notes that the CVSR site is one of three remaining core areas for the SJKF. The Biological Opinion (Appendix D-3, p. 100) discusses the "Recovery Plan for Upland Species of the San Joaquin Valley" in more detail. See Response BIO-2. The Biological Opinion lists the mitigation lands identified for the proposed CVSR Project (Table 2 of the Biological Opinion, Appendix D-3, p. 125) and includes maps depicting the location of these lands on pp. 127 and 128. It also describes that approximately 9,000 acres of SJKF habitat in the Carrizo Plain would be preserved or enhanced as a result of the implementation of the CVSR Project, thus contributing to the recovery goal of establishing a viable SJKF population on private lands within the Carrizo Plain (Appendix D-3, page 100). In addition, as discussed in Response BIO-14, the SJKF is an umbrella species, and the GKR is a keystone species. Therefore, compensating for these species would benefit numerous other

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		species. Mitigation lands are subject to approval by the USFWS, and mitigation ratios to compensate for impacts on special-status species were developed in consultation with the USFWS and/or CDFG, as described in further detail in the Biological Opinion (Appendix D-3). The Biological Opinion also contains an explanation of the conservation strategy including but not limited to requirements that the USFWS approve all conservation lands and that the Applicant establish an endowment to fund the annual management and monitoring of conservation lands. The Biological Opinion (Appendix D-3, p. 38) explains that the primary focus of the conservation measures would be placed on the permanent conservation of lands (fee title acquisition, conservation easement and management plan, etc.) that provide high value habitat for listed species. These lands would provide a significant contribution to regional preservation efforts by preserving and restoring lands that currently provide very low value in key areas within a regional context. All such lands would be managed to optimize suitability to the appropriate listed species. The conservation lands would be acquired, and placed in a permanent protection status, and a management plan that addresses each property would be developed and its implementation would be funded in perpetuity prior to ground breaking. All conservation lands and related management plans would be subject to USFWS approval. Section 4.4.7 addresses cumulative effects. Both the CVSR Project and Topaz Solar Farm Project applicants are working with San Luis Obispo County, USFWS, and CDFG to establish the California Valley Land Acquisition Program for the acquisition of private lands within the California Valley subdivision that may be available at low cost because they cannot support residential uses. They would be reclaimed and aggregated into larger parcels for use by regionally important wildlife and plant species. The long-term goal of the California Valley Land Acquisition Program would be to consolidate contiguous blocks of habitat capable of supporting sensitive plants and wildlife. The Biological Opinion (Appendix D-3, p. 101) states that cumulative effects include the effects of future State, Tribal, local, or private actions that are reasonably certain to occur in the action

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		area considered in this biological opinion. Future Federal actions that are unrelated to the Proposed Action are not considered in this section because they require separate consultation pursuant to Section 7 of the Act. The USFWS determined in their BO that there are no known cumulative effects that are reasonably certain to occur within the action area under consideration.
BIO-17: DOE fails to undertake an analysis of whether SunPower's compensatory mitigation plan and habitat management plan are likely to achieve conservation goals. Mitigation lands proposed by SunPower for GKR are unlikely to provide suitable habitat for the species. Compensatory mitigation may occur on lands that are already a suitable habitat for sensitive species and, therefore, protection of these lands will not result in a net benefit as the DOE claims. There is an information gap on how SJKF, GKR, tule elk, and other species will use and move through the solar arrays. For these reasons the DOE's reliance on the proposed protection of compensatory	DOW-30	See Responses BIO-2, regarding the recovery strategy involving the acquisition of compensation lands for SKJF, GKR, Tipton kangaroo rat, blunt-nosed leopard lizard, Kern mallow, and CTS. See Response BIO-14 and BIO-16 regarding the adequacy of mitigation lands. See Response BIO-11 regarding tule elk and other species.

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mitigation is arbitrary.		
BIO-18: While the implementation of a grazing plan is identified in the Draft EA, the plan is not available for review. The project's proposal to use grazing as mitigation for impacts is contradicted by the best available science. A 3-year ongoing study on the Carrizo has found that far more GKR have in fact been found in ungrazed pastures than grazed lands, and there are no conclusive findings in the scientific literature that show grazing to be beneficial to GKR. The available data is not sufficient for a conclusion that livestock grazing will constitute a benefit to the species. Results from grazing studies carried out in the Carrizo do not support the hypothesis that	SC-6 SC-7 CBD-41	As described in Project Design Feature CVSR-BIO-118, the Applicant would be required to prepare a Grazing Plan, which is subject to review and approval by San Luis Obispo County prior to the issuance of a construction permit. Additionally, this plan would be subject to approval by the USFWS as described in the Biological Opinion. Section 3.8.3.2 presents information on grazing. The CVSR Project's proposal to use grazing as a management tool to minimize impacts on GKR is based on both available science and the results of surveys conducted for the CVSR Project. The Biological Opinion (Appendix D-3, p. 39), concludes that land use changes and targeted management for various species, including the introduction of managed grazing, would considerably improve habitat quality for listed species. In addition, ample scientific evidence including ongoing research on the CPNM supports the benefits of grazing for GKR, particularly in years of increased precipitation, and the use of grazing as a management tool for the CVSR Project.[1] Notably, Prugh and Brashares (2010) recently reported that they have "completed the fourth year of the Carrizo Plain Ecosystem Project (CPEP), a long-term study to tease apart these relationships using replicated cattle and GKR exclosures. Because of high precipitation in 2010, vegetation biomass was three times higher than in previous years, and effects of cattle grazing on the dynamics of GKR and other species began to emerge. Cattle grazing positively affected GKR and beetle abundance and negatively affected San Joaquin antelope squirrel and side-blotched lizard abundance." [2] Furthermore, research conducted in California annual grasslands throughout California has found that livestock grazing in general resulted in a decrease in vegetation height and volume and an increase in small mammal populations. Moreover, GKR have been shown to favor forbs

[1] See, Letter from Brian B. Boroski, Ph.D. of H.T. Harvey & Associates (HTH) to Renée L. Robin of SunPower detailing the assessment of impacts and conservation strategy in relation to CDFG's presentation to the Planning Commission on December 9,2010, pp. 7-9.
[2] Prugh, L. and Brashares, J., *Carrizo Plain Ecosystem Project 2010 Report*, December 2010.

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grazing is beneficial for native plant community and for maintaining GKR.		(an herb that is not grasslike), have a strong preference for grass cover types, and a strong aversion to areas with dense shrub cover. Areas of the CVSR site that are currently occupied by GKR support short grassland vegetation in response to grazing by cattle (and grazing by the GKR themselves). Survey results show that ungrazed areas of the adjacent California Valley Subdivision support dense stands of grasses and shrubs, and GKR are constricted to road margins and open areas where soil conditions support reduced biomass production. Because grazing would help to control non-native plants and weeds and promote the growth of forbs, grazing is considered an important tool to benefit GKR under certain circumstances.
BIO-19: Scientific literature indicates that grazing is not compatible with the survival and recovery of many of the endangered species on the Carrizo Plain. The proposed grazing plan, which is identified in the Draft EA but is not available for review, may reduce the likelihood that SJKF will inhabit mitigation land. The failure to identify the potential mitigation lands and to indicate how those lands would be managed obfuscates the adequacy of the proposed mitigation plan.	CBD-33	As stated in Section 3.8.3.2, GKR are the preferred prey species for SJKF; therefore, design features that benefit the GKR also benefit the SJKF. As described in Response BIO-18, the grazing plan would benefit GKR, as demonstrated by available scientific research and surveys conducted for the CVSR. Additionally, as described in Response BIO-1, USFWS concluded in the Biological Opinion that the CVSR Project, with the incorporation of Project Design Features including the Grazing Plan, is not likely to jeopardize the continued existence of the species discussed or to adversely modify or destroy designated critical habitat (Appendix D-3, p. 102). Therefore the impacts on protected species would not be significant. As described in Project Design Feature CVSR-BIO-118, the Applicant would be required to prepare a Grazing Plan, which is subject to review and approval by San Luis Obispo County prior to the issuance of a construction permit. Additionally, this plan would be subject to approval by the USFWS as described in the Biological Opinion.

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BIO-20: DOE fails to analyze the impacts of construction vibrations and noise on the GKR. These impacts could cause permanent damage to the GKR's sound receptors, which could affect its ability to detect predators and competitors.	DOW-11	Section 3.8.3.2 presents indirect impacts to common wildlife species resulting from noise generated by heavy equipment. For indirect impacts to GKRs, the EA refers the reader to the discussion of impacts under the Common Wildlife section. The EA noted that pre-construction biological clearance surveys by qualified biologists would be performed at all activity areas to minimize impacts on special status plants or wildlife species (see Appendix B, CVSR-BIO-1). Project Design Feature CVSR-BIO-5 notes that biological monitors approved by the USFWS and CDFG would be assigned to the CVSR site and would be responsible for ensuring that construction impacts to special status species, native vegetation, wildlife habitat, or unique resources would be avoided to the fullest extent possible. Where appropriate, monitors would flag the boundaries of areas where activities need to be restricted to protect native plants and wildlife, or special status species. These restricted areas would be monitored to ensure their protection during construction. In addition, Section 3.8.3.2 (p. 3-83), notes that individuals would be trapped and translocated (i.e., relocated outside of the project impact areas), in occupied GKR areas that could not be avoided. To minimize direct and indirect effects specifically on GKR, the following Project Design Features have been incorporated into the CVSR Project: As described under CVSR-BIO-134, pre-construction biological clearance surveys by qualified biologists would be performed at all activity areas to minimize impacts on GKR. Biological monitors approved by the USFWS and CDFG would be assigned to the CVSR site. The monitors would be responsible for ensuring that impacts to special status species would be avoided. If active GKR burrows/precincts are present, they shall be flagged, with ground-disturbing activities to be setback a minimum of 50 feet from each active burrow/precinct. These restricted areas would be monitored to ensure their protection during construction. If avoidance is not possible, the Applicant and County-approved biologist will develop and implement a GKR Relocation Plan (CVSR-BIO-92) , which would be subject to approval by San Luis Obispo County and in accordance with protocols followed by USFWS-approved personnel as described in the BO (Appendix D-3). These design features ensure that the CVSR Project would not result in significant impacts on GKR including noise impacts. Additionally, as described in Response BIO-1, USFWS concluded in the Biological Opinion,

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		(Appendix D-3, p. 102), that the proposed action, with the incorporation of Project Design Features would not likely jeopardize the continued existence of protected species, including the GKR.
BIO-21: The number of GKR present on the CVSR Project site is unknown because there are no recent surveys and it is possible that there are more GKR on site now compared to 2009. A full analysis on potential impacts to GKR must be included in a full EIS to ensure that impacts to the species are less than significant.	DOW-12	See Responses BIO-4 and BIO-6. Species-specific surveys for GKR were conducted at the CVSR site for 17 days over a two-year period between November 2009 and June 2010 (Table G-1). These surveys provide sufficient information to make a reasoned decision on potential impacts and mitigation.
BIO-22: The Draft EA is unclear if surveys were done for GKR on the reconductoring project or the Twisselman mine. Without these surveys the impacts of the proposed project cannot be evaluated. The value of such surveys is to identify where GKR occur so that the project can avoid impacting them. Absent data on the occurrence of GKR, this cannot happen.	CBD-39	Section 3.8.2.3 notes that general habitat assessment surveys were conducted along Morro Bay–Midway transmission line route to characterize wildlife habitat types and locations and to evaluate the potential for the occurrence of federally listed wildlife species identified by PG&E. The EA also noted that focused surveys for federally listed wildlife species were not conducted for the reconductoring route. This includes GKR surveys. Table 3.8-3 presents the special status wildlife with potential to occur along the Morro Bay–Midway Transmission Line Reconductoring Route; suitable GKR habitat is present along the reconductoring route. Because suitable habitat is present, the EA evaluated direct and indirect impacts to GKR habitat and found that reconductoring would result in the temporary loss of 17.7 acres of suitable habitat for GKR in Kern County and the temporary loss of 4.1 acres of suitable habitat in San Luis Obispo County. As described in Section 3.8.3.2, the proposed action incorporates Project Design Features that would avoid areas providing suitable habitat for GKR (see Appendix B, Project Design Features PG&E-BIO-13 and PG&E-BIO-14). When vehicles must travel off existing access roads within

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		suitable habitat, a qualified biologist will walk ahead of the vehicle and indentify a rout that will avoid burrows to the extent practicable. If occupied or potentially occupied burrows cannot be avoided, a qualified biologist would flag a work-exclusion zone of at least 30 feet around active burrows and remain onsite as a biological monitor. If work must proceed in the exclusion zone, PG&E would pursue techniques to minimize direct mortality, which may include having approved biologists trap and hold species in captivity, and excavating and closing burrows. In areas that are temporarily disturbed, the approved biologist would release the mammals to areas where they were trapped as soon as possible when the work is complete and habitat is restored. These efforts would considerably reduce impacts on GKR and Tipton kangaroo rat, resulting in long-term but minor adverse effects. The Biological Opinion also includes these conservation measures (Appendix D-3, p. 34) and concludes that with these measures, the proposed action is not likely to result in jeopardy to protected species, including the GKR. See Response BIO-6.
BIO-23: The Draft EA states that "a GKR Science Advisory Committee for the CVSR Project was formed (which includes the USFWS and BLM) to provide recommendations for and technical review of proposed GKR conservation and restoration of on-site and off-site habitat" (Draft EA at 1-10). However, the Draft EA does not provide any recommendations of the committee and does not indicate whether the Plan for Relocation of GKR was	CBD-38	Section 1.4, Public Notice, presents a listing of agencies and organizations that DOE consulted with in the preparation of the EA. This section also includes a listing of community outreach activities conducted by the Applicant. Comments collected during outreach activities have been integrated into CVSR Project Design Features to reduce or avoid impacts. Included in this listing is the GKR Science Advisory Committee for the CVSR Project (which includes the USFWS and BLM) that was formed to provide recommendations for, and technical review of, the California Valley Solar Ranch: Plan for Relocation of GKRs. The GKR Relocation Plan was reviewed during the GKR workshop held in San Luis Obispo on October 20 and 21, 2010. Biologists from H.T. Harvey & Associates and Aspen Environmental Services, USFWS, CDFG, BLM, as well as species experts from the San Diego Zoo, San Francisco State University, and the University of California, Berkley attended and participated in the review. Several suggestions on the relocation methods and release sites were incorporated into the final plan. The GKR Relocation Plan is included as Appendix C of the Biological Assessment for the California Valley Solar Ranch Project (H.T. Harvey and Associates, 2010b, available at

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reviewed by or commented on by the listed scientists.		https://lpo.energy.gov/?page_id=1514#cvsr.), which notes that the relocation plan is the culmination of months of literature research; workshops, field meetings, and written and oral communications with biologists that have studied kangaroo rat species, managed their habitats and populations, and regulated their habitats and populations through state and federal impact assessments and permits; and is the synthesis of the findings and recommendations resulting from this process. This California Valley Solar Ranch: Plan for Relocation of GKRs, was submitted to and reviewed by the USFWS, as part of the Section 7 consultation. The relocation plan is noted on page 91 of the Biological Opinion (Appendix D-3), which concludes that with all the Project Design Features, the proposed action is not likely to result in jeopardy to protected species, including the GKR.
BIO-24: The Draft EA fails to evaluate the fragmentation effects on the GKR and other species.	CBD-40	As discussed in Section 3.8.3.2, Project Design Features were incorporated into the CVSR Project to, among other objectives, preserve large contiguous blocks of habitat both onsite and offsite (see also, Effects of Habitat Conservation as Determined by the USFWS in Section 3.8.2.3). Both the EA and Biological Opinion concluded that with the Project Design Features incorporated into the CVSR Project, no habitat fragment impacts would occur (Appendix D-3). Pages 96–99 of the Biological Opinion present the USFWS' determination of the effects of the conservation strategy. The Biological Opinion concludes that under the CVSR Project's conservation strategy approximately 9,000 acres of land would be protected and managed. Some of these protected lands would also be restored and enhanced, and the off-site lands protected will be strategically selected to enhance listed species benefits regionally. Thus, the effectiveness of the conservation strategy is greater than the raw ratio of lands protected to lands affected. The Biological Opinion (Appendix D-3) also found that conservation areas would build upon the benefits provided by the management of GKR populations on the CPNM and link this regional population center with conservation areas in the San Joaquin Valley. Privately-held parcels of land proximate to the solar site, south within or in the vicinity of the CPNM, and in eastern Kern County possess extremely important ecological values for populations of GKRs and SJKF. At present, the northern portion of the Carrizo Plain is, for the most part, isolated from populations of GKRs on the CPNM by unsuitable habitats and land use. Preserving the

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		few remaining populations on these privately-held sites that could potentially spread into the upper portion of the Carrizo Plain during drier periods is an important beneficial element of the proposed off-site conservation, and is one of the most important ecological factors likely to affect the long term persistence of the species in areas outside of the CPNM. The CVSR conservation strategy is a clear opportunity to enhance, and permanently protect the connectivity that will enable recolonization of the solar site and to enhance the connectivity of suitable habitats within the region. Maintaining connectivity of SJKF corridors within the Carrizo Plain is another important ecological benefit of the conservation strategy. The potential off-site conservation lands within the Carrizo Plain north of the CPNM are within the SJKF corridor identified by South Coast Wildlands (2010) and contribute to the preservation and enhancement of the corridor in this area by restoring habitat degraded by agricultural practices, preserving substantial areas between the proposed action and other proposed projects. See Response BIO-14 and BIO-16.
BIO-25: DOE concludes that avoiding core populations of GKR, micrositing to reduce impacts to densely populated areas, and preservation of large continuous blocks of habitat, would ensure that impacts to GKR would not be significant. However, DOE failed to acknowledge that there are critical data gaps regarding whether or not the GKR would use the solar arrays once installed, the effects on grazing	DOW-10	See Response BIO-23. Section 3.8.3.2 addresses direct and indirect impacts to GKR, which include, but are not limited to, GKR use of the solar array areas after construction, the effect of the grazing regime changes and the potential for increased owl predation. The avoidance of core populations of GKR is only one of the Project Design Features incorporated into the proposed action that would ensure that adverse effects would not be significant. Specifically, in addition to avoiding core population, Section 3.8.3.2 indicates that preservation of large contiguous blocks of habitat both onsite and offsite (see Section 3.8.2.3, Habitat Conservation), along with other design features including those discussed in the Vegetation and Habitat and Common Wildlife Species sections, would ensure that adverse effects on GKR would be long-term but minor, and impacts would not be significant during construction or operations. This finding is based on substantial scientific information presented in the Biological

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regime changes on GKR, and the effect of increased owl predation on GKR. These issues must be the subject of a scientifically-based analysis in an EIS.		Assessment for the California Valley Solar Ranch Project (listed in Appendix D-1 and available at, available at https://lpo.energy.gov/?page_id=1514#cvsr.), as well as in the Biological Opinion (Appendix D-3). Direct and indirect impacts to GKR are presented on pages 88–91 of the Biological Opinion. This section indicates that there is some potential that GKR would persist in the areas in and around the solar arrays after the arrays are installed. Regarding the effect of grazing regime changes, the Biological Opinion notes that this could affect the abundance of GKRs. The on-site conservation areas would continue to be grazed by cattle; however, the area within the array footprints would be grazed by sheep or goats. Vegetation changes resulting from this change in grazing could be either beneficial or detrimental to GKRs, which prefer grassy habitat and avoid areas with dense shrub cover. However, the change in grazing from cattle to sheep and goats in the array footprints is not likely to significantly change vegetation conditions such that it reduces habitat suitability for GKRs (Appendix D-3, pp. 90–91). Therefore, it appears as if vegetation conditions associated with sheep grazing do not reduce habitat suitability for GKRs, and sheep grazing and GKRs can coexist within the array footprints. The Biological Opinion (Appendix D-3) also notes that project structures would provide new perching structures for barn owls and great horned owls; this could enhance their ability to forage on GKRs. The Biological Opinion concludes that with the Project Design Features incorporated into the CVSR Project, it is not likely to result in jeopardy to protected species, including the GKR.
BIO-26: The CVSR Project is one of two being permitted for the Carrizo Plain and the cumulative impacts of these projects will result in the local extinction of sensitive species. The Draft EA fails to meaningfully analyze the cumulative impacts to the resources of the Carrizo Plain	NC-2 DOW-24 CBD-65 CBD-66 CBD-67	Section 4.4.7 presents the cumulative impacts on biological species, including the SJKF, GLR, Tipton kangaroo rat, San Joaquin antelope squirrel and pronghorn, BNLL, and golden eagles. The Biological Opinion (Appendix D-3) prepared by the USFWS has concluded that the continued existence of species on or potentially affected by the CVSR Project would not be jeopardized. The Biological Opinion also analyzes cumulative impacts. See Response G-3, CI-1, and CI-2.

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and the upland species of the San Joaquin Valley, including the SJKF, GKR, Tipton kangaroo rat, San Joaquin antelope squirrel and pronghorn, BNLL, and golden eagles. The Draft EA does not fully identify the cumulative impacts, it fails to consider all reasonably foreseeable cumulative impacts, and it does not fully analyze possible mitigation measures.		
BIO-27: The Draft EA relies largely on mitigation lands to minimize impacts. The mitigation lands are unidentified and unavailable for evaluation. The Applicant has not attained the 4:1 ration with mitigation lands thus far acquired. The 4:1 mitigation on the project site is also inadequate because the proposed project is large and within a core area, as identified by the USFWS. The Draft EA does not acknowledge the project site is within such a core	SC-3 CBD-22 CBD-27 CBD-32	Section 2.1.2.1, Project Design Features, discusses the design features and procedures incorporated into the proposed action to avoid or reduce environmental impacts during construction, operation, and maintenance. These Project Design Features are the result of a series of discussions with, and outreach to, conservation and environmental government agencies and non-governmental organizations, such as the USFWS, CDFG, county land use and public service agencies, the Defenders of Wildlife, the Sierra Club, Audubon Society, and the Natural Resources Defense Council. A complete listing of Project Design Features and procedures is presented in Appendix B. To avoid or reduce biological impacts, Appendix B includes more than 150 Project Design Features for the CVSR Project and/or Twisselman Mine and 25 measures for the PG&E Morro Bay-Midway Transmission Line Reconductoring. These measures include, but are not limited to mitigation lands. The selection criteria for the mitigation lands is identified in CVSR-BIO-116; CVSR-BIO-123; CVSR-BIO-127 and CVSR-BIO-134. The identified mitigation land is shown on Table 1 of the Biological Opinion (Appendix D-3, p. 125). The Biological Opinion identifies a mitigation ratio of 5:1 for the CVSR for SJKF and 4:1 for permanent impacts to GKR habitat (p. 38). This 4:1 ratio would comprise 3:1 of preserved

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area and as such fails to analyze the impact of this proposed project on the core areas of the SJKF, as well as the cumulative impacts from this project and others (including oil and gas development) within the same core areas. The proposed 3:1 mitigation ratio for permanent impacts on the reconductoring is inadequate, and the Draft EA fails to address the reason for two different mitigation standards for the same impact. Because the proposed projects sit directly within one of the last remaining core and recovery areas and significantly narrows the only linkage for the species between the southern and northern parts of its range, required mitigation should be at a minimum 5:1 for all of the lands affected by the projects and must include highly suitable habitat as well as identified linkages and movement corridors.		occupied habitat and 1:1 of created or restored habitat that is contiguous with or biological connected to occupied suitable habitat. For the PG&E reconductoring, all permanent losses to suitable habitat for SJKF would be compensated for at a 3:1 ratio, and temporary losses of suitable habitat would be mitigated at a 1:1 ratio (p. 42). The Biological Opinion concludes that, with the Project Design Features incorporated into the proposed action, it is not likely to result in jeopardy to protected species.

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Additionally a 5:1 ratio is the minimum appropriate ratio because mitigation ratios are based, in part, on the overall size of the project, and impacts increase geometrically with project size.		
BIO-28: Rodenticides are known to be a leading cause of mortality in SJKF. The Draft EA proposes conflicting guidance on rodenticide use. On p. ES-4 the Draft EA states, "To prevent take of SJKFs, all construction requirements described in the USFWS Standardized Recommendations for the Protection of the SJKF Prior to or During Ground Disturbance (USFWS 1999) would be followed." The Biological Assessment provides a conflicting standard when it states that "No rodenticides will be used on the Project site to avoid the potential for poisoning of GKRs and San Joaquin antelope squirrels and to avoid the secondary	CBD-34	Section 3.8.3.2 of the EA indicates that no rodenticide use would be permitted on the CVSR site, which is consistent with what is stated in the Biological Opinion (Appendix D-3). The USFWS Standardized Recommendations For Protection of the Endangered SJKF Prior To Or During Ground Disturbance, includes protection measures typically recommended by the USFWS prior to and during ground disturbance activities. As noted in the Executive Summary, all construction requirements would be followed to prevent the take of SJKF. This includes restricting the use of rodenticide and herbicides in project areas (Item 7 under the Construction And On-Going Operational Requirements). Although the USFWS issued new standard recommendations in January 2011; the specific recommendations for rodenticide use is the same as those listed in the June 1999 version. Regardless of USFWS standards, the Applicant would not use rodenticide.

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poisoning of SJKFs, California condors, and other predators and scavengers." (Draft EA Appendix D-3 at 46). Additionally, more recent Standardized Recommendations for Protection of the SJKF are available.		
BIO-29: The EIR's [sic] assertion that reducing the SJKF's movement corridor by half is not a significant impact and that SJKF will use the "movement pathways" between solar arrays is not supported by scientific evidence. The mitigation measures therefore do not meet the requirements of NEPA. The Draft EA fails to adequately assess how degrading the Carrizo Plain population of the SJKF may affect the core recovery area the project site is located within as well as the entire SJKF population as a whole outside of the Carrizo Plain. The Draft	SC-4 CBD-26 CBD-28	Section 3.8.3.2 analyzed potential impacts on wildlife movement corridors and pathways. The PV arrays were designed to incorporate movement pathways for SJKF, pronghorn antelope, and other species between the arrays, maintaining connectivity within and through the site. As described Chapter 2 and in Response G-3, the CVSR Project underwent design modifications during the CEQA review process, which included input from state agencies and interested parties, intended to further minimize impacts to biological resources, including those on SJKF. As described in Section 3.8.3.2 and the Biological Opinion (Appendix D-3), scientific analysis of SJKF habitat indicates that the development of the CVSR and its supporting infrastructure would not occur within the species' most likely movement pathway in the project area. Nonetheless, the EA and the Biological Opinion acknowledge that there would still be a reduction of habitat within the north/south corridor and some reduction of movement possibilities for the SJKF (Appendix D-3). As such, the Project Design Features (Appendix B) include enhancements to the CVSR Project layout and orientation intended to promote the movement of species within and among the CVSR array layouts. However, while scientific evidence indicates that SJKF populations continue to move freely throughout a variety of partially disturbed habitats in other contexts—even without the addition of species-movement enhancements like those included among the project design features (e.g., farmlands and oil fields, see Biological Opinion, p. 86)—it is uncertain how and to what degree the SJKF would continue to use areas beneath the solar array footprints. For this reason, the solar array features would be considered permanent land disturbance. As

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EA also fails to analyze how the proposed project poses a significant barrier and would reduce the width of the "least cost path" (highly permeable areas) for the SJKF within the existing connectivity corridor between the CPNM and the Palo Prieto-Cholame Valley. Failing to analyze how the connectivity would be compromised by the proposed project leaves the public and decision-makers without essential information on project impacts.		such, Project Design Features include land acquisition and protection for managed and restored habitat adjacent to and around the CVSR site that would, due to restoration efforts, provide additional opportunities for breeding, feeding, sheltering, and dispersal of SJKF. Criteria for mitigation land includes "location (e.g., habitat corridor, part of a large block of existing habitat, adjacency to source populations, proximity to solar facilities or other potential sources of disturbance)," and all mitigation land is subject to approval by both San Luis Obispo County and USFWS. Based upon this comprehensive study of available data, DOE concluded that the movement corridors would reduce impacts to SJKF populations to a level that would not be significant. Further, the DOE concluded (based on the Biological Opinion in Appendix D-3) that acquiring and enhancing compensation lands would contribute to the USFWS recovery goal for establishing a viable SJKF population on private lands within the Carrizo Plain.
BIO-30: Impacts to movement corridors for the SJKF are not mitigated and cannot be mitigated. The proposed project would reduce the width of the SJKF movement corridor by roughly 50 percent on the Carrizo Plain. The assumptions and conclusions that a 50% reduction in the existing movement corridor is not significant are unsupported. No scientific evidence or analysis	NC-9 DOW-8 DOW-9 CBD-30 CBD-31	Section 3.8.3.2 presents the CVSR Project's impacts on SJKF movement corridors as described in Response BIO-29. Cumulative impacts on SJKF are addressed in Section 4.4.7 as described in Response BIO-26. The USFWS has concluded in their Biological Opinion (Appendix D-3, p. 41) that the project design features, in particular the acquisition and enhancement of compensation lands, would have a net benefit for SJKF as well as other species.

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is provided to show that the SJKF will actually use the movement pathways among the solar panel arrays, or that reducing the movement corridor by 50% is not a significant impact. The project's impact on the wildlife connectivity and wildlife corridors for the SJKF is significant and unmitigable. Both the CDFG and the USFWS have expressed their belief that it is important to maintain SJKF undeveloped habitat in the Carrizo Plain and to protect remaining connections between SJKF populations to counteract interbreeding and declines in SJKF population. The disruption of landscape scale connectivity for the SJKF, and other dispersing wildlife species on the Carrizo Plain like the tule elk and pronghorn antelope cannot be mitigated given the size of the CVSR and the cumulative impact on landscape-scale connectivity		

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caused by the neighboring Topaz solar project, the Twisselman aggregate mine, the reconductoring of the Morro Bay-Midway transmission line, and the region's topographic features. These adverse effects to wildlife connectivity can only be reduced by a reduction in the size and scale of the CVSR and the neighboring Topaz solar project. The DOE should analyze alternatives that differ in size, scale and location from the proposed project to ensure that impacts to SJKF are less than significant. The proposed minimization and mitigation strategies are experimental and not proven to be effective. No studies are presented that document the SJKF will pass through or utilize areas where the solar arrays are proposed. Furthermore, project structures will potentially conceal SJKF predators. Also, while artificial dens have been documented to		

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be used by SJKF, they are not typically a successful mitigation strategy.		
BIO-31: The conclusions in the Draft EA regarding the movement of SJKF through the project site contradict the conclusions of the Draft EIS prepared for the Topaz Solar Project. The CVSR Draft EA concludes that the PV arrays were designed to incorporate movement pathways for SJKF which would maintain the robustness of the SJKF population on the Carrizo Plain. The EIS for the Topaz Solar Project concludes that, "[i]t is unknown to what degree SJKF would use the solar arrays for movement or foraging" (DOE, Topaz Draft EIS, 3-260). The absence of information or analysis of how the species would use the solar arrays is a data gap that the renders the Draft EA legally inadequate. NEPA implementing regulations require that DOE	DOW-6 DOW-7	DOE's conclusions in the CVSR EA do not contradict the Topaz Solar EIS findings with respect to how SJKF would use the solar array footprint. The CVSR Biological Opinion (Appendix D-3) acknowledges that it is unknown how the SJKF would continue to use the solar array footprints; however, scientific evidence indicates that SJKF populations continue to move freely throughout a variety of partially disturbed habitats in other contexts (e.g., farmlands and oil fields, *see* Biological Opinion, p. 86). The EA (Section 3.8.3.2) and the Biological Opinion (Appendix D-3, p. 101) acknowledge that there would be some reduction of habitat within the north/south corridor. As described in Response BIO-29, the project layout is designed to minimize impacts on wildlife movement corridors and pathways (Section 3.8.3.2). The Project Design Features (Appendix B) include enhancements to the CVSR Project layout and orientation intended to promote the movement of species within and among the CVSR array layouts. NEPA does not require DOE to eliminate all uncertainty as it concerns the effectiveness of the project design features to reduce impacts on special status species to a level that is not significant. Rather, DOE has relied upon all reasonably available data, consultation with relevant, expert species-protection agencies, and peer review from wildlife professionals to make reasonable predictions as to how the CVSR Project, and particularly its project design features, would allow for and enhance habitat connectivity and ensure the long-term survival of special status species, such as the SJKF. To account for the uncertainty associated with the SJKF's continued use of habitat beneath the solar array layouts, the project design features also incorporate off-site conservation measures (including habitat restoration and preservation). As such, with the inclusion of the project design features in the CVSR Project, SJKF connectivity corridors would be improved over current, baseline conditions.

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acknowledge missing or incomplete information and conduct an evaluation of impacts "based upon theoretical approaches or research methods generally accepted in the scientific community." The DOE should incorporate such an analysis into an EIS.		
BIO-32: The Draft EA fails to provide the number of SJKF, SJKF dens and SJKF natal dens on site in the text of the Draft EA. No definitive estimations of the population or number and location of home ranges of SJKF are provided in the Draft EA; therefore, the magnitude of the impact to the SJKF is unclear. The information contained in Appendix D-3 conflicts with information contained in the San Luis Obispo County's Final EIR.	CBD-25	Section 3.8.2.3 provides a description of special-status species, including SJKF, that occur on the project site based on biological surveys and habitat assessments including protocol-level surveys. The detailed results of these surveys are provided in Appendix D. The information in Appendix D-3 (the Biological Opinion) was prepared after San Luis Obispo County's Final EIR and contains more stringent mitigation ratios and more up-to-date information than the Final EIR. The Biological Opinion is based on the modified project design that resulted from the County's CEQA process; therefore, the project details discussed in the County's Final EIR cannot be directly compared to the Biological Opinion, which is based on the project details discussed in the DOE's EA. Therefore, the Biological Opinion does not conflict with the Final EIR. See Response PA-2 and PA-3.
BIO-33: Based on the DEIS' [sic] failure to provide essential data, subsequent analysis of project impacts and adequate mitigation (including an	CBD-35	The adequacy of the data presented in the EA for SJKF is addressed in Responses BIO-4, BIO-13, and BIO-32. The adequacy of the analysis of impacts on SJKF is addressed in this response to comments including Responses G-3, BIO-8, and BIO-29. Similarly, the adequacy of the Project Design Features (Appendix B) is discussed in this response to comments, including Response BIO-9 regarding mitigation plans, Response BIO-27 regarding SJKF

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analysis if full mitigation can even be accomplished) for the SJKF, we strongly urge the DOE to address these issues in a supplemental or revised EIS.		mitigation lands, and Response BIO-30 regarding mitigation for impacts on SJKF movement corridors. As addressed in Response G-2, DOE prepared an EA in compliance with NEPA, DOE's implementation regulations, and CEQ's guidance on impact intensity, and concluded that the CVSR Project would not result in significant environmental impacts. This conclusion is based upon information evaluated by DOE indicating that the Project Design Features would establish an adequate buffer against potential significant impacts to biological resources, including the SJKF. While NEPA does not require DOE to eliminate all uncertainty as it concerns the effectiveness of the Project Design Features, DOE has relied upon all reasonably available data, consultation with relevant, expert agencies, and peer review from wildlife professionals to make reasonable predictions as to how the CVSR Project, and particularly its Project Design Features (Appendix B), would allow for and enhance habitat connectivity and ensure the long-term survival of special status species such as SJKF. Each of the Project Design Features for protection special status species like the SJKF are incorporated into the design of the CVSR Project, and have been made enforceable conditions on construction and development of the CVSR Project by virtue of USFWS' Biological Opinion (Appendix D-3, p. 105). Accordingly, an EIS is not required.
BIO-34: The Draft EA does not include a quantitative analysis of impacts other than the number of acres that will be affected. The Draft EA fails to adequately identify the on-the-ground impacts to connectivity, and species essential habitat types (breeding/foraging etc.). Therefore, it is impossible to	CBD-24	In Section 3.8 and 4.4.7, the DOE has analyzed the direct, indirect, and cumulative impacts of the Project on biological resources. As described in Response G-3, the EA explains why the CVSR Project's impacts are not significant based on reasonable predictions derived from the analysis of available data and drawing on the expertise of other federal agencies. In addition, the EA, along with the BO in Appendix D-3, describe how Project Design Features incorporated into the CVSR Project reduce all potential species impacts to a less-than-significant level. For more information on connectivity, see Response BIO-29.

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evaluate if mitigation will be effective.		
BIO-35: The DOE needs to produce an EIS for the CVSR Project based on the 27 sensitive species listed in the EA to properly address avoidance, minimization, impacts, and mitigation.	CBD-2	As addressed in the Response G-2, DOE prepared an EA in compliance with NEPA, DOE's implementation regulations, and CEQ's guidance on impact intensity, and concluded that the CVSR Project would result in less than significant environmental impacts. Therefore, an EIS is not required. The presence of sensitive wildlife and their habitat on the CVSR site does not inherently necessitate the preparation of an EIS. Rather, because (i) DOE fully analyzed the potential for impacts to wildlife in the EA; (ii) impact avoidance and mitigation measures are an inherent part of the proposed action, which reduces potentially significant impacts to a less-than significant level; and (iii) DOE has fully complied with the Endangered Species Act by completing Section 7 consultation with the USFWS, in which USFWS issued a Biological Opinion that determined that the CVSR Project is not likely to result in jeopardy to protected species, DOE's conclusion that the CVSR Project does not significantly impact sensitive species or the habitat is supported. See Response G-2.
BIO-36: Despite the investment of significant public and private resources to re-establish the pronghorn and Tule Elk, the Draft EA fails to identify or analyze impacts of the project on the connectivity of these species through population isolation. The development of the proposed project may in fact isolate the populations of pronghorn in the northern and southern portion of the Carrizo	CBD-59	Section 3.8.3.2 analyzed potential impacts on wildlife movement corridors and pathways. The PV arrays were designed to incorporate movement pathways for SJKF, pronghorn antelope, and other species between the arrays, maintaining connectivity within and through the site. See Response BIO-29 for details on SJKF connectivity. As described in Section 3.8.3.2 there would be a reduction of habitat within the north/south corridor and some reduction of movement possibilities for the pronghorn. However, because the solar array features would be considered permanent land disturbance, Project Design Features include land acquisition and protection for managed and restored habitat adjacent to and around the CVSR site that would, through restoration efforts, provide additional opportunities for pronghorn. Further, standard cattle fencing, impermeable to pronghorn, will be replaced at key locations within the project site to facilitate movement of pronghorn. Finally, at least 10 miles of fences within the Carrizo Plain region in areas adjacent to and between the Topaz Solar Farm

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plain. Because these populations are small to begin with, there is potential for this isolation to significantly negatively affect pronghorn populations on the Carrizo Plain including those in the CPNM. This analysis must be included in an EIS.		Project and the CVSR Project sites that may pose barriers to movement for pronghorn antelope and tule elk shall be removed or modified to pronghorn friendly fencing.
BIO-37: The Applicant has cited migration routes established for pronghorn in Wyoming down to 150 yards wide as support for the contention that the project's significant reduction of wildlife corridors would not result in adverse impacts to antelope movement. Wildlife corridors on the Carrizo are not comparable to migration corridors in Wyoming.	SC-5	Section 3.8.3.2 analyzed potential impacts on wildlife movement corridors and pathways. The PV arrays were designed to incorporate movement pathways for SJKF, pronghorn antelope, and other species between the arrays, maintaining connectivity within and through the site. According to the corridor model created by Penrod et al. (2010) the western edge of the CVSR site is more permeable to pronghorn movement and the eastern edge not as much due to the nature of the terrain. No Wyoming data were used to analyze the corridors within the CVSR site. The corridor widths on the CVSR site range from 220 yards to ¾ of a mile. These measurements are based on the distances between arrays. See Response BIO-36 and Response BIO-26.
BIO-38: The Draft EA states that seasonal wetlands on the CVSR Project site may support federally listed fairy shrimp species, although surveys have not yet detected these species, and concludes that the seasonal	DOW-13	As described in Section 3.8, USFWS-approved surveys of all wetland habitats within the CVSR Project site were conducted for vernal pool fairy shrimp and longhorn fairy shrimp. No vernal pool or longhorn fairy shrimp were detected during these surveys. The construction and operation activities associated with the CVSR Project would not come within 250 feet of any currently occupied or unoccupied vernal pool or longhorn fairy shrimp habitat. Based on surveys of the CVSR Project site, documentation of known locations, measures to minimize and avoid effects during construction and operation activities, and the fact that a USFWS-approved

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wetlands would be protected from runoff from the project site by a 400-foot no-construction buffer (Draft EA at 3-85). Because of the imperiled status of these species, DOE must provide an analysis of its conclusion that these species will be adequately protected by the buffer in an EIS.		biologist/botanist would be present on-site during construction to assure avoidance of known or suspected occurrences of these species, the USFWS has concluded that the vernal pool fairy shrimp and the longhorn fairy shrimp are not likely to be adversely affected by the CVSR Project. See Response G-2.
BIO-39: There is a suitable habitat for the California condor on site but the impacts on the California condor were dismissed because less than 1% of the species would be affected. Cumulative impacts of the CVSR, Topaz, or other projects on the recovery of the California condor were not analyzed. An analysis needs to be included in an EIS to understand potential direct and cumulative impacts of the CVSR on the recovery of the California condor.	DOW-15	Section 3.8.3.2 states that although currently California condors are not known to regularly use any part of the CVSR site, suitable foraging habitat is present that could be used as the population recovers. This foraging habitat represents less than one percent of the nearly 200,000 acres of such habitat in the Carrizo Plain ecoregion that would remain after development of the CVSR Project. In addition, the Project Design Features (Appendix B) include measures intended to avoid impacts to California condors in the event of an occurrence on or near the CVSR, including microtrash removal and management, continued site monitoring, and protocols for impact avoidance in the event a California condor is identified near the CVSR Project site. As described in the Biological Opinion (Appendix D-3, p. 3), the California condor has not been observed on the CVSR Project site. No critical habitat for the California condor is present on or close to the CVSR or Twisselman aggregate mine sites. The nearest designated critical habitat for the species is the East Unit of the Hi Mountain-Beartrap Condor Area, 13 miles west of the CVSR site, where captive-raised condors were formerly released (H.T. Harvey and Associates 2010). In addition, no condors have been observed in the vicinity of the Topaz site during 2008, 2009, and 2010 field surveys (DOE 2011). The Biological Opinion concluded (Appendix D-3, p. 3) that the California condor would not be adversely affected by construction and operation of the CVSR. Despite the condor's wide range,

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		the Biological Opinion concluded this for two reasons: (1) the nature of the solar facility (low lying panels on the valley floor), and (2) the condor's preferred habitat (mountainous areas surrounding the valleys). The California condor is not known to use the CVSR site, so a cumulative effects analysis would require speculation regarding how condors might use the site in the future, along with speculation as to how condors might use other areas affected by reasonably foreseeable future actions. NEPA does not require cumulative impact analysis to include assessments of speculative, future impacts that are unlikely to become meaningfully cumulative, especially where impacts from the proposed action and similar reasonably foreseeable future actions are unlikely to accrue over time. Rather, in order for cumulative impact analysis to be meaningful, the scope of cumulative impact analysis should be commensurate with likely potential impacts. Consistent with CEQ Guidance, because future, reasonably foreseeable actions are likely to have a similarly nominal impact to California condors as those from the CVSR Project, DOE appropriately excluded California condors from the EA's cumulative impact analysis.
BIO-40: While the California condor was not detected in the project area, the project site is well within the historic range for the California condor and is six miles from federally designated condor critical habitat. The Draft EA dismisses the development of over 4,700 acres of potential foraging habitat for the California condor as it does for many of the wide-ranging avian species,	CBD-52	Section 3.8.3.2, California Condor, presents direct and indirect impacts to the California Condor. The EA notes that although California condors are not known to regularly use any part of the CVSR site, suitable foraging habitat is present and there is the potential for California condors to eventually use the area as foraging habitat as the population recovers. Direct effects could result from making approximately 1,684 acres unsuitable for California condor foraging. This foraging habitat represents less than 1 percent of the available natural habitat in the Carrizo Plain ecoregion, and 193,738 acres of such habitat would remain after development of the proposed CVSR Project. The EA also found that there is a very low potential for individuals to be injured or killed due to collision with or electrocution by bridging medium-voltage wires on the CVSR Project-associated interconnection line or existing transmission line. In addition, all transmission and sub-transmission towers and poles would be designed to be raptor-safe. All fuels, fluids, and components with hazardous materials would be handled in accordance with applicable regulations. Therefore, adverse effects on California condor would be long-term but

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and therefore fails to consider local and cumulative impacts to this species.		minor and not significant. Appendix B describes the Bird Monitoring and Avoidance Plan that would be implemented to avoid and reduce impacts on avian species. The purpose of the Bird Monitoring and Avoidance Plan is to provide a means for validating pre-construction predictions of fatality risk for birds and bats and, if necessary, form a basis for adaptive management; i.e., additional action to further reduce the risk of fatality when the post-construction monitoring indicates that fatality levels have exceeded acceptable thresholds. As discussed in the Biological Opinion (Appendix D-3), the permanent site conversion of habitat totals approximately 1,707 acres, of which approximately 1,685 acres is disturbance from the CVSR and interconnection line, approximately 10.26 acres is from the Caliente switching station, and approximately 11.4 acres is from the expansion of the Twisselman aggregate mine (Table 1). An additional 72 acres of habitat on the CVSR site would be temporarily disturbed. As described in Response BIO-39, this disturbance represents less than one percent of the nearly 200,000 acres of suitable foraging habitat in the area and would be restored post-construction. For these reasons, impacts on California condor would not be significant.
BIO-41: Microtrash – small bits of debris such as bottle caps, rags, screws, bolts, wires, glass, and other materials – presents a considerable threat to the recovery of the California condor. Defenders of Wildlife [commenter] recommends that regular microtrash clean-up and removal of all small metal objects occur at the end of construction activities daily or, at a minimum, weekly to	DOW-16	Section 3.8.2.3, Common Wildlife, describes the handling of trash during construction and operation of the proposed action. Project design feature CVSR-BIO-131 (Appendix B) requires the Applicant to monitor construction in condor habitat and remove trash and microtrash from the work area daily. CVSR-BIO-67 in Appendix B also requires the Applicant to collect all litter, small artificial items, and food waste from the Project area on a daily basis. In addition, CVSR-BIO-113 requires all construction personnel be trained on the detrimental effects of microtrash on California condor. CVSR-BIO-114 lists project design features, including the requirement that all general trash, food-related trash items (e.g., wrappers, cans, bottles, food scraps, cigarettes, etc.) and other human-generated debris scheduled to be removed weekly be stored in animal-proof containers and/or removed from the site each day. The analysis of Common Wildlife Species under the Morro Bay–Midway Transmission Line Reconductoring analysis in Section 3.8.3.2 explains that workers would not leave trash on the site and that a litter control program would be instituted at each of the work areas. In addition,

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prevent adverse effects to condors and continue throughout the operation phases of the project		personnel would collect all litter, small artificial items, and food waste along the reconductoring route on a regular basis.
BIO-42: The impacts on the mountain plover may be greater than presented in Draft EA. Because of direct impacts and the cumulative impacts from developing the Topaz project, a more detailed analysis should be included in an EIS.	DOW-18	As shown on Tables 3.8-3 and 3.8-4, the mountain plover is present on the CVSR site and its habitat exists along the reconductoring route. Impacts on the mountain plover are described in Section 3.8.3.2. As described in the Biological Opinion (Appendix D-3, p. 3), the USFWS has determined that the CVSR Project is not likely to adversely affect the mountain plover. This finding is based on surveys of the CVSR Project site and documentation of known locations of this species. In addition, the USFWS took into account the Project Design Features (Appendix B) intended to minimize and avoid effects during construction and operation activities, which include hiring a biologist/botanist approved by the USFWS who would be present on site during construction to assure avoidance of known or suspected occurrences of mountain plover. No critical habitat for this species occurs within the CVSR Project site; therefore, none would be affected. Section 3.8.3.2 describes the effects of construction and operation of the CVSR Project on migratory birds and raptors. The Project Design Features (Appendix B) include a Bird Monitoring and Avoidance Plan that would be implemented to avoid and reduce impacts on avian species, including mountain plover. The purpose of Bird Monitoring and Avoidance Plan is to provide a means for validating pre-construction predictions of fatality risk for birds and, if necessary, form a basis for adaptive management; i.e., additional mitigation action to further reduce the risk of fatality if the post-construction monitoring indicates that fatality levels have exceeded acceptable risk thresholds. For these reasons, the impacts on the mountain plover would not be significant. Overall, the conservation strategy of the CVSR Project would minimize effects and would result in permanent protection of suitable habitat for the listed species on lands where these habitats are currently vulnerable to conversion to incompatible land uses such as dryland farming or viticulture.

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		As with the California condor, see Response BIO-39, given that the mountain plover would not be significantly affected by the CVSR Project, the EA's cumulative impacts analysis did not specifically address this species. Because the CVSR Project is not likely to adversely affect the mountain plover, meaningful cumulative impact analysis would require speculation regarding impacts that are unlikely to accrue for this species. NEPA does not require cumulative impact analysis to include assessments of speculative, future impacts that are unlikely to become meaningfully cumulative, especially where impacts from the proposed action are unlikely to accrue over time. Rather, in order for cumulative impact analysis to be meaningful, the scope of cumulative impact analysis should be commensurate with likely potential impacts. Consistent with CEQ Guidance, because the CVSR Project is not expected to adversely affect the mountain plover, DOE appropriately excluded the mountain plover from the EA's cumulative impact analysis.
BIO-43: Mitigation for direct effects on mountain plovers due to the loss of 1,684 acres of suitable wintering habitat is to occur through the acquisition of mitigation lands; however, no evaluation of the quality of habitat or assessment of the adequacy of this mitigation is provided.	CBD-46	See Response BIO-42. As described in the Biological Opinion (Appendix D-3), the layout of the CVSR site has been designed to maximize avoidance, preservation, and management of the on-site habitat for special status species. The design would result in the on-site preservation and management of approximately 3,006 acres for listed species in perpetuity through fee title or conservation easement acquisition. This habitat would be managed to provide suitable habitat for listed species. Preservation and management of these lands would benefit grassland-associated species, such as the mountain plover. As described in the Biological Opinion (Appendix D-3, pp. 37–42), off-site preservation habitat would also be acquired, and the off-site conservation areas would be preserved and managed in perpetuity for the listed species covered by the Biological Opinion within areas of regional importance as approved by the USFWS. These conservation areas would comprise habitat that is occupied by the listed species affected by the CVSR Project or that is suitable but unoccupied and can be restored to ensure occupancy (through targeted management) by populations of these species. Criteria for mitigation land includes (1) current land use; (2) location (e.g., habitat corridor, part of a large block of existing habitat, adjacency to source populations, proximity to

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		solar facilities or other potential sources of disturbance); (3) vegetation composition and structure; (4) slope; (5) composition and drainage; and (6) level of occupancy or use by relevant species. Furthermore, all mitigation land is subject to approval by both San Luis Obispo County and USFWS. The conservation areas would also benefit grassland-associated species such as the mountain plover. The section of the Biological Opinion entitled CVSR Preservation and Management of Conservation Lands describes the contents of the Habitat Mitigation and Monitoring Plan (Appendix D-3). With the implementation of these measures, the impact on mountain plover would be less than significant.
BIO-44: It is unclear if surveys were performed for the Tipton kangaroo rat, if any Tipton kangaroo rats were observed, or if suitable habitat occurs on the project site, the Twisselman mine, or within the reconductoring route. Absent information on the presence/absence of the Tipton kangaroo rat, the impacts on this species cannot be adequately evaluated in violation of NEPA.	CBD-42	Surveys for Tipton kangaroo rat were not conducted for the CVSR or Twisselman mine site because the area is outside the range of this subspecies. Section 3.8.2.3 notes that there is no potential for the Tipton kangaroo rat to occur within or near the CVSR and Twisselman Aggregate Mine sites, but that it could occur along the Morro Bay–Midway transmission line reconductoring route, based on general habitat assessment surveys conducted along the route in 2010. Section 3.8.3.2 presents the direct and indirect effects that would occur to special status species, including the Tipton Kangaroo Rat, as a result of construction and operation of the Morro-Bay Transmission Line reconductoring. Specifically, the EA found that to the extent feasible, areas providing suitable habitat for GKR and Tipton kangaroo rat would be avoided. During the habitat assessment, biologists identified certain tension/pull sites and landing zones that PG&E proposed that were in areas that could significantly affect GKRs and Tipton kangaroo rats. As a result, PG&E agreed to move these tension/pull sites and landing zones to areas with significantly fewer burrows and much less dense shrubs, thus allowing for greater avoidance of burrows. When construction vehicles must travel off existing access roads within suitable habitat, a qualified biologist would walk ahead and identify a route for the vehicles to follow that would avoid burrows to the greatest extent practicable. To minimize direct mortality to GKRs and Tipton kangaroo rats when working in suitable habitat, plywood boards would be placed to cover suitable burrows that occur along the vehicle access routes. These boards would

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		be removed immediately after the construction vehicles have driven over them. If guard crossing poles need to be established within suitable GKR or Tipton kangaroo rat habitat, a biologist would work with construction crews to ensure that the poles are sited to avoid burrows. If occupied or potentially occupied burrows cannot be avoided, a qualified biologist would flag a work-exclusion zone of at least 30 feet around active burrows and remain onsite as a biological monitor. If work must proceed in the exclusion zone, PG&E would pursue techniques to minimize direct mortality, which may include having approved biologists trap and hold species in captivity, and excavating and closing burrows. In areas that are temporarily disturbed, the approved biologist would release the mammals to areas where they were trapped as soon as possible when the work is complete and habitat is restored. These efforts would considerably reduce impacts on GKR and Tipton kangaroo rat, resulting in long-term but minor adverse effects. Therefore, impacts on these species would not be significant during construction or operations." Section 3.8.3.2 describes habitat compensation plans for listed species that would be affected by the Morro-Bay transmission line reconductoring. With regards to the Tipton Kangaroo Rat, credits at a suitable bank in western Kern County would be purchased to compensate for temporary impacts to the species. If a bank is not available, money for habitat restoration and preservation would be contributed to the Center for Land Management or another conservation entity. The Biological Opinion (Appendix D-3, p. 42) found that for the reconductoring portion of the proposed action, all permanent losses to suitable habitat for GKR, SJKF, Tipton kangaroo rat, blunt-nosed leopard lizard, and Kern mallow will be compensated for at a 3:1 ratio and temporary losses of suitable habitat will be mitigated at a 1:1 ratio. The Biological Opinion concludes that with the Project Design Features incorporated into the proposed action, it is not likely to result in jeopardy to protected species.
BIO-45: The proposed mitigation ratio of 1:1 for the	CBD-45	Section 3.8.3.2 presents information on the effects of the CVSR Project on the California jewel-flower and the San Joaquin woollythreads As described in the Biological Opinion (Appendix D-

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California jewel-flower and the San Joaquin woolly is inadequate and a net loss to the species habitat. The mitigation ratio for these species should be a minimum of 5:1 due to the fact that these species are federally listed endangered species.		3, p. 2), protocol-level surveys for the California jewel-flower and San Joaquin wooly-threads were conducted over most of the CVSR Project site in 2009 (H. T. Harvey & Associates 2009), 2010 (H. T. Harvey & Associates 2010b, available at https://lpo.energy.gov/?page_id=1514#cvsr.) and 2011 (H. T. Harvey & Associates 2011). Neither the California jewel-flower nor the San Joaquin wooly-thread were detected during any of these protocol surveys. As part of the Section 7 consultation process, additional information and measures to minimize effects to these species were developed. The measures include having a USFWS-approved biologist/botanist survey the project site prior to construction, and if either of these species were detected the CVSR Project would avoid impacts. Based on previous surveys that have not detected these species and the proposal to survey and avoid impacts, the USFWS determined that the CVSR Project is not likely to adversely affect the California jewel-flower or San Joaquin wooly-threads. No critical habitat for these species occurs within the CVSR Project site; therefore, none would be affected (Appendix D-3, p. 3).
BIO-46: The Draft EA fails to discuss the golden eagle impacts on the site, fails to identify how many eagle territories will be affected and how impacts will be mitigated. If foraging habitat decreases, the reproductive capacity of nesting pairs could be significantly impacted. Furthermore, scientific evidence is clear that the presence of humans detected by a raptor in its nesting or hunting habitat can be a significant	CBD-47	Section 3.8.3.2, Migratory Birds and Raptors, presents impacts to golden eagles. Table 3.8-2 identifies the golden eagle as being present on the CVSR site and Appendix A of the Biological Assessment for the California Valley Solar Ranch project found that the Project site provides suitable foraging habitat (H.T. Harvey and Associates 2010b, available at https://lpo.energy.gov/?page_id=1514#cvsr). Nesting habitat is absent from the site; nesting surveys of the Carrizo Plain in 2010 identified the closest nest as being 3.2 mi from the site . Golden Eagle Nest Surveys were conducted within a ten mile radius of the project site in April and May 2010. The survey report is included in the list of biological surveys conducted for the CVSR Project, as identified in Appendix D-1. The survey located 22 golden eagle nests in the 12 active territories. To reduce impacts to golden eagles and other raptors, preconstruction surveys for nesting and breeding birds and raptors would be conducted within the recognized breeding season in all areas within 500 feet of the CVSR site, staging areas, and access roads. If nesting golden eagles are detected, a 0.5-mile no-activity buffer would be established. The prescribed buffers may be

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habit-altering disturbance. The Draft EA fails to identify and analyze the foraging habitat impacts of the project, which could constitute a "take" of this species.		adjusted in consultation with CDFG and USFWS. To reduce potential impacts from electrocution and collision with power lines, the Applicant would implement Avian Power Line Interaction Committee guidelines. Further, the Applicant would implement a long-term avian mortality study of the CVSR site, documenting the level of avian mortality and taking corrective measures if mortality is deemed excessive by the CDFG and USFWS. As described in the Biological Opinion (Appendix D-3), on-site preservation and off-site preservation habitat would be acquired and the off-site conservation areas would be preserved and managed in perpetuity within areas of regional importance as approved by the USFWS. These conservation areas would comprise habitat that is occupied by the listed species affected by the CVSR Project or that is suitable but unoccupied and can be restored. Some of these lands would be lands that are currently disked (farmed) or have approved construction entitlements, and will be actively restored. Overall, the conservation strategy of the CVSR Project would minimize effects and would result in permanent protection of suitable habitat for the listed species on lands where these habitats are currently vulnerable to conversion to incompatible land uses, such as dryland farming or viticulture, and would effectively compensate for affected golden eagle foraging habitat. The preconstruction surveys and avoidance measures for migratory birds and raptors, along with other design features including those discussed in the Vegetation and Habitat and Common Wildlife Species sections, and the conservation strategy (see Habitat Conservation in Section 3.8.2.3) would ensure that adverse effects on migratory birds and raptors would be negligible, and impacts would not be significant during construction or operations. Appendix B describes the Bird Monitoring and Avoidance Plan that would be implemented to avoid and reduce impacts on avian species. The purpose of Bird Monitoring and Avoidance Plan is to provide a means for validating pre-construction predictions of fatality risk for birds and bats and, if necessary, form a basis for adaptive management; i.e., additional mitigation action to further reduce the risk of fatality if post-construction monitoring indicates that fatality levels have exceeded acceptable thresholds. Further, an Avian and Bat Protection Plan (ABPP) incorporating avoidance, minimization and

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		mitigation measures into the project will ensure the Project's effects on eagles are consistent with the USFWS's goal of stable or increasing populations. The Golden Eagle Survey Report can be found at: http://www.sloplanning.org/EIRs/CaliforniaValleySolarRanch/feir/apps/Ap08G_Golden_Eagle_Nest_Surveys.pdf
BIO-47: No bald eagles were identified on the site; however, the Draft EA recognizes the potential for the bald eagles to use the site for foraging during migration. (Draft EA at 3-72). No impact analysis is provided for this species under the Bald Eagle and Golden Eagle Protection Act.	CBD-48	As shown on Table 3.8-2, the potential for the bald eagle to occur on the CVSR Project site is low. Section 3.8.3.2 presents impacts to this species in the discussion of migratory birds and raptors. In addition to the design features for Common Wildlife Species, preconstruction surveys for nesting and breeding birds and raptors would be conducted within the recognized breeding season in all areas within 500 feet of the CVSR site, staging areas, and access roads to reduce impacts to migratory birds and raptors. See Response BIO-46, BIO-48.
BIO-48: While the white-tailed kite was not located on the project site, habitat was identified as occurring on the proposed project site (DEIS at 3-143) [sic]. No analysis was provided as to how the CVSR Project would affect the foraging ability of this species, or if the decrease in foraging could result in "take." The number of kites that occur in the area and on the proposed	CBD-49	As shown on Table 3.8-2, the potential for white-tailed kites to occur at the CVSR Project site is low. Impacts to the white-tailed kite are included in the discussion of migratory birds and raptors in Section 3.8.3.2. As discussed, in addition to the design features for Common Wildlife Species described, to reduce impacts to migratory birds and raptors, preconstruction surveys for nesting and breeding birds and raptors would be conducted within the recognized breeding season in all areas within 500 feet of the CVSR site, staging areas, and access roads. Section 3.8.3.2 includes a discussion of migratory birds and raptors, including white-tailed kite, that may forage in proximity to the CVSR site. To reduce impacts associated with the loss of foraging habitat, the CVSR Project would include the acquisition of conservation land. Although adverse effects could result from making approximately 1,684 acres of the CVSR Project unsuitable for raptor foraging, these effects would be offset by the conservation of approximately 9,000 acres of habitat on lands that are currently vulnerable to conversion to land

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project site should be clearly identified in an EIS.		uses, such as dryland farming, that may not support raptor foraging. In addition, the implementation of a Weed Control Plan and Project Design Features to ensure erosion control, reduction of fugitive dust, restoration of disturbed areas, minimization of sedimentation, and protection of disturbed soil from wind erosion, would reduce impacts on foraging habitat to a level that is minor and not significant. The Biological Opinion (Appendix D-3, pp. 41, 98, 99) also describes the Compensatory Conservation Program comprising on-site preservation and off-site preservation habitat that would be acquired and preserved and managed in perpetuity, by an open space easement, within areas of regional importance as approved by the USFWS. These conservation areas would comprise habitat that is occupied by the listed species affected by the CVSR Project or that is suitable but unoccupied and can be restored. Some of these lands would be lands that are currently disked (farmed) or have approved construction entitlements, and would be actively restored. Appendix B describes the Bird Monitoring and Avoidance Plan that would be implemented to avoid and reduce impacts on avian species. The purpose of Bird Monitoring and Avoidance Plan is to provide a means for validating pre-construction predictions of fatality risk for birds and bats and, if necessary, form a basis for adaptive management; i.e., additional mitigation action to further reduce the risk of fatality when the post-construction monitoring indicates that fatality levels have exceeded acceptable thresholds. Further, an ABPP incorporating avoidance, minimization and mitigation measures into the project will further ensure the Project's effects on white tailed kites are less than significant. The EA does not have a page 3-143. See response to comments G-2.
BIO-49: Both the Swainson's hawk and American peregrine falcon potentially occur on site but no analysis of impacts is	CBD-50	As shown on Table 3.8-2, the potential that American peregrine falcon would occur on the CVSR Project site is moderate. Falcon may occasionally occur on the CVSR site during migration, but nesting habitat and habitats that would attract peregrine falcons for prolonged periods are absent from the site. The potential that Swainson's hawk would occur on the CVSR

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provided. The Draft EA is therefore inadequate in disclosing environmental impacts. The number and location of the Swainson's hawk are unclear. The only avoidance, minimization or mitigation measure provided is powerline avoidance, which fails to mitigate for the loss of foraging habitat for these species.		site is low because the Carrizo Plain is outside the nesting range of Swainson's hawk (H.T. Harvey and Associates 2010b, available at https://lpo.energy.gov/?page_id=1514#cvsr.). Impacts to hawks and falcons are included in the discussion of migratory birds and raptors in Section 3.8.3.2. As discussed, in addition to the design features for Common Wildlife Species described, to reduce impacts to migratory birds and raptors, preconstruction surveys for nesting and breeding birds and raptors would be conducted within the recognized breeding season in all areas within 500 feet of the CVSR site, staging areas, and access roads. To reduce potential impacts from electrocution and collision with power lines, the Applicant would implement Avian Power Line Interaction Committee guidelines. Further, the Applicant would implement a long-term avian mortality study of the CVSR site, documenting the level of avian mortality and taking corrective measures if mortality is deemed excessive by the CDFG and USFWS. As described in the Biological Opinion (Appendix D-3, p. 37–42), off-site preservation habitat would be acquired and the off-site conservation areas would be preserved and managed in perpetuity within areas of regional importance as approved by the USFWS. These conservation areas would comprise habitat that is occupied by the listed species affected by the CVSR Project or that is suitable but unoccupied and can be restored. Some of these lands would be lands that are currently disked (farmed) or have approved construction entitlements. Overall, the conservation strategy of the CVSR Project would minimize project effects and would result in permanent protection of suitable habitat for the listed species on lands where these habitats are currently vulnerable to conversion to incompatible land uses such as dryland farming or viticulture and would effectively compensate for affected Swainson's hawk and peregrine falcon foraging habitat. The preconstruction surveys and avoidance measures for migratory birds and raptors, along with other design features, including those discussed in the Vegetation and Habitat and Common Wildlife Species sections, and the conservation strategy (see Habitat Conservation in Section 3.8.2.3) would ensure that adverse effects on migratory birds and raptors would be negligible, and impacts would not be significant during construction or operations.

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		Appendix B describes the Bird Monitoring and Avoidance Plan that would be implemented to avoid and reduce impacts on avian species for the reconductoring. The purpose of Bird Monitoring and Avoidance Plan is to provide a means for validating pre-construction predictions of fatality risk for birds and bats and, if necessary, form a basis for adaptive management; i.e., additional mitigation action to further reduce the risk of fatality if the post-construction monitoring indicates that fatality levels have exceeded acceptable thresholds. Further, an ABPP incorporating avoidance, minimization and mitigation measures into the project will ensure the Project's effects on Swainson's hawk and peregrine falcon are less than significant.
BIO-50: Other than the 7 acres of habitat that would be affected by the Twisselman mine, it is unclear where the San Joaquin antelope squirrel occurs, how the species would be affected by the project, or what the mitigation or avoidance measures are proposed for this species. The Draft EA does not include an impact analysis for this species.	CBD-51	As described in Section 3.8.3.3, establishment of the Twisselman aggregate mine would result in long-term impacts on approximately 7 acres of San Joaquin antelope squirrel habitat. This habitat is suitable for other species of wildlife as well. However, because the mine was previously developed, the current habitat is already disturbed. Because of Project Design Features that would avoid or minimize impacts on vegetation and habitat, common wildlife species, and special status species in the CVSR Project sites described in the above sections, adverse effects on biological resources within the Twisselman aggregate mine site would be long-term but minor and not significant. The San Joaquin antelope squirrel is known to occur within the CVSR Project area at two locations, one immediately north of the main Project site, and the other along the southeastern most edge of the main Project site boundary (*Revised Biological Resources Assessment Report for the California Valley Solar Ranch Project, San Luis Obispo County, California. Prepared by URS and H. T. Harvey & Associates, December 2009,* See Appendix D-1). An explanation of how San Joaquin antelope squirrel would be affected by the CVSR Project has been added to Section 3.8.3.2 under the Umbrella and Keystone Species discussion. In addition, Appendix B includes Project Design Feature CVSR-BIO-135, which sets forth a series of avoidance, minimization, and compensation measures for this and other species. The CVSR Project would conserve more than 9,000 acres of SJKF habitat, which provides an

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		umbrella of protection for species that require less habitat, e.g., GKR (USFWS 1998). Re-establishment or population growth in areas where SJKF and GKR have been extirpated or exist in low numbers would benefit numerous other species including American badger, burrowing owl, SJKF, and San Joaquin antelope squirrels. San Joaquin antelope squirrels rely on GKR burrows for shelter (Appendix D-3, p. 41).
BIO-51: Badgers were identified to occur on the proposed project, and literature indicates that badger home territories range from 340 to 1,230 hectares. Therefore, the proposed project could displace at least one badger territory. Passive relocation of badgers into suitable habitat may result in "take." Surveys need to be conducted for both on- and off-site badger territories if animals are to be passively relocated in order to increase chances of persistence. The revised or supplemental DEIS [sic] should identify suitable habitat nearby if the project is relying on passive relocation as a mitigation strategy.	CBD-53	As shown in Table 3.8-2, the American badger is present on the CVSR site. The American badger is a CDFG designated species of special concern. The American badger has not been designated by the California or federal Endangered Species Act as a threatened or endangered species. Effects on badgers are described in Section 3.8.3.2 under Common Wildlife Species and Umbrella and Keystone Species. In accordance with Project Design Feature CVSR-BIO-145 (see Appendix B), complete focused pre-construction surveys for American badgers would be conducted within suitable habitat on the project site. If present, occupied badger dens will be flagged and ground-disturbing activities avoided within 50 feet of the occupied den. Maternity dens will be avoided during pup-rearing season (February 15 through July 1) and a minimum 200-foot buffer established. If avoidance of a non-maternity den (impacts to maternity dens is not allowed) is not feasible, badgers shall be relocated by slowly excavating the burrow (either by hand or mechanized equipment under the direct supervision of the biologist, removing no more that 4 inches at a time) before or after the rearing season (February 15 through July 1). Any passive relocation of badgers shall occur only after consultation with the CDFG and the biological monitor. Implementation of this Project Design Feature would minimize impacts to American badgers. In addition, the CVSR Project site and surrounding areas support habitat for this species, and the exclusion of one or more badgers from the project site would not jeopardize existing population dynamics. The CVSR Project would conserve more than 9,000 acres of SJKF habitat and this would benefit badgers. According to the Biological Opinion (Appendix D-3), re-establishment or population growth in areas where they have been extirpated or exist in low numbers would benefit numerous other species including the American badger, burrowing owl, SJKF, and San Joaquin antelope squirrels, and potentially the blunt-nosed leopard lizard, which relies on GKR

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		burrows for shelter.
BIO-52: The Draft EA fails to estimate the amount of San Joaquin coachwhip (whipsnake) habitat that would be affected by the proposed project or address any avoidance, minimization or mitigation measures. Elimination of whipsnake habitat will push this species closer to extinction and ESA protection.	CBD-54	As shown on Table 3.8-2, the San Joaquin coachwhip, which is a species of special concern in California, is present on the CVSR site. Section 3.8.3.2 describes the effects on wildlife species, including the San Joaquin coachwhip. The species is described in further detail in the CVSR Biological Resources Assessment Report (H. T. Harvey & Associates 2010b, available at https://lpo.energy.gov/?page_id=1514#cvsr.). In addition, focused pre-construction surveys would be completed immediately prior to ground disturbance (i.e., the morning of the commencement of). Any coachwhip found in an area of disturbance would be relocated to pre-approved relocation areas. As described in the Biological Opinion (Appendix D-3, p. 37–42), off-site preservation habitat would be acquired and the off-site conservation areas would be preserved and managed in perpetuity within areas of regional importance and approved by the USFWS. These conservation areas would comprise habitat that is occupied by the listed species affected by the CVSR Project or that is suitable but unoccupied and can be restored. Some of these lands would be lands that are currently disked (farmed) or have approved construction entitlements and would be actively restored. Overall, the conservation strategy of the CVSR Project would minimize the project effects and would result in permanent protection of suitable habitat for the listed species on lands where these habitats are currently vulnerable to conversion to incompatible land uses such as dryland farming or viticulture and would effectively compensate for affected habitat. The preconstruction surveys and avoidance measures for wildlife species along with other design features including those discussed in the Vegetation and Habitat and Common Wildlife Species sections, and the conservation strategy (see Habitat Conservation in Section 3.8.2.3) would ensure that adverse effects on San Joaquin coachwhip habitat would be negligible, and impacts would not be significant during construction or operations.

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BIO-53: The Draft EA fails to note that the proposed project is located in a globally recognized Important Bird Area. The Draft EA downplays the fatalities that have been documented to occur from birds running into panels as well as impacts to avian species from reflective surfaces and power lines. The Draft EA does not quantify the number of birds (rare, migratory or otherwise) that use/traverse the project site from the avian point count surveys (which don't seem to have been done), nor does it evaluate the impact to those birds. The revised Draft EA needs to analyze likely impacts to birds based on the point counts. Failure to provide the baseline data violates NEPA and may also lead to a violation of the Migratory Bird Treaty Act, 16 U.S.C. §§ 703–711. The Draft EA does not identify that an Avian Protection Plan is needed. The EIS should include	CBD-55	The EA describes the potential impacts to birds. Section 3.8.2.3 summarizes information detailed in the CVSR Biological Resources Assessment Report, the PG&E Reconductoring Biological Resources Report, the Topaz Solar Farm and California Valley Solar Ranch San Luis Obispo County Golden Eagle Nest Surveys, April 30 - May 10, 2010 and May 20 – 23, 2010 Final Report, and information provided in the Audubon Science – Christmas Bird Count. Appendix D-1 contains a complete list of surveys and biological assessments prepared for the CVSR Project. Appendix G contains a list of all surveys conducted for the CVSR Project, including specific survey dates; specifically point-count surveys were conducted (H. T. Harvey & Associates 2010b, available at https://lpo.energy.gov/?page_id=1514#cvsr.). Section 3.8.3.2, in addition to describing Project Design Features for Vegetation and Common Wildlife Species, describes how preconstruction surveys for nesting and breeding birds and raptors would be conducted within the recognized breeding season in all areas within 500 feet of the CVSR site, staging areas, and access roads, thus reducing impacts to reduced migratory birds and raptors,. To reduce potential impacts from electrocution and collision with power lines, the Applicant would implement Avian Power Line Interaction Committee guidelines. Further, the Applicant would implement a long-term avian mortality study of the CVSR site, documenting the level of avian mortality and taking corrective measures if mortality is deemed excessive by the CDFG and USFWS. The Biological Opinion (Appendix D-3, pp. 41, 98, 99) describes off-site preservation habitat that would be acquired and the off-site conservation areas that would be preserved and managed in perpetuity within areas of regional importance and approved by the USFWS. These conservation areas would comprise habitat that is occupied by the listed species affected by the CVSR Project or that is suitable but unoccupied and can be restored. Some of these lands would be lands that are currently disked (farmed) or have approved construction entitlements and would be actively restored. Overall, the conservation strategy of the CVSR Project would minimize the effects of the project and would result in permanent protection of suitable habitat for the listed species on lands where these habitats are currently vulnerable to conversion to

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such a plan. Additionally Executive Order 13186 states "Each Federal agency taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations is directed to develop and implement, within 2 years, a Memorandum of Understanding with the USFWS that shall promote the conservation of migratory bird populations." Because the proposed project is tied to federal actions, it too must abide by this Executive Order.		incompatible land uses such as dryland farming or viticulture. Section 3.8.2.3 discusses the preconstruction surveys and avoidance measures for migratory birds and raptors, along with other design features including those discussed in the Vegetation and Habitat and Common Wildlife Species sections, and the conservation strategy, which would ensure that adverse effects on migratory birds and raptors would be negligible, and impacts would not be significant during construction or operations. Appendix B describes the Bird Monitoring and Avoidance Plan that would be implemented to avoid and reduce impacts on avian species. The purpose of Bird Monitoring and Avoidance Plan is to provide a means for validating pre-construction predictions of fatality risk for birds and bats and, if necessary, form a basis for adaptive management; i.e., additional mitigation action to further reduce the risk of fatality when the post-construction monitoring indicates that fatality levels have exceeded acceptable thresholds. Further, an ABPP incorporating avoidance, minimization and mitigation measures into the project would ensure the CVSR Project's effects on avian species would not be significant. Together, the analysis summarized in the EA and supporting documents, and the avoidance, minimization and compensation measures that are incorporated in the CVSR Project, meet the DOE's responsibilities under Executive Order 13186. See Response G-2.
BIO-54: The Draft EA notes that burrowing owls occur on the project sites, but does not identify how many burrowing owls are present or the number of active nest burrows that occur on site. Habitat acquisition for SJKF is proposed as mitigation. Adequate acquisition of	CBD-56	As shown on Table 3.8-2, burrowing owls, a species of special concern in California, are present on the CVSR site and along the reconductoring route. Section 3.8.3.2 describes the effects on burrowing owls. As discussed in the EA, in addition to the Project Design Features for Vegetation and Common Wildlife Species, to reduce impacts to migratory birds and raptors, preconstruction surveys for nesting and breeding birds and raptors would be conducted within the recognized breeding season in all areas within 500 feet of the CVSR site, staging areas, and access roads. Specifically, the purpose of CVSR-BIO-71 (Appendix B) is to ensure that immediately prior to the start of construction, all burrowing owls that could potentially be affected by construction are identified. The Project Design Feature then sets forth a series of avoidance, minimization, and mitigation measures, which would be required to be implemented

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burrowing owl habitat needs to be acquired based on the mean foraging territory size times the number of owls. Mitigation must include lands that are native habitats on undisturbed lands, not cultivated lands, which are subject to land use changes. The Draft EA fails to do any type of avoidance, minimization, or impact analysis. Draft EA fails to provide public and decision makers adequate information on burrowing owls on the proposed project site.		should burrowing owls be discovered during the pre-construction survey. To reduce potential impacts from electrocution and collision with power lines, the Applicant would implement Avian Power Line Interaction Committee guidelines. Further, the Applicant would implement a long-term avian mortality study of the CVSR site, documenting the level of avian mortality and taking corrective measures if mortality is deemed excessive by the CDFG and USFWS. The Biological Opinion (Appendix D-3, pp. 41, 98, 99) describes the Compensatory Conservation Program comprising of on-site preservation and off-site preservation habitat that would be acquired, preserved, and managed in perpetuity by open space easement within areas of regional importance as approved by the USFWS. These conservation areas would comprise habitat that is occupied by the listed species affected by the Proposed Action or that is suitable but unoccupied and can be restored. Some of these lands would be lands that are currently disked (farmed) or have approved construction entitlements and would be actively restored. Overall, CVSR Project's conservation strategy would minimize effects and would result in permanent protection of over 9,000 acres of suitable habitat for the listed species on lands where these habitats are currently vulnerable to conversion to incompatible land uses such as dryland farming or viticulture. In accordance with the California Burrowing Owl Consortium (1995) guidelines, an area of 6.5 acres per burrowing owl pair will be preserved and managed for this species as described above. Based on these guidelines, the overall conservation acreage will compensate for impacts to burrowing owl on the CVSR Project site. Section 3.8.2.3 discusses the preconstruction surveys and avoidance measures for migratory birds and raptors, along with other design features including those discussed in the Vegetation and Habitat and Common Wildlife Species sections, and the conservation strategy, which would ensure that adverse effects on migratory birds and raptors would be negligible, and impacts would not be significant during construction or operations. Appendix B describes the Bird Monitoring and Avoidance Plan that would be implemented to

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		avoid and reduce impacts on avian species. The purpose of Bird Monitoring and Avoidance Plan is to provide a means for validating pre-construction predictions of fatality risk for birds and, if necessary, form a basis for adaptive management; i.e., additional mitigation action to further reduce the risk of fatality when the post-construction monitoring indicates that fatality levels have exceeded acceptable thresholds. Further, an ABPP incorporating avoidance, minimization and mitigation measures into the project will ensure the Project's effects on burrowing owls are less than significant.
BIO-55: The Draft EA states that none of the rare plants found on the project site are eligible for listing under the California Endangered Species Act, but six species are California list 1B plants due to rarity and threat. The Draft EA proposes no clear avoidance, minimization or mitigation strategy for these unique California species, and therefore fails to meet NEPA standards.	CBD-57	Section 3.8.3.2, Vegetation and Habitat, discusses impacts to non-federally listed, California Native Plant Society (CNPS) List 1B plant species and summarizes information on rare plants available in the CVSR Biological Resources Assessment Report (H. T. Harvey & Associates 2010b, available at https://lpo.energy.gov/?page_id=1514#cvsr.). Table 3.8-5 lists the direct effects on vegetation communities and Section 3.8.3.2 outlines the Project Design Features incorporated into the CVSR Project to minimize vegetation removal and permanent loss at the CVSR site. This includes the use of PV arrays with foundations and supporting structures that preserve most of the existing annual grassland ground cover and do not require vegetation removal for installation (except where grading otherwise required). It also includes biological monitors that would be responsible for ensuring impacts to special status species (including rare plants), native vegetation, wildlife habitat, or unique resources would be avoided to the fullest extent. Where appropriate, native vegetation would be flagged for protection. Appendix B describes additional Project Design Features, such as preparation of a revegetation plan (CVSR-BIO-115) for areas of native habitat temporarily affected during construction. The revegetation plan would incorporate California annual grassland species in areas of temporary disturbance. Personnel would avoid affecting wetlands, streambeds, and banks of any streams to the maximum extent practicable (CVSR-BIO-3); and development would maintain or improve existing hydrologic patterns with respect to runoff supporting seasonal wetlands (CVSR BIO-19). Additionally, dust would be suppressed during construction in compliance with air quality standards (CVSR-BIO-21). In addition, Project Design Features CVSR-BIO-139 and CVSR-

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		BIO-140 provide a clear avoidance, minimization and compensation strategy, which would be implemented for CNPS List 1B. With the implementation of these measures, the impacts on eligible California plants would be minor and not significant.-
BIO-56: The Draft EA fails to provide any information on, survey data for, or evaluation of rare insects on the proposed project site aside from surveys for the KPSM conducted after the publication of the Draft EA. The EIS needs to include results of surveys and an analysis of impacts on insects, in particular rare ones.	CBD-58	No rare insect species are expected to occur on the CVSR Project site. In addition to the KPSM being absent from the site, as shown on Table 3.8-2, habitat for the federally listed valley elderberry longhorn beetle is absent from the CVSR site. Based on surveys of the CVSR Project site, documentation of known locations, measures to minimize and avoid effects during construction and operation activities, and the proposal to have a USFWS-approved biologist/botanist on site during construction to assure avoidance of known or suspected occurrences of these species, the USFWS has determined that the CVSR Project is not likely to adversely affect the valley elderberry longhorn beetle. As indicated in the reconductoring Biological Assessment (ICF 2010), host plants for the valley elderberry longhorn beetle occur adjacent to the reconductoring route. The Biological Opinion (Appendix D-3, p. 3) concurred with DOE's determination that the CVSR Project is not likely to adversely affect the species. This concurrence was based on surveys of the reconductoring, documentation of known locations, and the Project Design Features including the proposal to have a USFWS-approved biologist/botanist on site during construction. No critical habitat for this species occurs in the project area, therefore none will be affected. See Response G-2 and Response BIO-1.
BIO-57: Thirty rare game species other than the pronghorn and Tule Elk have high to moderate potential to occur onsite. With the paucity of survey effort for a large proposed project site, it is conceivable that additional rare species will be discovered in	CBD-60	Section 3.8.3.2 analyzes potential impacts on wildlife movement corridors and pathways. The layout of the PV arrays incorporates movement pathways for rare game species in addition to pronghorn antelope and Tule Elk. Project Design Features include land acquisition and protection for managed and restored habitat adjacent to and around the CVSR site that would, due to restoration efforts, provide additional opportunities for rare game species. Standard cattle fencing, impermeable to some game species, will be replaced at key locations within the project site. At a minimum, 10 miles of fence in areas adjacent to and between the Topaz Solar Farm Project and CVSR Project sites that may pose barriers to movement for game species will be

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subsequent years. No evaluation or modeling was undertaken to identify potential habitat and quantify potential impacts or propose potential mitigation.		removed or modified. As outlined in Section 3.8.3.2, lands within the CVSR Project site that are not permanently converted to facilities would be included within compensatory conservation habitat. In addition, off-site habitat that is suitable for the species in question would be preserved and managed. Under the compensatory mitigation strategy described here, approximately 9,000 acres of land would be protected and managed to compensate for impacts. Some of these protected lands also would be restored and enhanced, and off-site lands would be strategically selected to enhance species benefits regionally. Section 3.8.2.1 describes the vegetation and habitat on the CVSR site. Appendix D-1 lists the surveys for both special-status species and wildlife that have been conducted on site to identify habitat and species presence. Table 3.8-2 lists CVSR and Twisselman aggregate mine sites, and Table 3.8-3 lists special status wildlife and plant species with the potential to occur along the reconductoring route. Section 3.8.3.2, describes impacts for federally listed or candidate species, as well as common wildlife species. See also Response BIO-4. The Biological Opinion (Appendix D-3, p. 102) concluded that the CVSR Project would not jeopardize the continued existence of protected species or adversely modify or destroy designated critical habitat. The USFWS reached this finding based upon analysis showing that the CVSR Project would not impede the survival and recovery of protected species. The general avoidance and minimization measures described, as well as measures to minimize and avoid impacts to special-status species, vegetative communities, and listed or special-status plants would also minimize impacts to rare game species discovered in subsequent years.
BIO-58: The Draft EA fails to address the risks associated with global climate change in the context of including both the need for climate change mitigation strategies (e.g.,	CBD-13 CBD-14 CBD-62 DOW-32	See Response CC-2.

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reducing GHG emissions) and climate change adaptation strategies (e.g., conserving intact wildlands and the corridors that connect them). The proposed project bisects the connectivity for numerous species between the CPNM and other conservation investments to the north. Habitat fragmentation, loss of connectivity for terrestrial wildlife, and the introduction of predators and invasive weed species associated with the CVSR will undermine climate change adaptation strategies. The way to maintain healthy, vibrant ecosystems is not to fragment them and reduce their biodiversity. The Draft EA does not analyze the impacts climate change will have on species and the effects of climate change on habitats of at risk species. NEPA's "hard look" requires that federal agencies consider climate change in EISs. DOE must		

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evaluate the impacts of the CVSR Project on wildlife species, wildlife habitat, and wildlife connectivity in the Carrizo Plain in light of the projected effects of global climate change, including the movement of certain species to higher elevations and/or latitudes as temperatures increase, as shifts occur in natural communities' species composition, and as changes occur in precipitation patterns.		
BIO-59: The Draft EIS fails to consider the species impacts of thousands of acres of solar panels that produce polarized light. Polarized light can serve as ecological traps that threaten populations of polarization-sensitive species, can disrupt the predatory relationships between species maintained by naturally occurring patterns of polarized light, and alter community structure, diversity, and dynamics. The Draft EA also fails to evaluate the impact	CBD-61	Fragmenting the solar-active area of solar panels lessens their attractiveness to polarotactic insects. Horvath et al. (2010) found that breaking up the polarizing black surface of solar panels utilizing nonpolarizing white borders and white grids produced a 10 to 26 fold reduction in the likelihood of aquatic insects thinking that the panels are water and depositing eggs on them. Horvath et al. (2010) estimated that, depending on the amount of space the white strips cover, the effectiveness of the solar cells may be reduced by approximately 1.8 percent. Solar panels used for the California Valley Solar Ranch project, have as part of the design white breaks formed by the spacing between the light receptive surfaces, which fragments the solar-active area of the panels. Breaking up the polarizing black surface of the solar panels with nonpolarizing white borders will significantly reduce the potential misidentification of the panel surface as open water. See revised Section 3.8.

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of the polarized light on insect reproduction.		
BIO-60: The Carrizo Plain and the CVSR project site provide habitat for numerous other sensitive species. Impacts to species including Fairy shrimp, Mountain Plover, Golden eagle, Bald Eagle, white tailed kite, San Joaquin Antelope Squirrel, California Condor, Swainson's hawk, American Badger, Coachwhip, Western Spade foot toad, and Burrowing Owl, pronghorn elk, and tule elk are inadequately identified and un-mitigated**.**	NC-12 DOW-19	See Response BIO-8 regarding impacts to fairy shrimp and the project design features that would avoid or minimize impacts. See Response BIO-1 and BIO-42 regarding project impacts to mountain plover and the project design features that would avoid or minimize impacts. See Response BIO-46 regarding impacts to golden eagle and the project design features that would avoid or minimize impacts. Also see Responses BIO-BIO-8, BIO-13, and BIO-26. See Response to BIO-47 regarding impacts to bald eagle and the project design features that would avoid or minimize impacts. See Response BIO-48 regarding impacts to white tailed kite and the project design features that would avoid or minimize impacts. See Response BIO-50 regarding impacts to San Joaquin antelope squirrel and the project design features that would avoid or minimize impacts. See Response BIO-39 regarding impacts to California condor and the project design features that would avoid or minimize impacts. Also see Response BIO-28 and BIO-2. See Response BIO-49 regarding impacts to Swainson's hawk and the project design features that would avoid or minimize impacts. See Response BIO-51 regarding impacts to American badger and the project design features that would avoid or minimize impacts. See Response BIO-52 regarding impacts to San Joaquin coachwhip and the project design features that would avoid or minimize impacts. Direct and indirect effects on western spadefoot toad from construction and operation of the proposed action have been added to Section 3.8.3.2. Project design features include conducting

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		preconstruction surveys and implementing avoidance measures such as habitat conservation, species relocation, and restoration management would ensure that adverse effects on this species would be minor (SLO County 2011a). Therefore, impacts would be not be significant during construction and operations. See Response BIO-54 regarding impacts to burrowing owl and the project design features that would avoid or minimize impacts. See Responses BIO-11, BIO-36, and BIO-37 regarding impacts to pronghorn elk and tule elk and the project design features that would avoid or minimize impacts.
CUMULATIVE IMPACTS		
CI-1: DOE fails to adequately identify and analyze the direct, indirect, and cumulative impacts of the proposed action in the context of other developments similar to the CVSR in the Carrizo Plain. In order to avoid the approval of industrial sites sprawling across and throughout the California Valley and adjacent areas, DOE must take a hard look at the reasonably foreseeable future impacts (including indirect effects) of the proposed action, including how the impacts might combine or synergistically interact to affect the environment. Furthermore,	CBD-5 CBD-17 CBD-65 CBD-66	DOE analyzed the direct and indirect environmental effects of the proposed action throughout Section 3 of the EA (see e.g., EA section 3.8.3.2, which discusses the indirect and direct impacts of the proposed action on special status species). In addition, Section 4 of the EA discusses the cumulative impacts of the proposed action (including the indirect effects resulting from all reasonably foreseeable future actions) (see, e.g., Section 4.3 of the EA, which discusses the reasonably foreseeable impacts from the proposed action and any resulting indirect effects). Pursuant to NEPA and the CEQ regulations, discussion of cumulative impacts in an EA must include some quantified or detailed information to assure the public that a federal agency has taken a hard look at the probable environmental consequences of past, present, and future actions. On the basis of all reasonably available data, the EA provides detailed and quantified information as to the past and present actions, reasonably foreseeable actions, cumulative impacts of those actions within the area of evaluation (see Sections 4.1, 4.2, 4.3, and 4.4 of the EA). While a limited degree of uncertainty exists as to future cumulative impacts—which is acknowledged by NEPA procedures as an inherent aspect of all environmental decision-making—there are no data gaps in the EA's analysis of the cumulative impacts of the proposed action. Rather, the EA makes reasonable predictions on the basis of reasonably available data to detail and quantify cumulative impacts of the proposed action, along with the effectiveness of the impact Project Design Features incorporated into the proposed action that reduce the

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DOE's cumulative impacts analysis cannot be completed until the initial identification and analysis of project impacts is finalized. Where DOE has incomplete or insufficient information, NEPA requires DOE to do the necessary work to obtain it where possible.		cumulative impacts of the proposed action to a less than significant level. Through these processes, the EA's cumulative impact findings have been informed by relevant public agencies and peer reviewed by experts (see "List of Preparers" contained in Section 5 of the EA, and "List of Entities Contacted" contained in Section 6 of the EA).
CI-2: The cumulative impacts of past, present, and future projects would be significant because of the habitat fragmentation and species displacement that would result from the effect of several solar power projects being developed in the Carrizo Plain and the Panoche Valley. Given that reasonably foreseeable actions outlined in the Draft EA threaten the long-term survival and recovery of special status species in the area of evaluation, and because those actions will result in significant impacts, an EIS is required for the proposed action. In addition, uncertainty as to the	DOW-20 DOW-21 DOW-22 DOW-23 DOW-24	Sections 4.3 and 4.4.7 of the EA describe, detail, and quantify the reasonably foreseeable future actions in the area of evaluation and cumulative effects on special status species that would result from those actions, respectively. The analysis takes into consideration the effect of the Project Design Features outlined in Appendix B and in the Biological Opinion prepared by the USFWS, which is contained in Appendix D. *See* Biological Opinion, pp. 15–45 (Appendix D-3). The EA describes the cumulative impacts from the CVSR combined with the Topaz Solar Farm and Panoche Valley Solar Farm projects, along with the accompanying expansion of roads and other infrastructure. The Project Design Features (Appendix B) incorporated into the CVSR Project address—among other issues—the cumulative impacts to special status species that may result from reduced connectivity and species displacement created by solar power project development in the Carrizo Plain and Panoche Valley. Through construction techniques that leave natural vegetation intact, efforts to preserve key habitat areas both off- and on-site, and a design that permits and facilitates the continued existence of special status species on and around the site of the proposed action, the Project Design Features reduce cumulative impacts to a level that is less than significant. DOE concluded that the Project Design Features would facilitate the continued and long-term survival of special status species in light of the reasonably foreseeable future actions in the area of evaluation. In section 4.4.7 of the EA, DOE considered the extent to which cumulative effects of solar

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effectiveness of design features such as movement pathways and compensatory lands, underscores the existing potential for significant impacts. The adverse cumulative impacts of utility-scale solar development in the Carrizo Plain and the Panoche Valley are significant and unmitigable.		project development in the Carrizo Plain may create barriers preventing the north-south movement of SJKF, tule elk, pronghorn antelope and other species dependent on landscape-level connectivity. Based upon reasonably available data and in consultation with the USFWS, DOE found that the development of both the Topaz Solar Farm and the CVSR would not prevent the movement of species throughout the Carrizo Plain. Instead, the Project Design Features—along with similar and complimentary measures incorporated in the design of the Topaz Solar Farm—provide ample and contiguous north-south corridors. DOE concluded, therefore, that development of these projects would not measurably impede the movements of species that depend upon landscape-level connectivity for their survival and productivity. In reaching this conclusion, DOE considered (i) the avoidance of core species concentrations, (ii) solar array designs that allow for species movements among the projects, (iii) fencing that similarly addresses species movement among and between solar arrays, (iv) habitat enhancement projects, and (v) the off- and on-site habitat restoration and conservation measures incorporated in the solar projects being developed in the Carrizo Plain region. In performing its cumulative impacts analysis in the EA, DOE recognizes that the reasonably foreseeable actions in the area of evaluation (i.e., the Topaz and Panoche Valley Solar Farms) will feature similar avoidance and conservation measures as the Project Design Features incorporated in the CVSR Project. These avoidance and conservation measures would be incorporated into binding conditions on the implementation of these reasonably foreseeable actions by virtue of their consultation with the USFWS under Section 7 of the Endangered Species Act. By virtue of consultation, the referenced avoidance and conservation measures become enforceable conditions in the Biological Opinions issued for the federal actions accompanying development of the Topaz and Panoche Valley Solar Farms (Appendix D-3). In addition, such measures—along with others intended to address a variety of potential impacts to various environmental values—have been made enforceable conditions on the CUPs authorizing the development of the Topaz and Panoche Valley Solar Farms. Like the CVSR, the comprehensive impact avoidance and conservation measures for these projects were evaluated and subject to public scrutiny pursuant to CEQA. DOE reasonably concluded that the Project Design Features, along with other similar measures adopted by the Topaz and Panoche

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Summary of Comment	Comment No	DOE Response
		Valley Solar Farms, would reduce cumulative impacts to a level that is less than significant. NEPA does not require DOE to eliminate all uncertainty as it concerns the effectiveness of the Project Design Features to reduce impacts on special status species to a level that is less than significant. Rather, DOE has relied upon all reasonably available data, consultation with relevant, expert agencies, and peer review from wildlife professionals to make reasonable predictions as to how the proposed action, and particularly its Project Design Features (Appendix B) would allow for and enhance habitat connectivity and ensure the long-term survival of special status species. This degree of expert consideration and agency agreement as to DOE's findings in the cumulative impact analysis is evident in the Biological Opinion contained in Appendix D-3 and the "no-jeopardy" finding reached by the USFWS—both of which make their findings on the basis of peer-reviewed analysis of the potential for cumulative impacts to result from habitat fragmentation. The USFWS found that the project is not likely to jeopardize the continued existence of the species discussed or to adversely modify or destroy designated critical habitat (Appendix D-3, p. 102).
CI-3: DOE acknowledges in the Draft EA that certain impacts from the proposed action to special status species would be of a long-term nature. Although DOE determines that this long-term impact would be minor, DOE fails to consider the cumulative effects of multiple such long-term impacts. DOE must undertake an analysis of whether the long-term impacts it acknowledges in the Draft EA would amount to individually minor but	DOW-25	Section 4.4.7 of the EA discusses the long-term but minor cumulative impacts that would result for special status species because of the proposed action. As described in responses CI-2, BIO-16, BIO-39, BIO-42, and others, DOE's conclusion that these long-term cumulative impacts on special status species are not significant is based upon analysis of reasonably available scientific data, consultation with relevant, expert agencies, and input from wildlife professionals. Furthermore, DOE has assurance as to the long-term effectiveness of the Project Design Features incorporated into the proposed action, because these measures—along with similar measures incorporated into the designs of other reasonably foreseeable actions in the area of evaluation—apply to solar power projects in the Carrizo Plain and Panoche Valley as binding conditions authorizing their operation under Section 7 of the Endangered Species Act. Thus, DOE has concluded in the EA that the long-term cumulative impacts to special status species resulting from the proposed action would be less-than significant.

CBD = Center for Biological Diversity
NC = North County Watch
KMCA = Kern Minority Contractors Association
DOW = Defenders of Wildlife
SC = Sierra Club

CALIFORNIA VALLEY SOLAR RANCH
DOE RESPONSE TO COMMENTS ON DRAFT EA

Summary of Comment	Comment No	DOE Response
collectively significant actions taking place over a period of time.		
CI-4: DOE should analyze alternatives that differ in size, scale, and location from the proposed project and that take into consideration the cumulative impacts of the CVSR, the Topaz Solar Project, the Twisselman aggregate mine, and the reconductoring of the Morro Bay-Midway transmission line, in order to ensure that impacts to the SJKF and other dispersing wildlife species on the Carrizo Plain, like the tule elk and the pronghorn antelope, are less than significant.	DOW-9	Section 2.2 of the EA describes alternative sites, operating parameters, and other project alternatives that were considered but eliminated. In preparing an EA, NEPA requires federal agencies to consider appropriate alternatives to recommended courses of action that involve unresolved conflicts concerning alternative uses of available resources. Under Title XVII of EPAct of 2005, DOE has authority to either issue or deny loan guarantees for eligible applicant projects. The EA's focus on either issuing a loan guarantee or not issuing a loan guarantee (i.e., the "no action alternative") is appropriate given DOE's authority under the loan guarantee program. See Response PA-3. EA Section 3.8.3.2, "Special Status Species" examines the protected species that inhabit the project site, including the SJKF. The EA concludes that impacts to the SJKF during construction and operations would not be significant because of micro-siting to reduce temporary impacts to densely populated areas, along with permanent preservation of large blocks of habitat both onsite and offsite (see esp., Section 3.8.2.3 of the EA, Habitat Conservation); along with other Project Design Features (Section 3.8.3.2 of the EA (pp. 3-83, 3-84). In addition, the Biological Opinion prepared by USFWS examines the indirect effects of the CVSR Project on SJKF movements, and in particular, their movements relative to wildlife corridors. See Biological Opinion, pp. 87–88 (Appendix D-3). The Biological Opinion concludes that, with the implementation of Project Design Features such as the redesign of the solar arrays and use of animal-friendly fencing to accommodate movement of animals, the robust nature of the Carrizo Plain SJKF population would be maintained. See Biological Opinion, p. 100 (Appendix D-3). See Response BIO-29.

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Abbreviations and Acronyms

ABPP	Avian and Bat Protection Plan
AFY	acre-feet per year
APCD	Air Pollution Control District
ARRA	American Recovery and Reinvestment Act
BLM	Bureau of Land Management
BNLL	blunt-nosed leopard lizard
CDFG	California Department of Fish and Game
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
Corps	U.S. Army Corps of Engineers
CPNM	Carrizo Plain National Monument
CPUC	California Public Utilities Commission
CTS	California tiger salamander
CUP	Conditional Use Permit
CVSR	California Valley Solar Ranch
DOE	Department of Energy
EPAct	Energy Policy Act
EA	Environmental Assessment
EIR	environmental impact report
EIS	environmental impact statement
FONSI	finding of no significant impact
GHG	greenhouse gas
GKR	giant kangaroo rat
KPSM	Kern primrose sphinx moth
MW	megawatts
NEPA	National Environmental Policy Act
PG&E	Pacific Gas & Electric
PPA	Power Purchase Agreement
PV	photovoltaic
RMP	Resource Management Plan
RO	Reverse Osmosis
RPS	renewable portfolio standard
SJKF	San Joaquin kit fox
USFWS	U.S. Fish and Wildlife Service
WWD	Westlands Water District

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Table G-1. BIOLOGICAL SURVEYS COMPLETED FOR CVSR PROJECT AND AGGREGATE MINE PROJECT

Survey Dates	Report Title	Species or Habitat	Area Surveyed	Report Date	Prepared by:
3/15/2010 - 3/19/2010; 3/22/2010 - 3/26/2010; 3/29/2010 - 3/31/2010; 4/1/2010 - 4/3/2010; 4/5/2010 - 4/12/2010; 4/22/2010 - 4/29/2010; 5/3/2010 - 5/7/2010; 6/7/2010 - 6/8/2010; 6/29/2010 - 7/2/2010; 7/6/2010 - 7/8/2010	California Valley Solar Ranch Special - Status Plant Survey, Final Report	California and rosace, California jewelflower, crownscale, cottony buckwheat, coulter's goldfields, diamond - petaled poppy, Ferris' goldfields, gypsum - loving larkspur, heartscale, Hoover's eriastrum, Jared's pepper - grass, Lost hills crownscale, La Panza mariposa lily, Lemmon's jewelflower, Munz's tidy - tips, oval - leaved snapdragon, pale - yellow layia, recurved larkspur, round - leaved filaree, Salinas milk - vetch, San Joaquin woollythreads, showy golden madia, Temblor buckwheat	Solar Generation Facility, Gen - Tie Line, Caliente Switching Station Sites, Aggregate Mine	18 - Nov - 10	H.T. Harvey & Associates
3/15/2010 - 3/19/2010; 3/22/2010 - 3/26/2010; 3/29/2010 - 3/31/2010; 4/1/2010 - 4/3/2010; 4/5/2010 - 4/12/2010; 4/22/2010 - 4/29/2010; 5/3/2010 - 5/7/2010	California Valley Solar Ranch: Special Status Plant Surveys Interim Survey Report	California and rosace, oval – leaved snapdragon, Salinas milk - vetch, round - leaved filaree, La Panza mariposa lily, California jewel - flower, Lemmon's jewel - flower, gypsum - loving larkspur, recurved larkspur, Hoover's eriastrum, diamond - petaled California poppy,	Solar Generation Facility, Gen - Tie Line, Aggregate Mine	30 - Jul - 10	H.T. Harvey & Associates

Table G-1. BIOLOGICAL SURVEYS COMPLETED FOR CVSR PROJECT AND AGGREGATE MINE PROJECT

Survey Dates	Report Title	Species or Habitat	Area Surveyed	Report Date	Prepared by:
		Ferris' goldfields, Coulter's goldfields, pale - yellow layia, Munz's tidy - tips, Jared's pepper - grass, showy golden madia, San Joaquin woolly threads			
6/7/2010 - 6/8/2010; 6/29/2010 - 7/2/2010; 7/6/2010 - 7/8/2010	California Valley Solar Ranch: Special Status Plant Summer Surveys Interim Survey Report	Heartscale, crownscale, Lost hills crownscale, cottony buckwheat, Temblor buckwheat	Solar Generation Facility, Gen - Tie Line, Caliente Switching Station Sites, Aggregate Mine	9 - Aug - 10	H.T. Harvey & Associates
2/22/2010 - 2/23/2010; 3/10/2010 - 3/11/2010; 3/18/2010, 6/3/2010; 8/24/2010	Biological Assessment for the Carrizo - Midway 230 kV Reconductoring Project and SunPower Switching Station	General reconnaissance surveys for all species	Reconductoring, Caliente Switching Station Sites	Nov - 10	ICF International
7/30/2008 - 8/1/2008; 8/11/2008 - 8/12/2008; 3/20/2009	Wetland Delineation and Jurisdictional Determination Report	USACE jurisdictional waters (wetlands and other waters)	Solar Generation Facility	Sep - 09	URS Corporation
2/18/2010 - 2/19/2010	Twisselman Quarry Operation/Expansion, San Luis Obispo County, California, Preliminary Delineation of Wetlands and Other Waters	USACE jurisdictional waters (wetlands and other waters)	Aggregate Mine	2 - Aug - 10	H.T. Harvey & Associates
5/4/2010 - 5/6/2010	California Valley Solar Ranch Revised Vegetation Community Map	Wildflower fields	Solar Generation Facility, Gen - Tie Line, Caliente Switching Station Sites, Aggregate Mine	27 - Oct - 10	H.T. Harvey & Associates
6/2/2010 - 6/3/2010, 6/7/2010 - 6/8/2010, 6/10/2010 - 6/11/2010	Potential Switchyard/Tie&#31; Line Alternatives	Potential jurisdictional wetlands and other waters of the U.S., other sensitive habitats, special - status	Gen - Tie Line, Caliente Switching Station Sites, Aggregate Mine	Jun - 10	H.T. Harvey & Associates

Table G-1. BIOLOGICAL SURVEYS COMPLETED FOR CVSR PROJECT AND AGGREGATE MINE PROJECT

Survey Dates	Report Title	Species or Habitat	Area Surveyed	Report Date	Prepared by:
	Biological Resources Summary	plants, giant kangaroo rat precincts, potential San Joaquin kit fox and American badger dens, burrowing owl burrows, potential San Joaquin antelope squirrel burrows, and blunt - nosed leopard lizards			
URS Field Surveys: 7/30/2008 - 8/1/2008;3/11/2009 - 3/12/2009; 3/20/2009; 7/16/2009 HTH Field Surveys: 11/17/2009; 12/1/2009 - 12/3/2009	California Valley Solar Ranch Project, San Luis Obispo County, California, Preliminary Delineation of Wetlands and Other Waters	USACE jurisdictional waters (wetlands and other waters)	Solar Generation Facility, Gen - Tie Line	29 - Dec - 09	H.T. Harvey & Associates and URS Corporation
7/28/2010	California Valley Solar Ranch Project, San Luis Obispo County, CA: Submittal of Additional Materials for the Preliminary Jurisdictional Determination	USACE jurisdictional waters (wetlands and other waters)	Solar Generation Facility, Gen - Tie Line, Caliente Switching Station Sites, Aggregate Mine	5 - Aug - 10	H.T. Harvey & Associates
8/13/2010 - 8/14/2010	Letter to USACE re: California Valley Solar Ranch Project, San Luis Obispo County, CA: Submittal of Revised Potential Jurisdictional Waters Map	USACE jurisdictional waters (wetlands and other waters)	Solar Generation Facility, Gen - Tie Line, Caliente Switching Station Sites, Aggregate Mine	26 - Aug - 10	H.T. Harvey & Associates

Table G-1. BIOLOGICAL SURVEYS COMPLETED FOR CVSR PROJECT AND AGGREGATE MINE PROJECT

Survey Dates	Report Title	Species or Habitat	Area Surveyed	Report Date	Prepared by:
2/2/2010, 2/12/2010, 3/10/2010	California Valley Solar Ranch: Wet - Season Vernal Pool Branchiopod Survey Report, Service File No. 81420 - 2010 - TA - 0313	Vernal pool branchiopods	Solar Generation Facility	22 - Jul - 10	H.T. Harvey & Associates
6/7/2010 - 6/11/2010, 6/14/2010 - 6/18/2010, 6/21/2010 - 6/25/2010, 7/6/2010 - 7/9/2010, 7/12/2010 - 7/15/2010, 8/16/2010 - 8/20/2010, 8/23/2010 - 8/27/2010	California Valley Solar Ranch Project, Blunt - Nosed Leopard Lizard Protocol - Level Survey Draft Report	Blunt - nosed leopard lizard	Solar Generation Facility, Gen - Tie Line, Caliente Switching Station Sites, Aggregate Mine	30 - Aug - 10	H.T. Harvey & Associates
6/28/2010 - 7/3/2010, 7/19/2010 - 7/23/2010, 7/26/2010 - 7/31/2010 8/2/2010 - 8/6/2010, 8/9/2010 - 8/13/2010, 8/16/2010 - 8/20/2010, 8/30/2010 - 9/3/2010, 9/14/2010 - 9/18/2010	California Valley Ranch Solar Project: California Valley Solar Ranch San Joaquin Antelope Squirrel Trapping Report - October 2010	San Joaquin antelope squirrel	Solar Generation Facility, Gen - Tie Line	Oct - 10	H.T. Harvey & Associates
9/20/2010, 9/21/2010, 9/22/2010, 9/23/2010, 9/24/2010, 9/27/2010, 9/28/2010, 9/29/2010, 9/30/2010, 10/1/2010, 11/17/2009, 11/18/2009, 11/19/2009,	California Valley Ranch Solar Project: Focused Surveys of Giant Kangaroo Rats, California Valley Solar Ranch Project Site 2009 - 2010	Giant kangaroo rat	Solar Generation Facility, Gen - Tie Line, Caliente Switching Station Sites, Aggregate Mine	Oct - 10	H.T. Harvey & Associates

Table G-1. BIOLOGICAL SURVEYS COMPLETED FOR CVSR PROJECT AND AGGREGATE MINE PROJECT

Survey Dates	Report Title	Species or Habitat	Area Surveyed	Report Date	Prepared by:
11/20/2009, 11/21/2009, 11/22/2009, 11/23/2009,					
1/2/2010	Christmas Bird Count*	Carrizo Plain California Region	Carrizo Plain California Region	March - 10	Morro Coast Audubon Society(Sponsor)
4/30/2010, 5/1/2010, 5/3/2010 - 5/4/2010, 5/6/2010 - 5/8/2010, 5/10/2010, 5/20/2010 - 5/21/2010,	Topaz Solar Farm and California Valley Solar Ranch San Luis Obispo County Golden Eagle Nest Surveys, April 30 - May 10, 2010 and May 20 - 23, 2010	Golden eagle	Ten mile radius from the Topaz Solar Farm site and CVSR Solar Generation Facility	16 - Jun - 10	Brian Latta Senior Raptor Biologist Santa Cruz, CA
5/11/2009 - 5/13/2009, 5/26/2009 - 5/29/2009, 6/2/2009, 6/4/2009, 6/9/2009 - 6/12/2009, 6/16/2009 - 6/19/2009, 6/24/2009 - 6/27/2009, 6/30/2009 - 7/2/2009, 7/7/2009 - 7/9/2009, 7/13/2009 - 7/15/2009, 8/4/2009 - 8/7/2009, 8/11/2009 - 8/13/2009, 8/19/2009 - 8/21/2009, 8/24/2009 - 8/28/2009, 8/31/2009 - 9/3/2009	Revised Biological Resources Assessment Report for the California Valley Solar Ranch Project, San Luis Obispo County, California	Special - status reptiles	Solar Generation Facility, Gen - Tie Line (partial), Aggregate Mine	18 - Dec - 09	H.T. Harvey & Associates and URS Corporation

Table G-1. BIOLOGICAL SURVEYS COMPLETED FOR CVSR PROJECT AND AGGREGATE MINE PROJECT

Survey Dates	Report Title	Species or Habitat	Area Surveyed	Report Date	Prepared by:
3/10/2009 - 3/12/2009, 10/12/2009, 11/17/2009, 12/1/2009	Revised Biological Resources Assessment Report for the California Valley Solar Ranch Project, San Luis Obispo County, California	Vernal pool branchiopods	Solar Generation Facility	18 - Dec - 09	H.T. Harvey & Associates and URS Corporation
3/10/2009 - 3/11/2009, 3/25/2009 - 3/26/2009	Revised Biological Resources Assessment Report for the California Valley Solar Ranch Project, San Luis Obispo County, California	Special - status Birds	Solar Generation Facility, Gen - Tie Line(partial), Caliente Switching Station Sites	18 - Dec - 09	H.T. Harvey & Associates and URS Corporation
7/15/2008, 7/18/2008, 7/20/2008 - 7/25/2008, 5/26/2009, 5/29/2009, 6/4/2009, 6/9/2009 - 6/10/2009, 6/15/2009 - 6/16/2009, 7/1/2009, 7/29/2009 - 7/30/2009, 8/4/2009 - 8/6/2009, 11/17/2009 - 11/23/2009, 12/1/2009, 12/14/2009 - 12/17/2009	Revised Biological Resources Assessment Report for the California Valley Solar Ranch Project San Luis Obispo County, California	Special - status Mammals	Solar Generation Facility, Gen - Tie Line (partial)	18 - Dec - 09	H.T. Harvey & Associates and URS Corporation

North County Watch

Looking Out Today For Tomorrow

May 16, 2011

Lynn Alexander
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Washington, DC 20585

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RE: Comments on DOE/EA–1840 - the Draft Environmental Assessment for the California Valley Solar Ranch (CVSR) in San Luis Obispo County, CA.

Dear Ms. Alexander:

North County Watch is a 501 3 c public benefit corporation in San Luis Obispo County. Our organization is committed to balanced and responsible development in and around northern San Luis Obispo County. Its purpose is to promote economic and environmental policies that maintain and enhance the uniqueness of our community. These comments are submitted on behalf of North County Watch (NCW).

Whereas we recognize the serious nature of Climate Change and support measures taken to lessen the impacts, including the development of renewable energy, the importance of careful environmental analysis and mitigation of impacts to threatened and endangered species cannot be overstated. Projects need to be and can be sited on lands that result in minimal environmental impacts. The purpose of careful siting and environmental mitigation is to allow for the adaptation of already endangered species to the impacts that climate will bring to their habitats. Additionally, long range planning for the sustainability of renewables such as wind and solar is essential. Expensive upgrades to existing transmission corridors, or development of new corridors are not useful, necessary, or desirable because of the nature of PV solar generation. Distributed systems located close to the end user that are located on existing facilities, whether industrial, commercial or residential, is the ideal solution and can be accomplished.

Biological Resources: The CVSR project is to be located in the Carrizo Plain, recognized as the most biologically diverse area in California and home of over 34 threatened or endangered species. The

project site is over 4,000 acres. Adverse environmental impacts would accrue to the entire site even though arrays will only occupy approximately 1,900 acres. The project will have a significant impact on the numerous endangered and threatened species. The Carrizo Plain is core habitat for numerous endangered species, including the Giant Kangaroo Rat San Joaquin Kit Fox. The project will result in significant unavoidable and un-mitigable impacts to numerous threatened and endangered species. This project is one of two being permitted for the Carrizo Plain and the cumulative impacts will result in the extirpation of species. This project should be denied by the Department of Energy and the Army Corp of Engineers.

NC-1

NC-2

NC-3

. Biological impacts are significant and un-mitigable and the analysis of these impacts is inadequate. The analyses fails to adequately identify the impacts related to the project's substantial adverse effects on biological resources and habitat modification to special status species identified in the Recovery Plan for the Upland Species of the San Joaquin Valley and analyses of the species including but not limited to the giant kangaroo rat, San Joaquin kit fox, blunt-nosed leopard lizard, golden eagle, white-tailed kite, California condor.

NC-4

The analysis is also inadequate regarding substantial interference with the movement of any native resident or migratory wildlife corridors. Protocol level surveys were not performed for the federally threatened Kern primrose sphinx moth. The proposed avoidance measures are inadequate because protocol level surveys were never performed for the species. Many "mitigation measures" for rare species include preconstruction surveys the EIR relies on those post-hoc surveys rather than information gathered as part of the environmental analysis. Failure to conduct adequate surveys prior to the environmental analysis of the project effectively eliminates the most important function of surveys - using the information from the surveys to avoid and minimize harm caused by the project and reduce the need for mitigation.

NC-5

NC-6

NC-7

NC-8

Impacts to movement corridors for the San Joaquin kit fox are not mitigated and cannot be mitigated. Regarding San Joaquin kit fox, the proposed project would reduce the width of the identified movement corridor by roughly 50 percent on the Carrizo Plain. While the proposed project designs three movement pathways for kit fox, the assumptions and conclusions that a 50% reduction in the existing movement corridor is not significant are unsupported. No scientific evidence or analysis is provided to show that kit fox will actually use the movement pathways among the solar panel arrays, or that reducing the movement corridor by 50% is not a significant impact. The project's impact on the corridors is unmitigable.

NC-9

Proposed mitigation levels are inadequate to ensure the recovery of special status species and in fact, because of the cumulative effects of two large industrial scale projects (CVSR and Topaz Solar Farm), not enough suitable habitat and mitigation lands can be indentified to mitigate impacts to a level of insignificance. Surveys for Blunt Nose Leopard Lizard, Giant Kangaroo Rat, and California Tiger Salamander are inadequate. Impacts to other species including Fairy shrimp, Mountain Plover, Golden eagle, Bald Eagle, white Tailed Kite, San Joaquin Antelope Squirrel, California Condor, Swainson's hawk, American Badger, Caochwhip, Western Spade foot toad, and Burrowing Owl are inadequately identified and un-mitigated.

NC-10

NC-11

NC-12

Agriculture: The project fails to consider and analyze the substantial conversion of agricultural lands proposed for biological mitigation measures; biological mitigations could result in an additional 7,300 acres of agricultural lands being removed from production. This project and the Topaz Soalr Ranch project will have considerable cumulative effects on agricultural lands on the Carrizo Plain.

NC-13

Missing in the DEIS analysis is consideration of alternatives that would accomplish the same goals but with little or no impacts to special status species. Westlands CREZ is an important example. It could ultimately develop 50,000 acres degraded farmlands of Central San Joaquin valley lands, located on major north south transmission lines. We are attaching a spread sheet for 93 projects in the permitting process now that are sited on lands with little or no environmental impacts as an example how we can reach our renewable energy goals without sacrificing endangered species and habitats. NC-14 NC-15

We note the following in the Draft Environmental Assessment for the Department of Energy Loan Guarantee to High Plains II, LLC for the California Valley Solar Ranch Project in San Luis Obispo County and Kern County, California.

2.2 Alternatives Considered but Eliminated

The EA incorporates by reference numerous misstatements of fact from the EIR's alternatives analysis, which the Department should correct in the context of a full EIS. NC-16

The EA also incorrectly cites the EIR as having concluded that "Lands in these locations [Westlands Water District] were deemed infeasible as alternatives for the CVSR Project due to the lack of available transmission capacity and the inability to develop such capacity within the term of the existing PPA or in the foreseeable future. In addition, these sites were rejected due to their status as protected agricultural lands under binding contracts with the State of California to remain in active production under the California Land Conservation Act of 1965 (Williamson Act). Removal of these contracts to assemble a comparable site for the CVSR would require a minimum of 10 years. These lands were further rejected due to the substantially reduced insolation values for production of solar energy pursuant to the PPA with PG&E" (2-29). NC-17

In fact, the EIR concluded that transmission capacity on the Westlands "Potentially meets objective - uncertain" and acknowledged that the Westlands site has 800MW of existing transmission capability with minor upgrades. The EIR conceded that the difference in insolation between the Carrizo and Westlands, both classified as high solar resource areas, is minor, was not a barrier to developing on Westlands, and did not render it infeasible as a project alternative. The applicant has asserted that they could build a Westlands alternative project in "five to seven years." (Sunpower Director of Permitting Renee Robin, San Luis Obispo County Planning Commission hearing, 01.27.11). Thus this alternative would in fact meet the goal of helping PG&E to meet the state's target of 33 percent renewable energy delivery by 2020. NC-18

The EA compares the project's generating capacity to "rooftop PV potential in San Luis Obispo and Kern counties in the year 2016" (2-29) instead of to rooftop PV potential throughout the PG&E service area, and does not cite the source and date of this statistic, of the parameters of the study. Energy & Environmental Economics and Black & Veatch, RETI's engineering contractor, estimate 2,922 MW of distributed PV capacity on large commercial roof space near distribution substations within PG&E's NC-19

service territory. This does not include residential, ground-mounted or small and medium commercial rooftop PV, and represents a generating capacity more than 30 times that of the proposed project.

The EIR stated "because a distributed solar PV alternative would be located throughout the state, the insolation at some of these locations would be less than in the Carrizo Plains." The EIR fails to note that any decreased power generation due to reduced insolation values that may be incurred in a distributed solar alternative would likely be compensated or cancelled out by the elimination of line loss from the Preferred Project's central generating station. NC-20

In positing the "limited installations" of large-scale distributed solar projects as a challenge to implementation of distributed PV alternative, the EIR failed to note that examples of large-scale central station solar power plants in California larger than 20 MW are actually more "limited" (there are none) than large-scale commercial PV. NC-21

The EIR stated that "an additional 250 MW to eliminate the need for the proposed project…would require an even more aggressive deployment of PV at more than double the historic rate of solar PV than the California Solar Initiative Program currently employs." The CSI program has no bearing on the ability of the solar industry to carry out simultaneous, multiple, large-scale distributed PV projects in California. These projects are being built under long-term power purchase agreements (PPAs) between the distributed PV project developer and a utility within the framework of the RPS program. No incentives beyond those already available (federal investment tax credit, accelerated depreciation) would be necessary to build 250 MW of distributed PV under a long-term PPA as a feasible alternative to the Proposed Project. NC-22

The EIR cited a 2009 CPUC study that found "the cost of a high distributed generation case is significantly higher than the other 33 percent RPS alternative cases," and goes on to state that "the applicant compared the cost per watt for the California Valley Solar Ranch, residential PV, and commercial PV and found that the CVSR was approximately $4.55/W (using Energy Commission data), compared with $9.02/W for residential PV, and $8.05/W for commercial PV (using CPUC data)". The cost assumptions were incorrect in the 2009 CPUC study, and are obsolete today. (The EIR vaguely noted "dramatic cost reductions" in residential and commercial solar PV technology since 2007.") To determine the feasibility of the distributed solar PV alternative, an EIS needs to be prepared comparing actual and current figures for the applicant's estimated cost per watt of the CVSR and the current cost of state-of-the-art distributed PV. NC-23

The EIR dismissed the distributed PV alternative from consideration because "It is likely going to be essential to use both utility-scale and distributed renewable technologies to meet the state's 33% RPS requirement." We question what this general observation has to do with the requirement to analyze alternatives to the California Valley Solar Ranch Project to determine whether an alternative could meet the specific project objectives and what its environmental impacts would be. This was an insufficient basis for eliminating the distributed PV alternative from detailed analysis, as was the accompanying rationale offered for doing so, re "the limited numbers of currently existing facilities," as noted above. Neither rationale supported the EIR's conclusion: "As a result, this technology is eliminated from detailed analysis as an alternative to the CVSR project." NC-24

We note that even with the flawed analysis and obsolete figures used in the EIR, distributed PV is clearly environmentally superior to both the proposed project and the reduced acreage alternative, and is acknowledged as such. The DOE's analysis should note that a distributed PV project and/or central station solar project in the Westlands CREZ are feasible alternatives that would achieve the NC-25

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fundamental goals of the project with virtually none of the environmental impacts related to the proposed project. NC-25 Cont.

The EIR's seriously flawed alternatives analysis should mandate the Department's preparation of an Environmental Impact Statement. NC-26

The re-conductoring phase and the construction of one of the two necessary substations were estimated in 2008 to be 40 to 50 million dollars for the re-conductoring and 25 to 35 million dollars for just one substation. This is 65-85 million dollars that will be borne ultimately by the ratepayers and it is an unnecessary expense because equivalent MW renewable could be sited in areas requiring less upgrade to the grid. See attached document "PG&E 2008 Electrical Grid Expansion Plan." NC-27

The Twisselman Mine: is not a "borrow pit" but has been operating out of compliance and is under an enforcement action at this time. NC-28

Air Quality and GHG: Impacts to Green House Gases is flawed where it claims beneficial reduction in GHG emitted by fossil fuel fired generating plants because no fossil fuel generating plants have been identified for closure as a result of the project. Any benefit in reduction of GHG linked to the closure of fossil fuel fired generating plants is speculative. NC-29

The GHG analysis needs to estimate the GHG impact of recycling the project components at end of life.

Water Use: We have looked at the proposed water use number of 39 AFY in a number of ways and do not see how the requirements for the following purposes: concrete manufacturing, dust control, panel washing, sanitary uses, landscaping, and reverse osmosis can be satisfied with 39 AFY of water. NC-30

If we consider only the total areas reported for "Area and Length of Access Roads" stated to be 192 acres, the daily water use per acre of road is generously calculated at 7 gallons per one foot x 24 foot wide roadbed[i]. (See calculations in endnote). Or, approximately ½ inch depth of water over the 1x24 foot surface.

The project area of disturbance is 1,900 acres. Presuming that there will be 3 phases of construction, over each of the three years of construction, one third, or 633 acres of land will be disturbed and require dust control during each year of construction. 39 AFY spread over 633 acres conservatively allows 80 gallons per day per acre for dust control[ii].

At these low rates of application it is difficult to see how water application could exceed daily evapo-transpiration for an area that has low humidity level - summer and winter – and daily summer temperatures regularly exceeding 100F. Based on daily evapo-transpiration number for Cuyama for July of .275, or Bakersfield at .32[iii], daily evaporation would exceed 7,000 gallons per acre per day.

Using calculations submitted to the California Energy Commission on the Ridge Crest Solar Power Project (http://www.energy.ca.gov/sitingcases/solar_millennium_ridgecrest/documents/others/2010-01-14_scoping_comments/Don_Decker_Public_Scoping_Comments_TN-54936.pdf) which estimate

a use of 2800 gallons per day per acre for dust control, 39 AFY distributed over 250 days would allow a 2800 acre per day application rate over 18 acres per day, i.e. 6.2 miles of roadbed.

NC-30 Cont.

The San Joaquin Valley Air Pollution control District published the following Regulation for determining minimum gallonage water application rates to control fugitive dust: 1800 gallons per mile for 24 feet of road width[1]. Each road mile of the CVSR Project (5,280x24) equals 2.9 acres for a minimum water application rate of 5,220 gallons per acre of roadbed. The CVSR Project has 192 acres of roads = 1,002,240 or 3.1 acre feet for one application of all road areas. 39AFY divided by 3.1 = 12.5 applications of water per year for the entire 192 acres at the rates suggested by the San Joaquin Valley APCD.

Application rates for dust control as approached from any of the criteria above, reveal a water use picture that consumes the more than the estimated 39AFY for dust control alone. There are 720,000 PV panels in the project (p. B-8) Applicants have stated that the panels will be washed twice a year and each panel will require 1.1 gallon of water. Panel washing twice a year will consume 4.9 AFY of water[iv] Reverse Osmosis generates approximately 30% reject water as brine – no estimate of how much water will be processed through the RO system. The well water for the site is brackish and has 4,940 mg/L TDS (total dissolved solids). The panel washing water will have to be purified in the RO system. Assuming a conservative 25% loss for reject water, panel washing demands will require 5.9 AFY.

NC-31

The water usage estimates are unrealistic.

Thank you for your consideration of our comments.

Susan Harvey, President

Attachments: Power Point "PG &E 2008 Electrical Grid Expansion Plan."

Excel spreadsheet of projects with low environmental impacts

[i] 325,851(gallons per AF)x39AFY=12,708,189 gallons annually); 12,708,189/192 acres of 24 foot wide roadbed = 66,188 gallons of water annually per acre of road; 66,188/250 day work year = 265 gallons per day per acre of roadbed; 43,560 square feet in an acre/24 foot roadbed width = 1818 feet of roadbed per acre; 1818/265=7 gallons of water per one foot of 24 foot wide roadbed daily for dust control

[1] http://www.valleyair.org/busind/comply/PM10/forms/REG%20VIII%20FPMP%20Complete%20Packet.pdf p. 20

[ii] 325,851x39=12,708,189 gallons annually / 633 annual acre disturbance = 20,076 gallons of water annually per acre / 250 work days = 80.304 gallons per acre per day for dust control

[iii]

AVERAGE MONTHLY EVAPORATION FROM CLASS 'A' PAN IN IRRIGATED PASTURE ENVIRONMENTS NEAR BAKERSFIELD, CALIFORNIA FROM 1958-2009
Evaporation in inches

Month	Average	STD DEV	STD Error
January	1.44	0.34	0.05
February	2.26	0.46	0.06
March	4.12	0.71	0.10
April	5.96	0.87	0.12
May	8.35	0.82	0.12
June	9.56	0.79	0.11
July	9.92	0.81	0.11
August	8.84	0.71	0.10
September	6.62	0.64	0.09
October	4.47	0.43	0.06
November	2.23	0.36	0.05
December	1.35	0.36	0.05
Mar-Oct Total	57.83	0.72	0.10
Jan-Dec Total	65.11	0.61	0.09

[iv] 2.2x720,000=1,584,000/325,851=4.86

North County Watch P.O. Box 455 Templeton, CA 93465

PG&E's
2008 Electric Transmission Grid Expansion Plan

San Joaquin Valley and Los Padres

Isaac Read

November 20, 2008

Folsom, CA

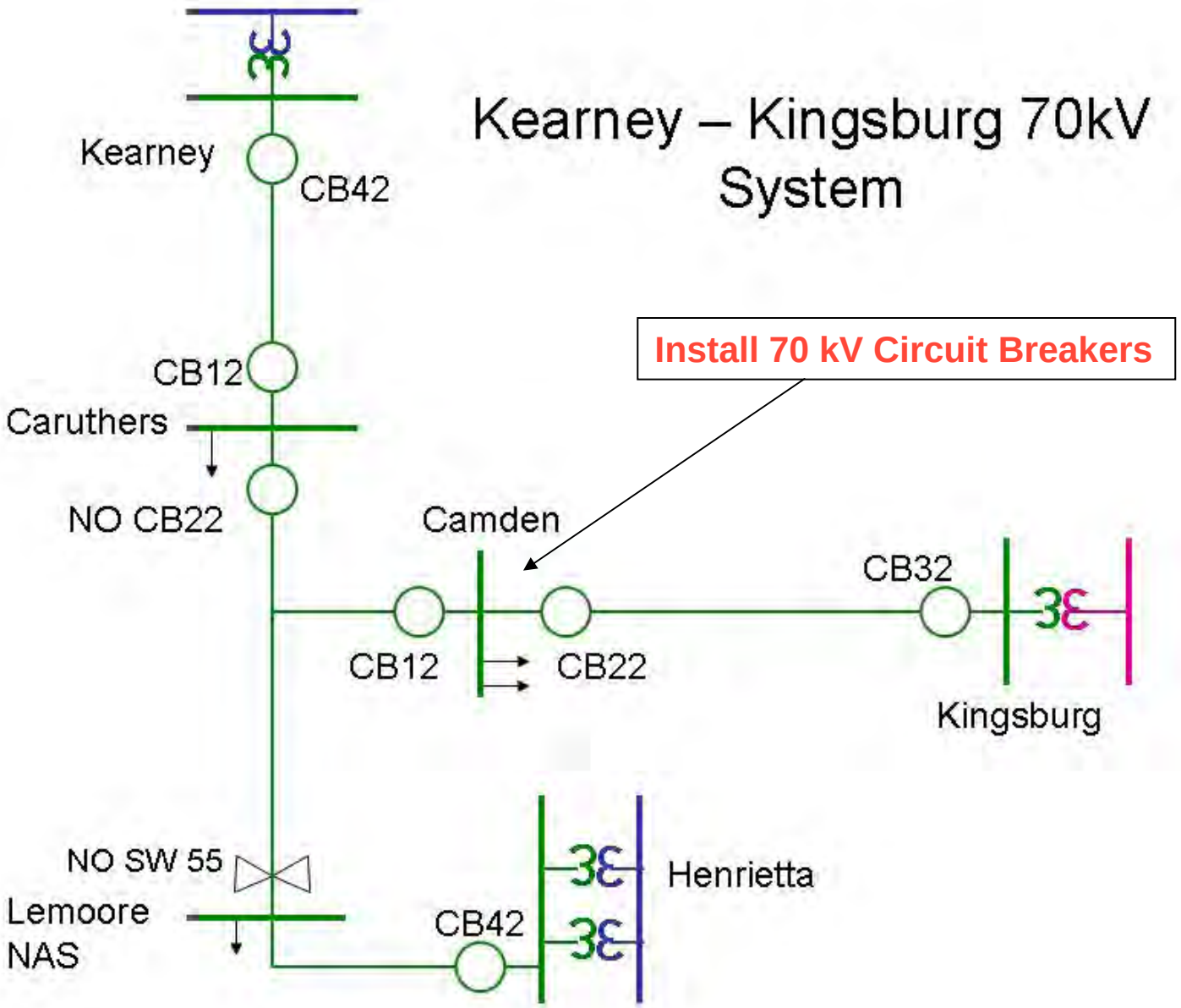
Transmission Projects Overview

- **Projects Seeking CAISO Approval**
  - Camden 70 kV Breaker Installation (May 2009)
  - Wilson – Oro Loma 115 kV Line Reconductor (May 2009)
  - Cassidy 70 kV Breaker Installation (May 2010)
  - Herndon 115 kV Circuit Breaker Replacement (May 2010)
  - Sanger – Reedley Area Reinforcement (May 2010)
  - Sanger – California Ave. 70 kV to 115 kV Voltage Conversion (May 2010)
  - Guernsey – Henrietta 70 kV Line Reconductor (May 2011)
  - Herndon 230/115 kV Transformer Installation (May 2011)
  - Kern – Old River Line Reconductor (May 2011)
  - Midway – Renfro 115 kV Line Reconductor (May 2011)
  - Shepherd Substation Interconnection (May 2011)
  - West Fresno 115 kV Bus Upgrade (May 2011)
  - Caruthers – Kingsburg 70 kV Line Reconductor (May 2012)
  - Cressey – Gallo 115 kV Line Installation (May 2012)
  - 230 kV Solar Switching Station (May 2010)
  - Morro Bay – Midway 230 kV Line Reconductor (May 2011)

San Joaquin Valley Projects Recommended for Submittal into Request Window

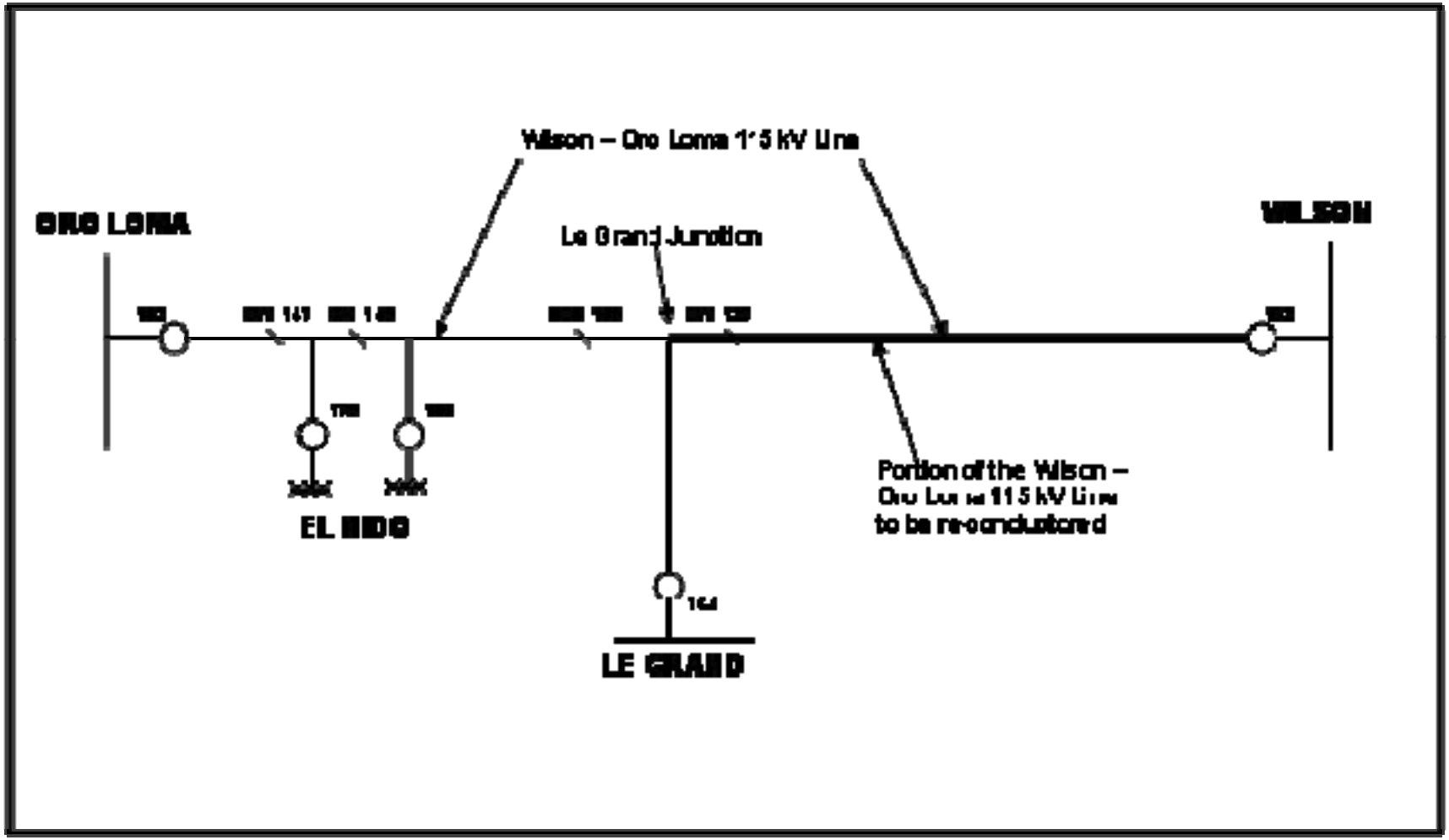
Camden 70 kV Breaker Installation

- **Background**
  - Camden is a distribution substation located in Fresno County and supports the greater Riverdale area.
  - Camden Substation is radially served via the Caruthers-Kingsburg 70 kV transmission line.
  - The Caruthers-Kingsburg 70 kV Line is comprised of approximately 40 circuit miles (including all tap lines) of various conductor sizes and is constructed mainly on single wood poles
- **Assessment**
  - Loss of the Caruthers-Kingsburg 70 kV Line (L-1)
    - Radial load at Camden would be dropped
- **Scope**
  - Install a 70 kV bus with circuit switcher with SCADA, and two 70 kV line circuit breakers with SCADA at Camden Substation
- **Other Alternatives Considered**
  - Install 70 kV Ring Bus at Camden Substation
- **In Service Date**
  - May 2009
- **Cost**
  - $2M-$4M


Kearney – Kingsburg 70kV System
Install 70 kV Circuit Breakers
Kearney
CB42
CB12
Caruthers
NO CB22
Camden
CB12
CB22
CB32
Kingsburg
NO SW 55
Lemoore
NAS
CB42
Henrietta

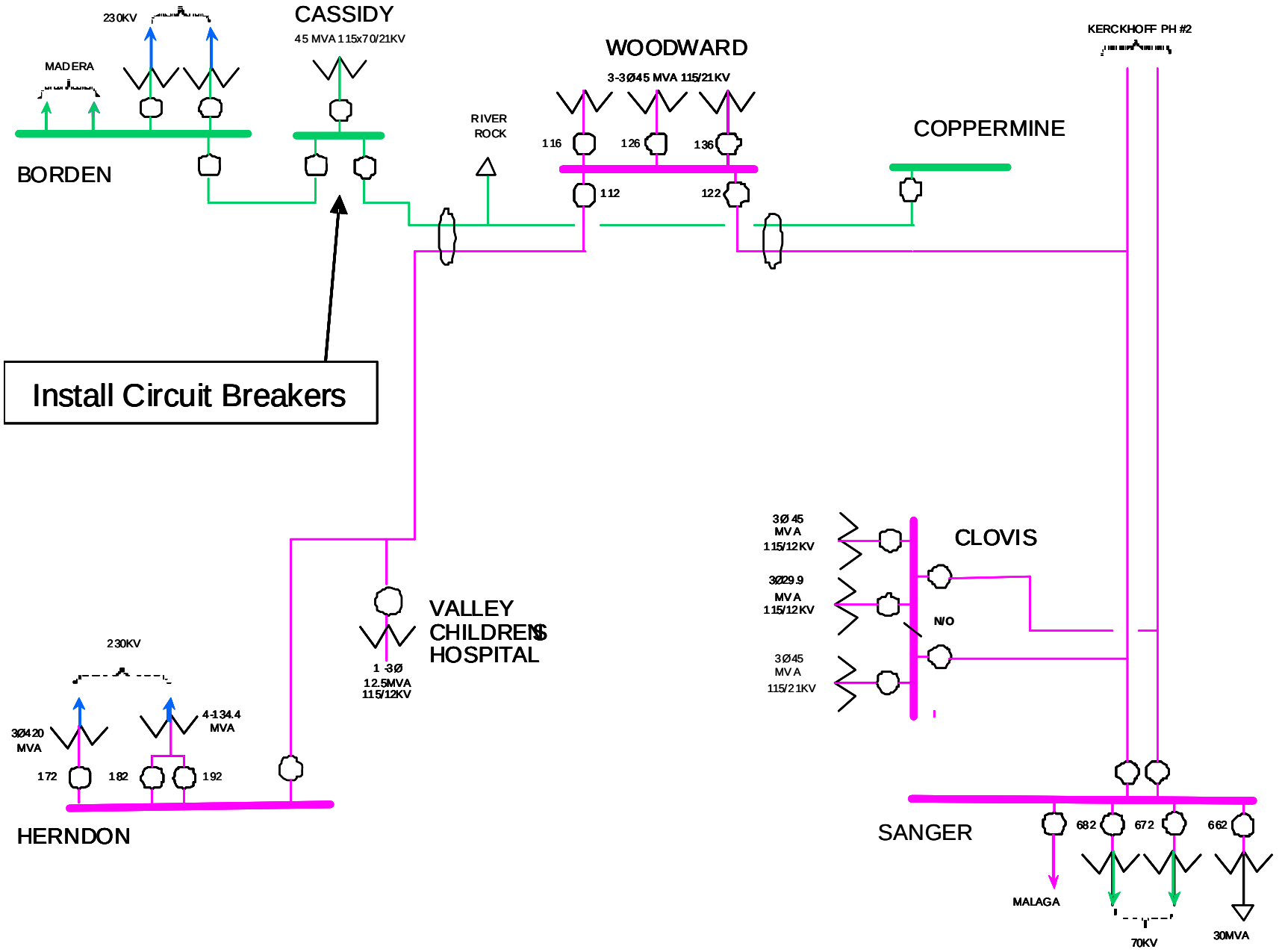
Wilson – Oro Loma 115 kV Line Reconductor

- **Background**
  - Panoche Energy Center, LLC, plans to install a 401 MW combined cycle generating facility (PEC), near the Company's Panoche Substation In June 2007,
  - the Company and the CAISO completed a generation interconnection study for PEC .
- **Assessment**
  - Wilson – Oro Loma 115 kV Line does not have adequate capacity to allow the reliable full delivery of PEC power to the grid.
- **Work Scope**
  - Reconductor 5.25 miles of 115 kV line between Wilson Substation (Tower 2/4) and Le Grand Junction (Tower 8/2) with carrying a minimum ampacity rating of 631 Amps.
- **Other Alternatives Considered**
  - Install a Special Protection Scheme (SPS) at Herndon Substation
- **Unit Cost Range**
  - $2M - $3M
- **In Service Date**
  - May 2009


Wilson – Oro Loma 115 kV Line
ORO LOMA
Le Grand Junction
WILSON
EL RIDO
Portion of the Wilson –
to be re-conductored
LE GRAND

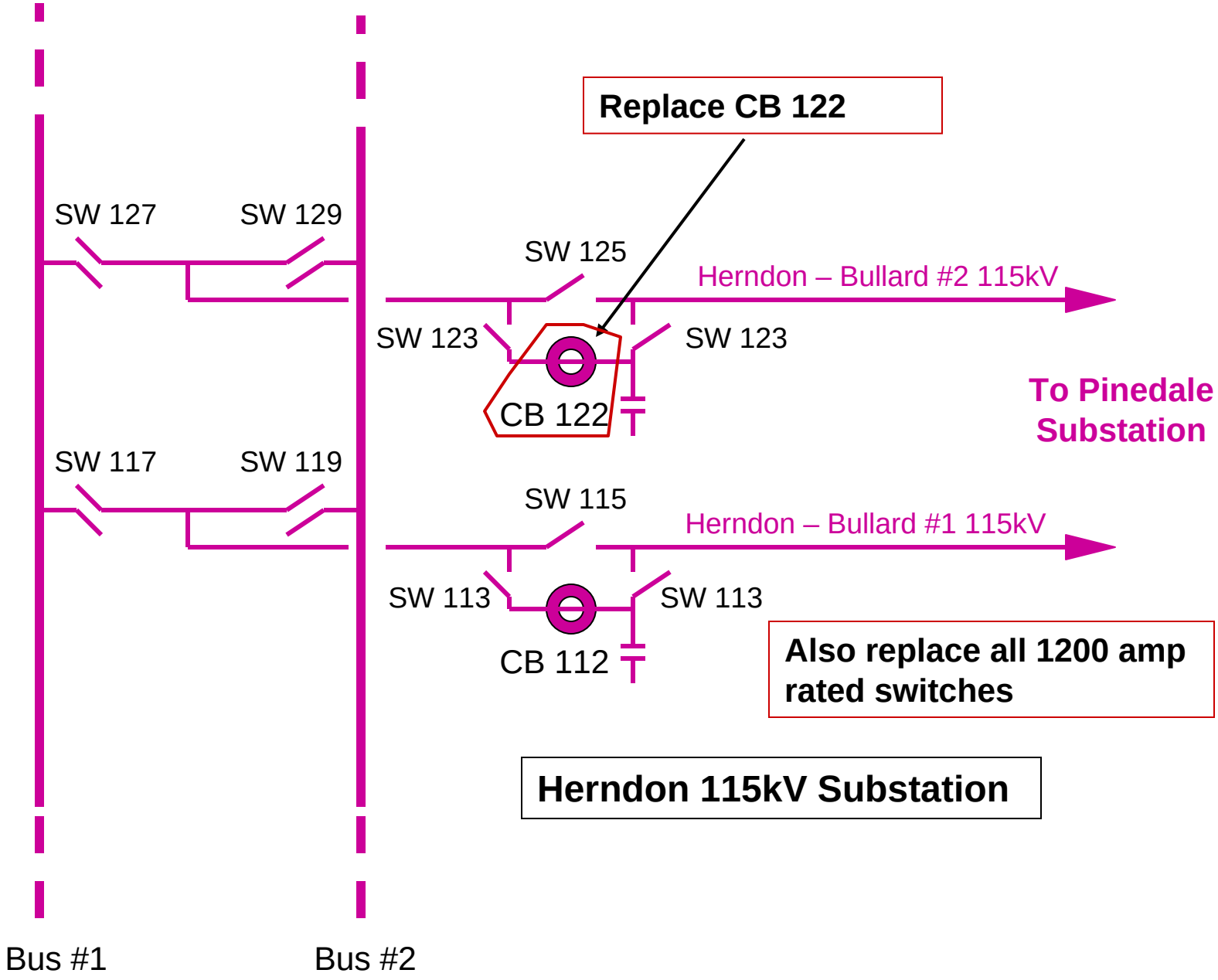
Cassidy 70 kV Breaker Installation

- **Background**
  - Cassidy is a distribution substation located in Fresno County and supports the greater Northern Fresno area.
  - Cassidy Substation is served via a single tap off the Borden-Coppermine 70 kV transmission line.
  - A maintenance project has been initiated to upgrade Cassidy Bank No. 1 to a 115x70/21 kV 45 MVA transformer. EDRO for this project is May 2010.
- **Assessment**
  - Loss of the Borden-Coppermine 70 kV Line (L-1)
    - Load at Cassidy would be dropped
- **Scope**
  - Install two 70 kV line circuit breakers with SCADA and a UVLS scheme at Cassidy Substation.
- **Other Alternatives Considered**
  - Install 70 kV ring bus at Cassidy Substation
  - Convert Borden-Coppermine 70 kV Line to 115 kV service
- **In Service Date**
  - May 2010
- **Cost**
  - $2M-$4M


230KV
MADERA
BORDEN
CASSIDY
45 MVA 115x70/21KV
RIVER
ROCK
WOODWARD
3-3Ø45 MVA 115/21KV
116
126
136
112
122
COPPERMINE
KERCKHOFF PH #2
Install Circuit Breakers
VALLEY
CHILDRENS
HOSPITAL
1-3Ø
12.5MVA
115/12KV
230KV
3Ø420
MVA
4-134.4
MVA
172
182
192
HERNDON
3Ø45
MVA
115/12KV
3Ø29.9
MVA
115/12KV
3Ø45
MVA
115/21KV
N/O
CLOVIS
SANGER
682
672
662
MALAGA
70KV
30MVA

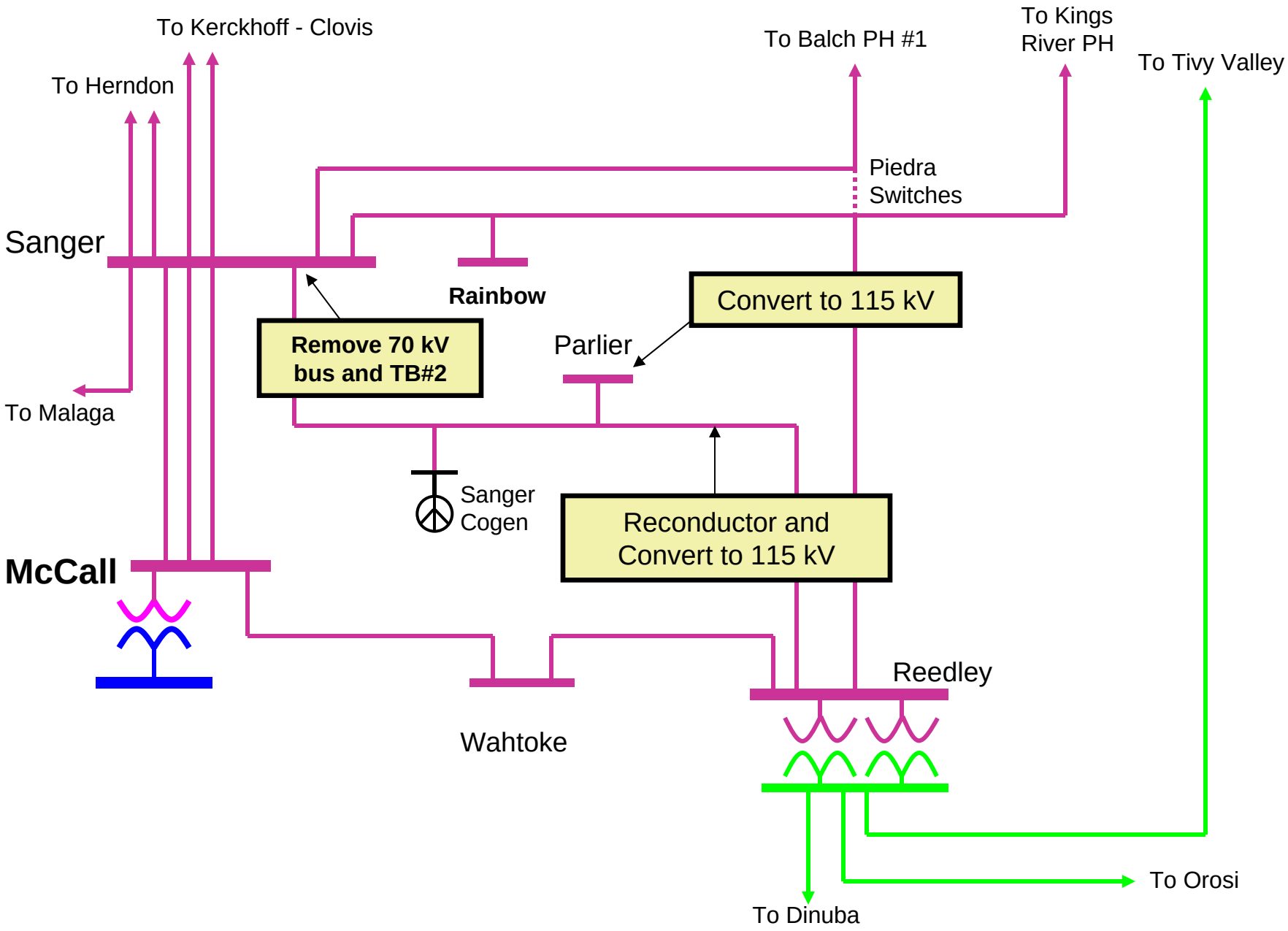
Herndon 115 kV Circuit Breaker Replacement

- **Background**
  - Herndon Substation is located in Fresno County and serves as the only source to both Pinedale and Bullard substations.
  - Herndon-Bullard 115 kV Line Number (No.)1 and No. 2 are currently limited to 1200 amps by Herndon Circuit Breaker (CB) No. 122 and associated switches on both Herndon CB No. 122 and CB No. 112.
- **Assessment**
  - Loss of either Herndon-Bullard 115 kV Line #1 or #2
    - Overloads the remaining Herndon-Bullard 115 kV Line.
- **Scope**
  - Replace Herndon 115 kV CB No. 122 and its associated switches rated to 2,000 amps or higher
- **Other Alternatives Considered**
  - Status Quo
- **In Service Date**
  - May 2010
- **Cost**
  - $1M - $3M


Replace CB 122
SW 127
SW 129
SW 125
Herndon – Bullard #2 115kV
SW 123
SW 123
CB 122
To Pinedale Substation
SW 117
SW 119
SW 115
Herndon – Bullard #1 115kV
SW 113
SW 113
CB 112
Also replace all 1200 amp rated switches
Herndon 115kV Substation
Bus #1
Bus #2

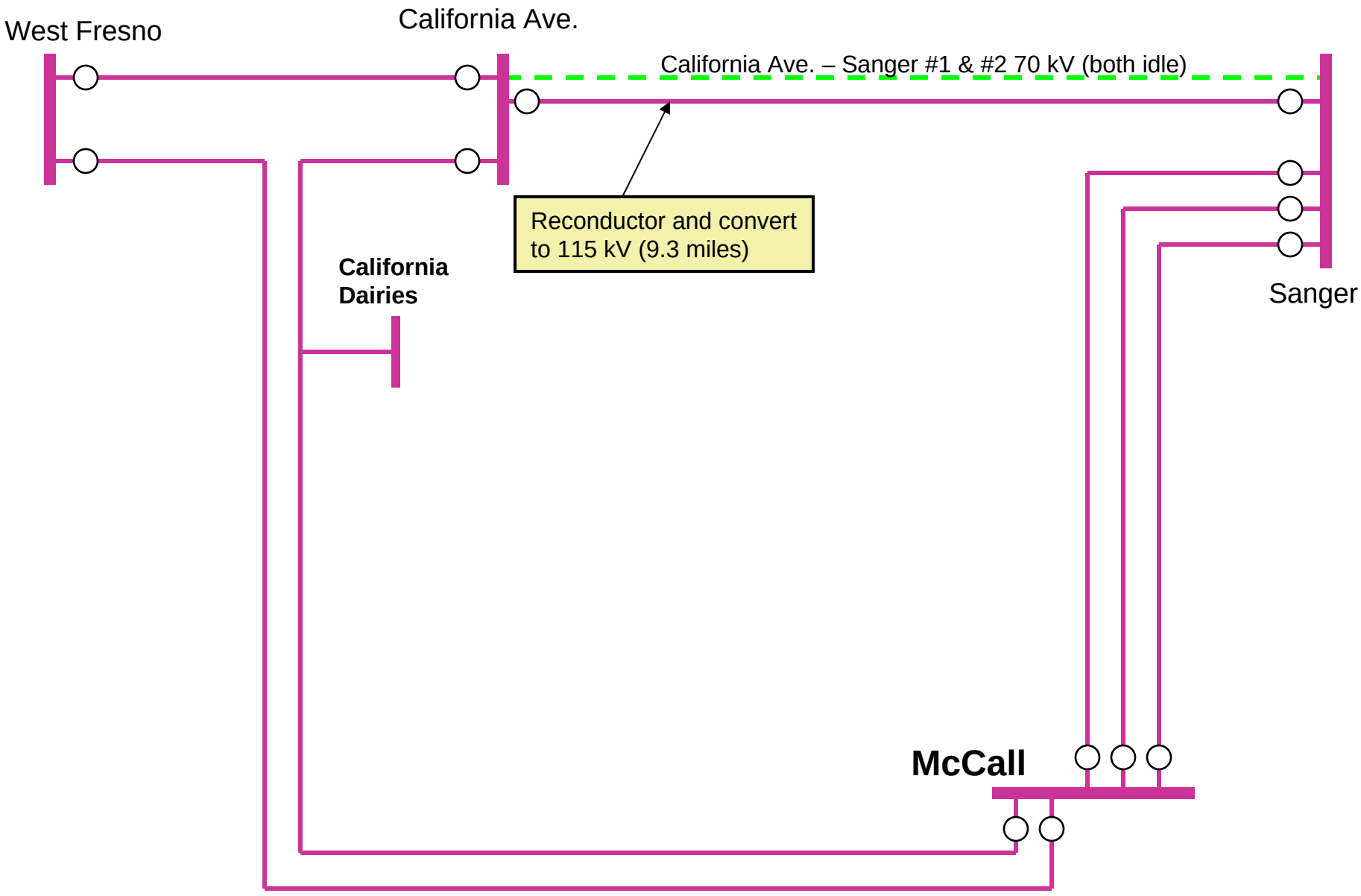
Sanger-Reedley Area Reinforcement Project

- **Background**
  - Reedley 70 kV system is located east of Fresno and is served via McCall Substation on the McCall-Wahtoke 115 kV Line.
  - Alternate source is Sanger Substation via Sanger-Reedley 70 kV and Kings River-Sanger-Reedley 115 kV lines.
- **Assessment**
  - Loss of the McCall-Wahtoke 115 kV Line and Kings River PH or Sanger Cogen offline (L-1/G-1)
    - Overloads Sanger-Reedley 70 kV Line in 2010
    - Overloads Kings River-Sanger-Reedley 115 kV Line in 2013
- **Scope**
  - Convert Sanger-Reedley 70 kV Line to 115 kV operation, upgrade line with a conductor capable of 900 Amps emergency.
  - Convert Parlier Substation and require Sanger Cogen to convert to 115 kV operation.
  - Convert Reedley 115 kV bus to BAAH
- **Other Alternatives Considered**
  - Reconductor 47 miles of Sanger-Reedley 70 kV and Kings River-Sanger-Reedley 115 kV lines
  - New McCall-Reedley 115 kV Line
- **In Service Date**
  - May 2010
- **Cost**
  - $20M - $25M


To Kerckhoff - Clovis
To Herndon
To Balch PH #1
To Kings River PH
To Tivy Valley
Piedra Switches
Sanger
Rainbow
Convert to 115 kV
Remove 70 kV bus and TB#2
Parlier
To Malaga
Sanger Cogen
Reconductor and Convert to 115 kV
McCall
Reedley
Wahtoke
To Orosi
To Dinuba

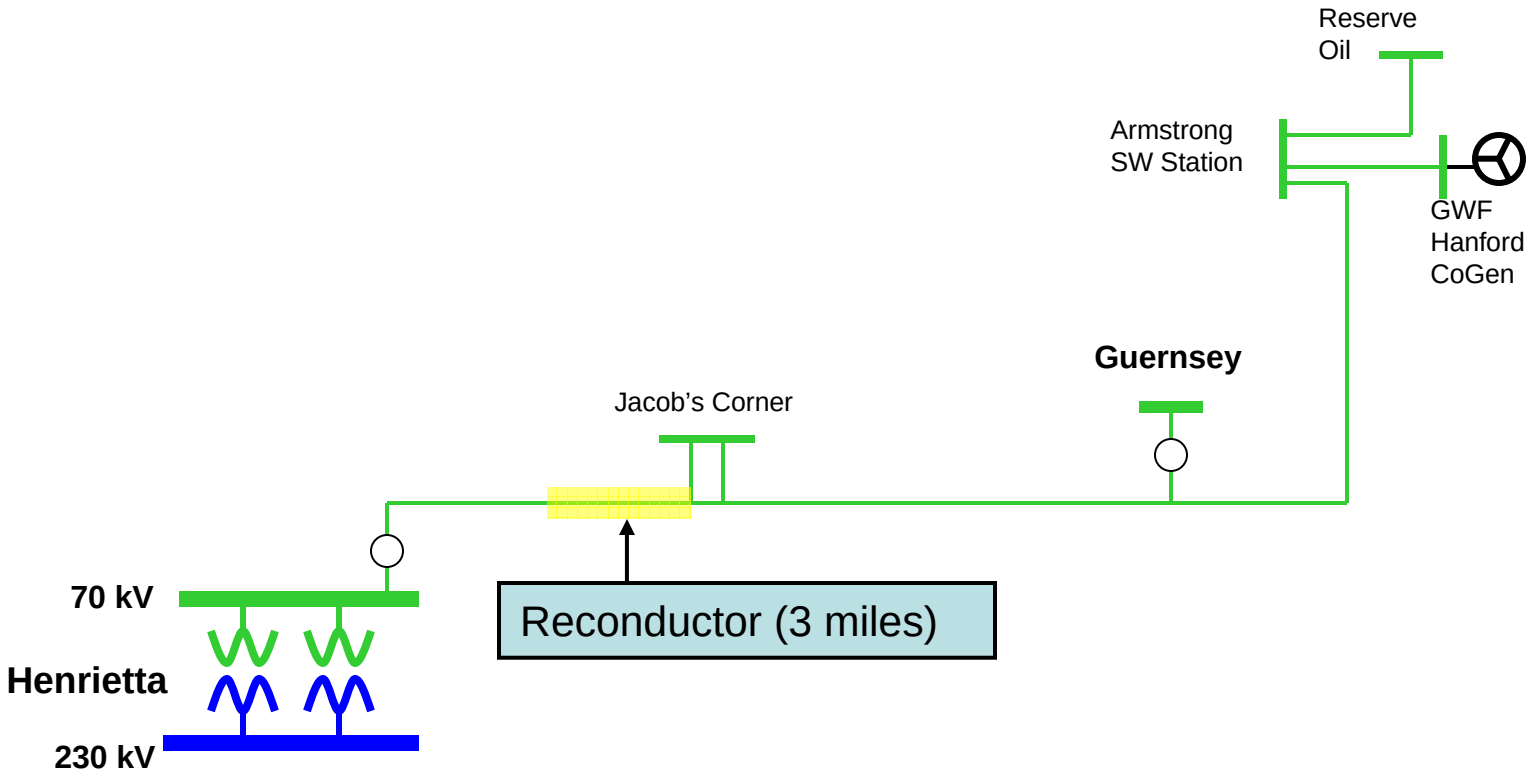
Sanger-California Ave 70 kV to 115 kV Conversion

- **Background**
  - California Ave and West Fresno Substations are located in southwest Fresno.
  - McCall Substation serves both West Fresno and California Ave via McCall-West Fresno and California Ave-McCall 115 kV lines. West Fresno-California Ave 115 kV Line connects the two substations.
- **Assessment**
  - Loss of either McCall-West Fresno or California Ave-McCall 115 kV lines (L-1)
    - Low Voltage conditions on West Fresno and California Ave 115 kV buses
    - Overloads California Ave-McCall 115 kV Line in 2018
- **Scope**
  - Convert idle Sanger-California Ave 70 kV Line #2 to 115 kV operation. Upgrade line with conductor capable of 900 Amps emergency rating.
- **Other Alternatives Considered**
  - Install 75 MVArs of shunt capacitors at either West Fresno or California Ave
- **In Service Date**
  - May 2010
- **Cost**
  - $5M - $10M


West Fresno
California Ave.
California Ave. – Sanger #1 & #2 70 kV (both idle)
Reconductor and convert to 115 kV (9.3 miles)
California Dairies
Sanger
McCall

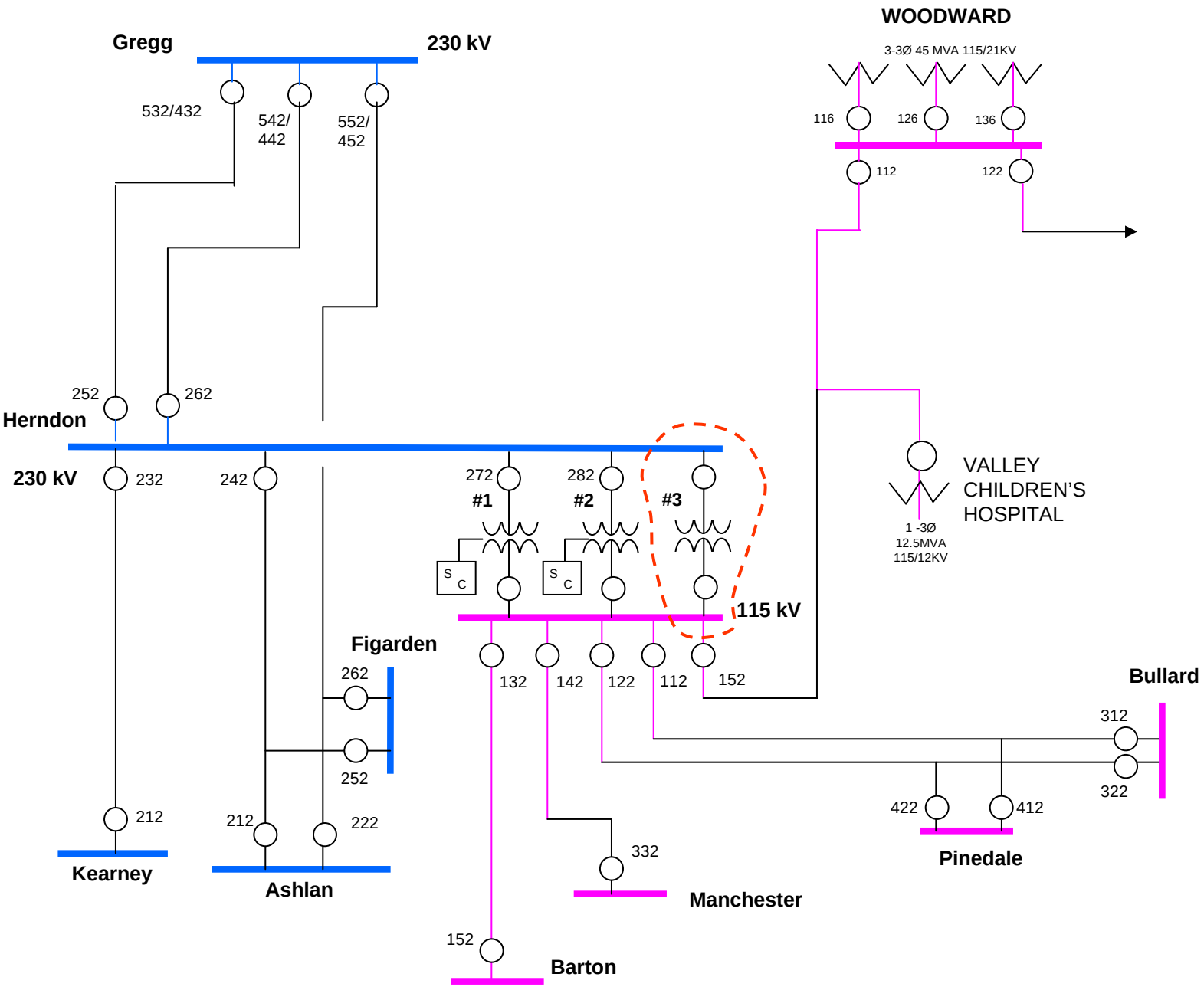
Guernsey-Henrietta 70 kV Line Reconductoring

- **Background**
  - Guernsey-Henrietta 70 kV Line is located in Kings County and radially serves Jacobs Corner, Guernsey, and Reserve Oil substations and GWF Hanford generation.
  - Henrietta to Jacobs Corner section of line re-rated to 4 fps wind speed in 2004.
- **Assessment**
  - Loss of GWF Hanford (G-1) overloads a three mile line section between Henrietta and Jacobs Corner substation.
- **Work Scope**
  - Reconductor three mile limiting section of Guernsey-Henrietta 70 kV Line with a conductor capable of 975 Amps emergency.
- **Other Alternatives Considered**
  - Build new 70 kV line from Henrietta to Jacobs Corner Substation
- **In Service Date**
  - May 2011
- **Cost**
  - $1M - $5M


Reserve
Oil
Armstrong
SW Station
GWF
Hanford
CoGen
Guernsey
Jacob's Corner
70 kV
Henrietta
230 kV
Reconductor (3 miles)

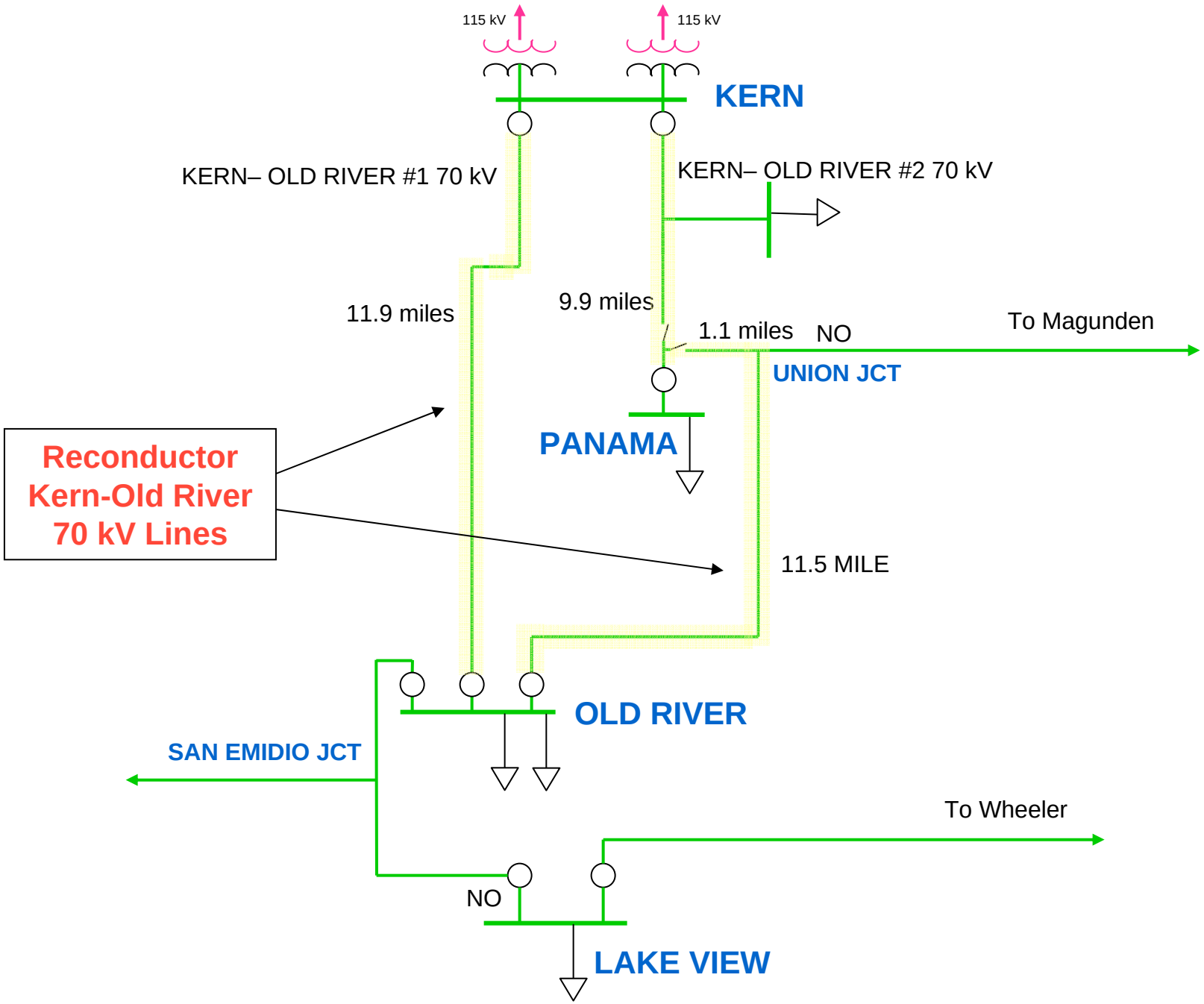
Herndon 230/115 kV Transformer Installation

- **Background**
  - Herndon Substation is located in Fresno County and serves over 100,000 electric customers in the Fresno metropolitan area.
  - The total peak demand for this area is expected to grow at a rate of just under 3.0% per year
  - There are currently two 420 MVA 230/115 kV Transformers at Herndon Substation
- **Assessment**
  - Loss of either Herndon 230/115 kV Transformer No. 1 or 2 (T-1)
    - Overloads parallel Herndon 230/115 kV transformer by 2013
- **Scope**
  - Install a third 420 MVA 230/115 kV Transformer Bank at Herndon
  - Expand 230 and 115 kV buses for necessary terminals
- **Other Alternatives Considered**
  - Status Quo
- **In Service Date**
  - May 2011
- **Cost**
  - $10M - $15M


Gregg
230 kV
532/432
542/
442
552/
452
252
262
Herndon
230 kV
232
242
272
#1
282
#2
#3
S
C
S
C
115 kV
WOODWARD
3-3Ø 45 MVA 115/21KV
116
126
136
112
122
VALLEY
CHILDREN'S
HOSPITAL
1 -3Ø
12.5MVA
115/12KV
Figarden
262
252
212
212
222
Kearney
Ashlan
132
142
122
112
152
332
Manchester
152
Barton
Bullard
312
322
422
412
Pinedale

Kern-Old River 70 kV Line Reconductor

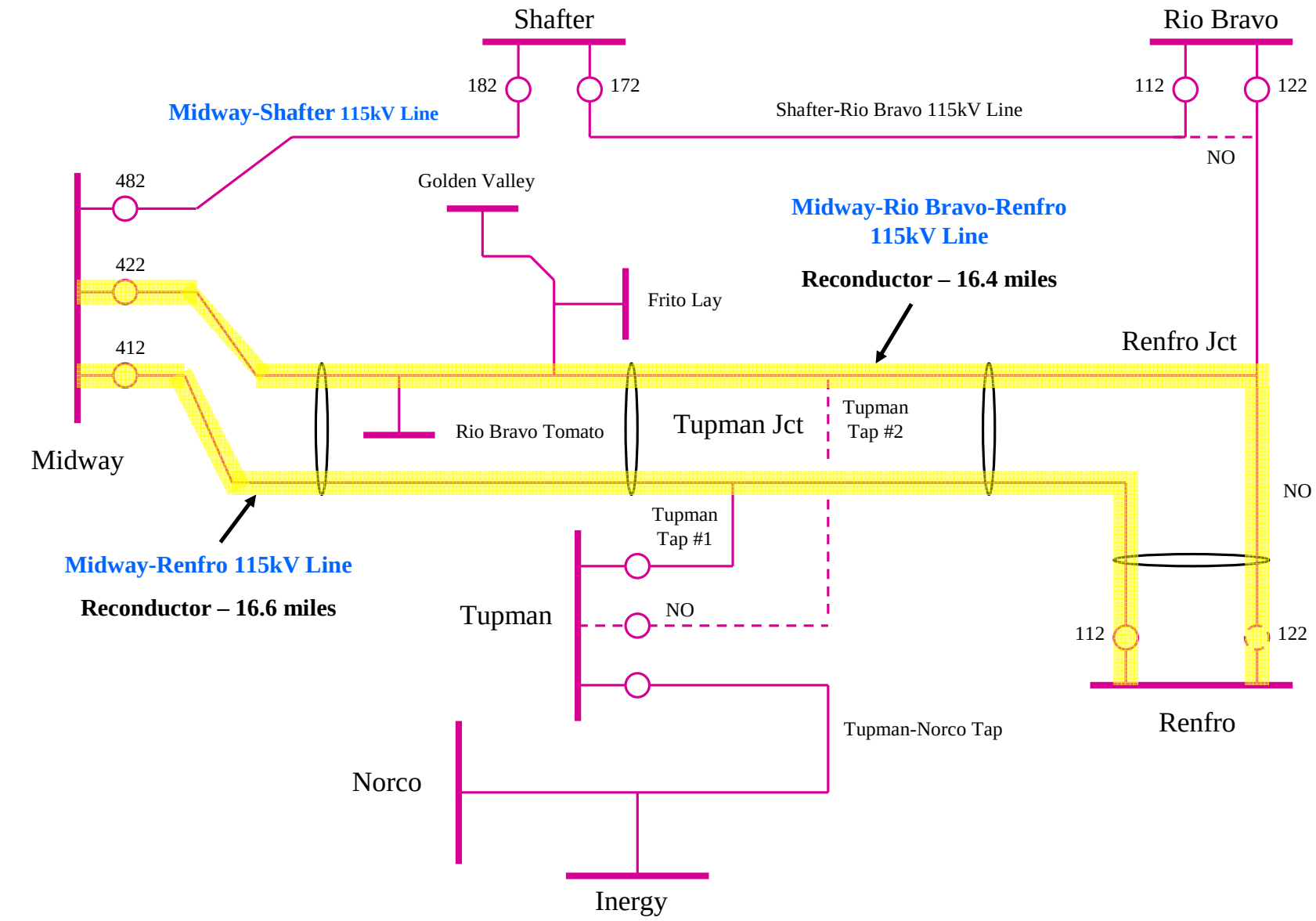
- **Background**
  - Kern Power Plant provides power to Panama and Old river substations via the Kern-Old River Nos.1 and 2 lines.
- **Assessment**
  - Loss of either Kern-Old River No. 1 or 2 line
    - Overloads parallel line
    - Voltage concerns during either outage at Panama and Old River substations
- **Scope**
  - Reconductor approximately 35 miles of the Kern-Old River 70 kV Nos. 1 and 2 lines with a conductor capable of carrying a minimum of 975 Amps emergency
- **Other Alternatives Considered**
  - Status Quo
- **In Service Date**
  - May 2011
- **Cost**
  - $20M - $25M


115 kV
115 kV
KERN
KERN– OLD RIVER #1 70 kV
KERN– OLD RIVER #2 70 kV
11.9 miles
9.9 miles
1.1 miles
NO
To Magunden
UNION JCT
PANAMA
Reconductor
Kern-Old River
70 kV Lines
11.5 MILE
OLD RIVER
SAN EMIDIO JCT
To Wheeler
NO
LAKE VIEW

Midway-Renfro 115 kV Line Reconductoring

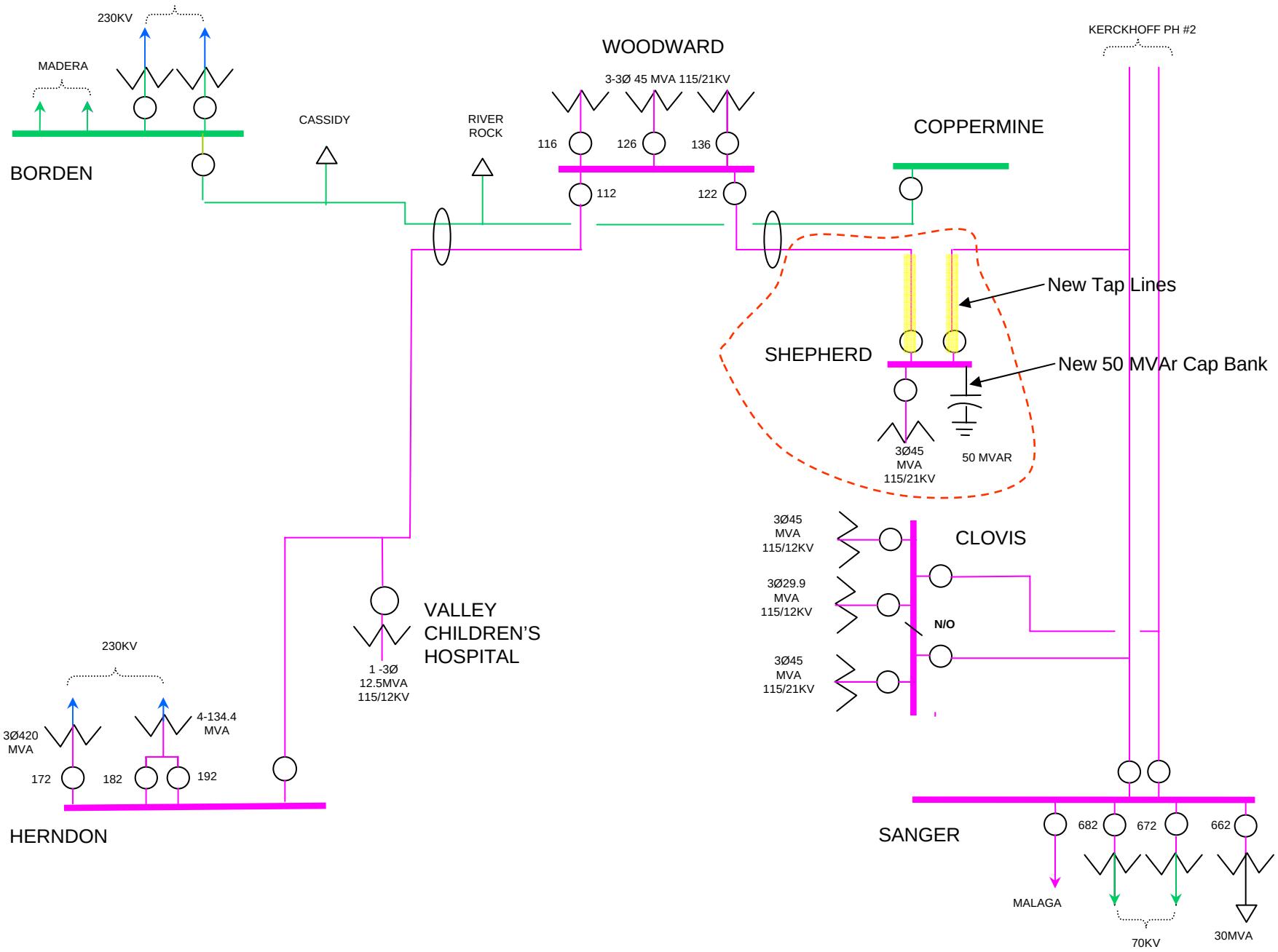
- **Background**
  - Midway-Renfro and Midway-Rio Bravo-Renfro 115 kV double circuit tower lines are located in Kern County.
  - Significant load additions are anticipated in this area based on the large number of Agricultural Internal Combustion Engine Conversion (AG-ICE) electric service applications, and a new large load interconnection customer.
- **Assessment**
  - Loss of Midway-Renfro 115 kV Line (L-1)
    - Overloads Midway-Rio Bravo-Renfro 115 kV Line
- **Scope**
  - Reconductor the Midway-Renfo 115 kV Line (16 miles) and the Midway-Rio Bravo-Renfro 115 kV Line (16 miles) with a minimum current carrying capacity of 1,525 Amps emergency.
- **Other Alternatives Considered**
  - None
- **In Service Date**
  - May 2011
- **Cost**
  - $15M - $20M

Post-Project Scope Diagram



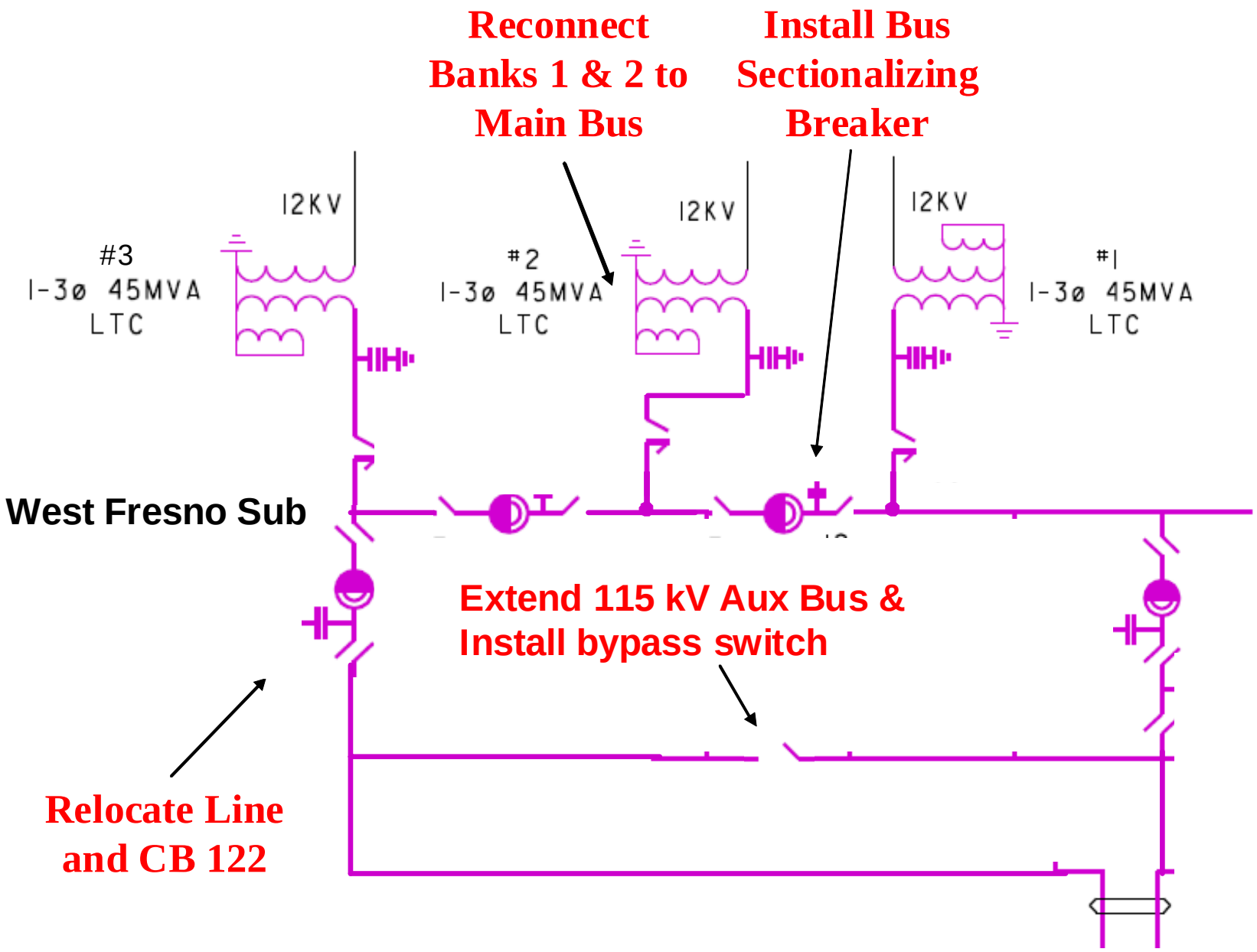
Shepherd Substation Interconnection

- **Background**
  - PG&E is proposing to construct a new distribution substation (Shepherd Substation) to serve electric customers in Fresno County
  - This substation will be designed to serve up to 45 MVA of load.
- **Assessment**
  - Loss of Herndon-Woodward 115 kV Line overlapped with Kerckhoff Generator Offline (L-1/G-1)
    - Voltage concerns at Shepherd and Woodward substations
- **Scope**
  - Loop Shepherd Substation into the Kerckhoff-Clovis-Sanger #1 115 kV Line, between Woodward and Woodward Jct with a new 2 mile long DCTL with a minimum current carrying capacity of 1,360 Amps emergency
  - Install 50 MVArs of shunt capacitors at Shepherd Substation
- **Other Alternatives Considered**
  - Status Quo
  - Connect Shepherd Substation via Flip-Flop scheme
- **In Service Date**
  - May 2011
- **Cost**
  - $8M - $10M


230KV
MADERA
BORDEN
CASSIDY
RIVER
ROCK
WOODWARD
3-3Ø 45 MVA 115/21KV
116
126
136
112
122
COPPERMINE
KERCKHOFF PH #2
New Tap Lines
New 50 MVAr Cap Bank
SHEPHERD
3Ø45
MVA
115/21KV
50 MVAR
3Ø45
MVA
115/12KV
3Ø29.9
MVA
115/12KV
3Ø45
MVA
115/21KV
CLOVIS
N/O
VALLEY
CHILDREN'S
HOSPITAL
1 -3Ø
12.5MVA
115/12KV
230KV
3Ø420
MVA
4-134.4
MVA
172
182
192
HERNDON
SANGER
682
672
662
MALAGA
70KV
30MVA

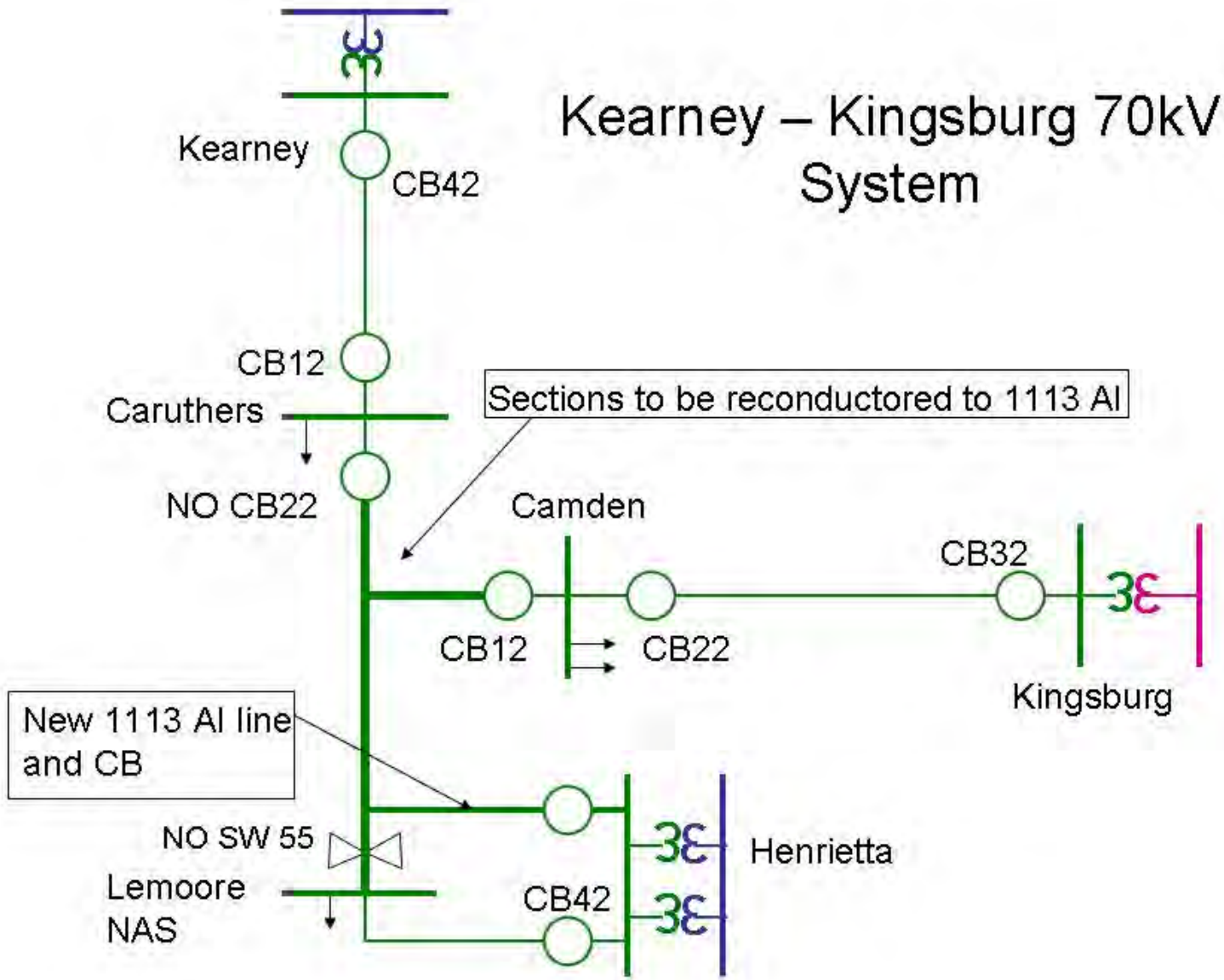
West Fresno 115 kV Bus Upgrade

- **Background**
  - West Fresno is a distribution substation located in Fresno County and supports the greater West Fresno area.
  - West Fresno Substation is served via the West Fresno-California Ave. and McCall-West Fresno No. 2 kV transmission lines.
  - West Fresno utilizes a main/aux 115 kV bus arrangement to interconnect three distribution banks and two transmission lines.
- **Assessment**
  - Loss of the West Fresno 115 kV main bus or West Fresno distribution transformer
    - Load at West Fresno would be dropped
- **Scope**
  - Convert the existing Main/Aux bus to a looped configuration at West Fresno Substation
- **Other Alternatives Considered**
  - Install 115 kV Ring Bus at West Fresno Substation
- **In Service Date**
  - May 2011
- **Cost**
  - $3M-$5M


Reconnect Banks 1 & 2 to Main Bus
Install Bus Sectionalizing Breaker
12KV
#3
1-3ø 45MVA
LTC
12KV
#2
1-3ø 45MVA
LTC
12KV
#1
1-3ø 45MVA
LTC
West Fresno Sub
Extend 115 kV Aux Bus & Install bypass switch
Relocate Line and CB 122

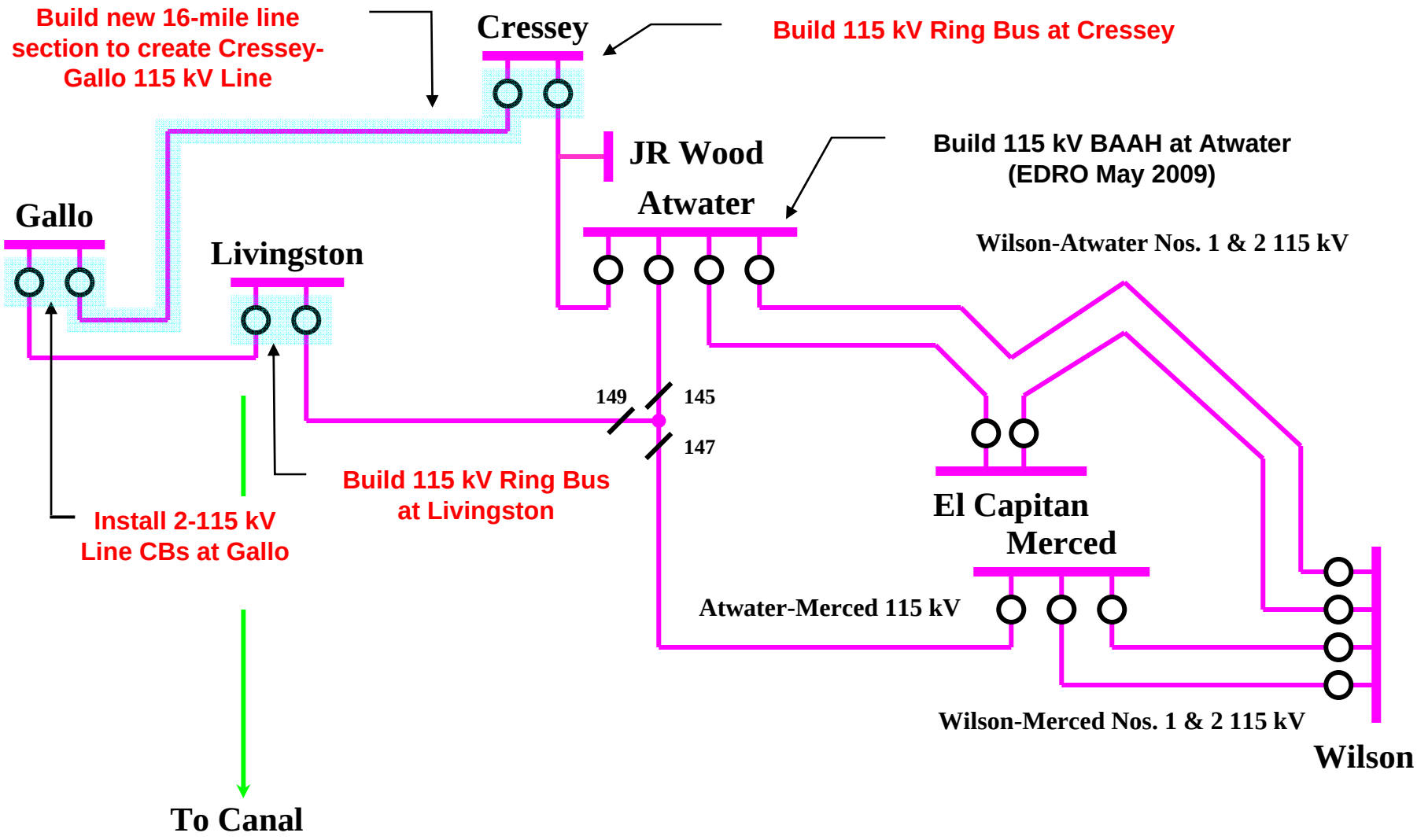
Caruthers-Kingsburg 70 kV Line Reconductoring

- **Background**
  - The Caruthers-Kingsburg line is located in Fresno and includes Camden, Caruthers and Lemoore N.A.S. 70 kV distribution substations.
  - These loads are set up as radial lines, each substation fed from one source (either Kearney 230 kV, Kingsburg 115 kV, or Henrietta 230 kV).
- **Assessment**
  - Loss of the Camden-Kingsburg 70 kV Line (L-1)
    - Radial load at Camden would be dropped
    - Overloads Camden Junction-Lemoore N.A.S. when SW 55 closed in to pickup Camden.
- **Scope**
  - Reconductor the Camden Junction-Lemoore N.A.S., Camden Junction-Camden, Camden Junction-Caruthers (~25 miles) with a conductor capable of carrying a minimum of 975 Amps emergency.
  - Build a new, 1.7 mile line capable of carrying 975 Amps emergency, double circuited along the Henrietta-Lemoore N.A.S. 70 kV Line. Tap onto this line nearby the normally open SW 55.
- **Other Alternatives Considered**
  - Camden-Kingsburg 70 kV reconductor to 1113 Al.
  - Kearney-Caruthers 70 kV reconductor to 1113 Al.
- **In Service Date**
  - May 2012
- **Cost**
  - $10M-$15M


Kearney – Kingsburg 70kV System
Kearney
CB42
CB12
Caruthers
NO CB22
Sections to be reconductored to 1113 Al
Camden
CB12
CB22
CB32
Kingsburg
New 1113 Al line and CB
NO SW 55
Lemoore NAS
CB42
Henrietta

Cressey-Gallo 115 kV Line Installation

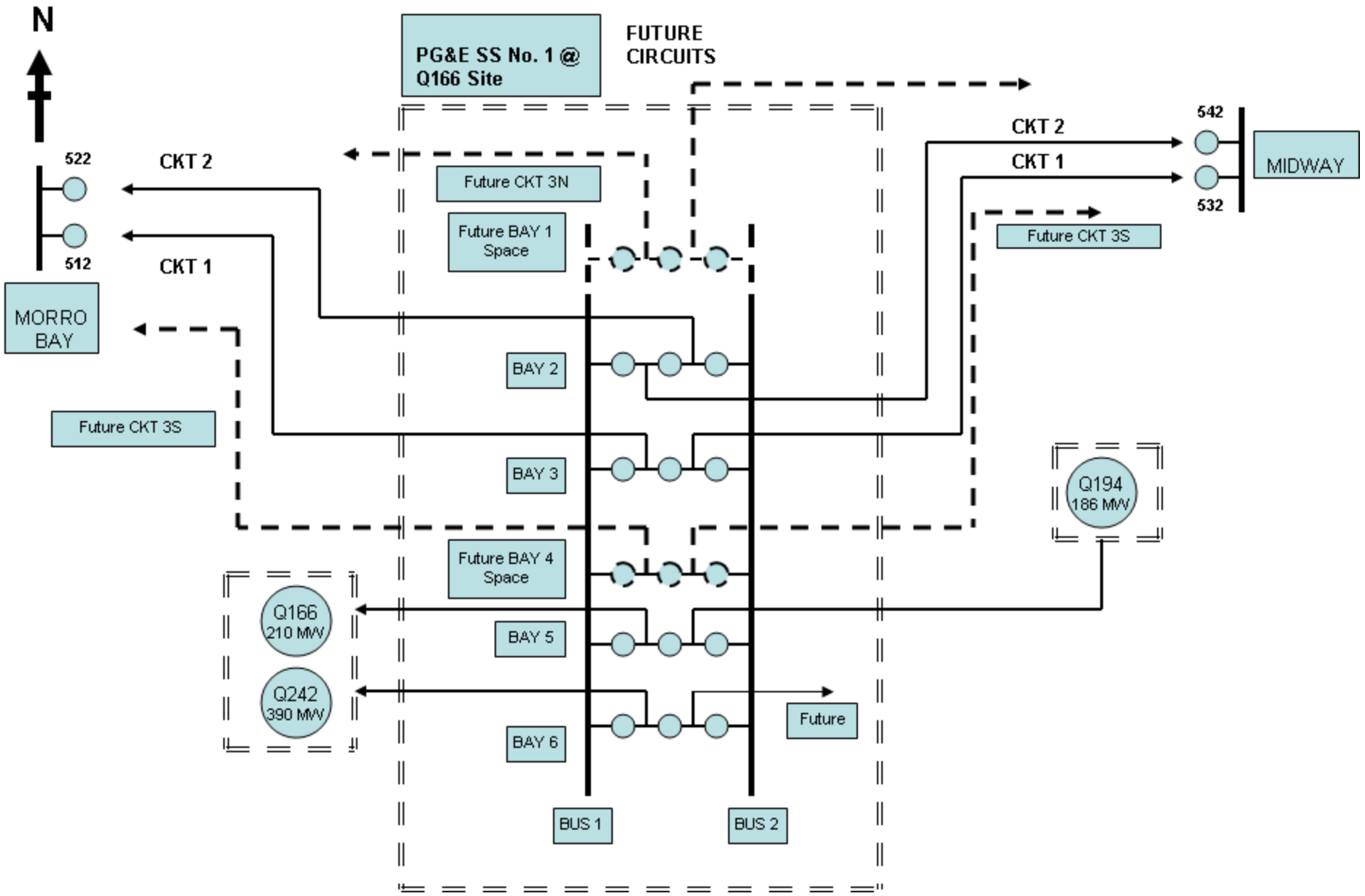
- **Background**
  - The Atwater-Merced 115 kV Line is located in Merced County and supports Livingston, Gallo, and Cressey Substations.
  - These loads are served radially with each substation fed from one source (either Atwater 115 kV or Merced 115 kV).
  - The Atwater-Merced 115 kV Line is comprised of 35 miles (including all tap lines) of various conductor sizes and is constructed mainly on wood poles.
- **Assessment**
  - Loss of the Atwater-Merced 115 kV Line (L-1)
    - Radial loads at Livingston, Gallo, and Cressey Substations would be dropped.
- **Scope**
  - Construct a new Gallo-Cressey 115 kV Line.
  - Install 115 kV line breakers at Livingston, Gallo, and Cressey substations.
- **Other Alternatives Considered**
  - Construct a new Atwater-Livingston 115 kV Line
- **In Service Date**
  - May 2012
- **Cost**
  - $15M-$25M


Build new 16-mile line section to create Cressey-Gallo 115 kV Line
Cressey
Build 115 kV Ring Bus at Cressey
JR Wood
Atwater
Build 115 kV BAAH at Atwater (EDRO May 2009)
Gallo
Livingston
Wilson-Atwater Nos. 1 & 2 115 kV
149
145
147
Build 115 kV Ring Bus at Livingston
Install 2-115 kV Line CBs at Gallo
El Capitan
Merced
Atwater-Merced 115 kV
Wilson-Merced Nos. 1 & 2 115 kV
Wilson
To Canal

Los Padres Projects Recommended for Submittal into Request Window

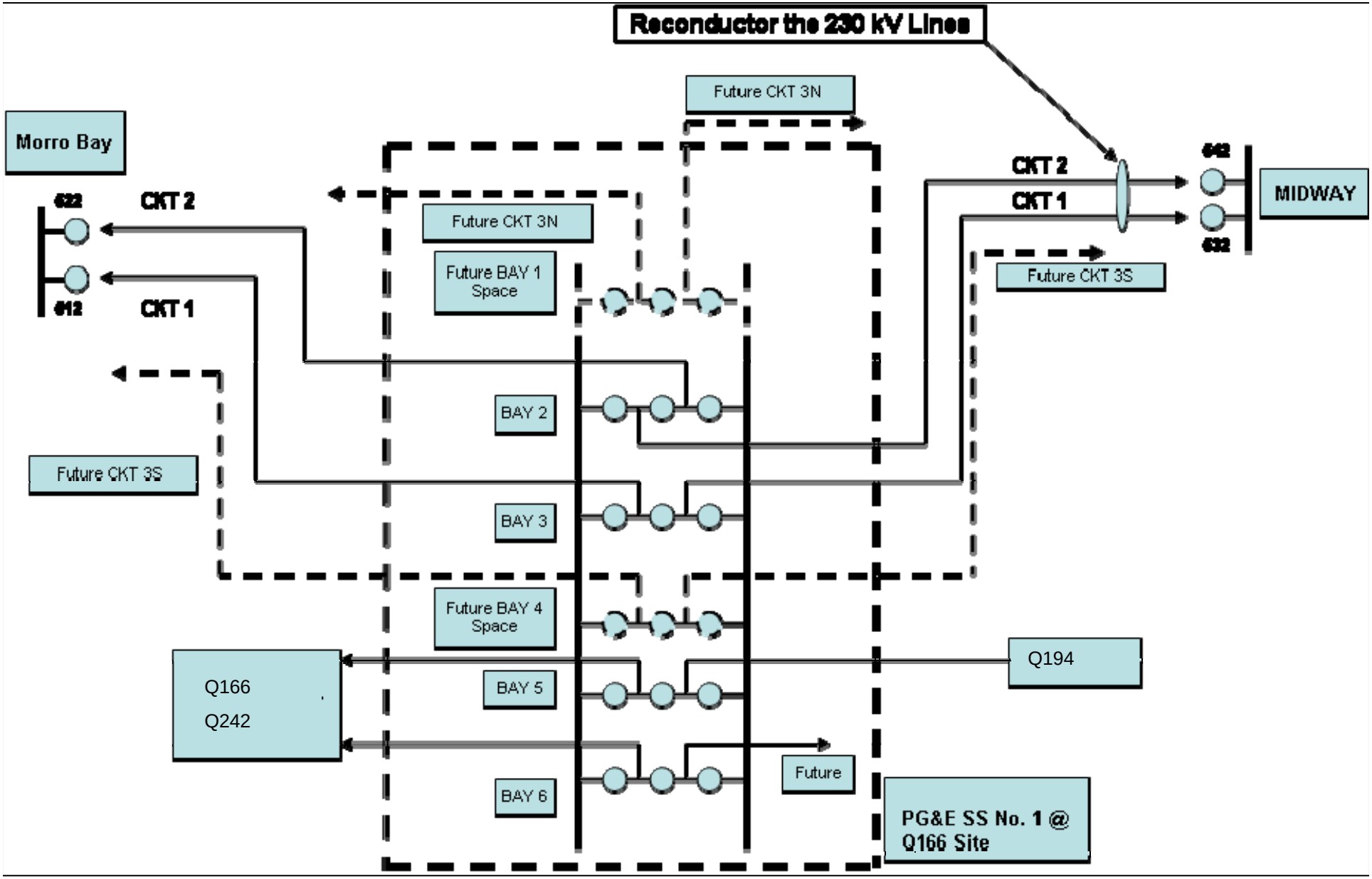
San Luis Obispo 230 kV Solar Switching Station

- **Background**
  - Over the last few years, various solar power generation developers have approached PG&E regarding electric interconnections to the local transmission network in the Carrizo Plain area.
  - Electric transmission facilities that are located near the development of these solar power facilities are the Morro Bay-Midway 230 kV Nos. 1 and 2 lines.
- **Assessment**
  - In order to reliably interconnect the planned generation facilities, a new switching station or expansion of the existing Carrizo Plains Substation would be required by May 2010
- **Scope**
  - This project scope is to construct a new 230 kV switching stations with a five bay, breaker and a half (BAAH) bus configuration and electrically “loop” the Morro Bay – Midway 230 kV Line Nos. 1 and 2. Currently a preferred site location for the new switching station has not been determined.
- **Other Alternatives Considered**
  - Status Quo
- **In Service Date**
  - May 2010
- **Cost**
  - $25M - $35M


N
PG&E SS No. 1 @
Q166 Site
FUTURE
CIRCUITS
522
512
CKT 2
CKT 1
MORRO
BAY
Future CKT 3N
Future BAY 1
Space
Future CKT 3S
BAY 2
BAY 3
Future BAY 4
Space
BAY 5
BAY 6
BUS 1
BUS 2
Q166
210 MW
Q242
390 MW
Future
Q194
186 MW
542
532
CKT 2
CKT 1
MIDWAY
Future CKT 3S

Morro Bay-Midway 230 kV Line Reconductor

- **Background**
  - Over the last few years, various solar power generation developers have approached PG&E regarding electric interconnections to the local transmission network in the Carrizo Plain area.
  - Electric transmission facilities that are located near the development of these solar power facilities are the Morro Bay-Midway 230 kV Nos. 1 and 2 lines .
- **Assessment**
  - Morro Bay - Midway 230 kV line Nos. 1 and 2 do not have adequate capacity to allow the reliable full delivery of those solar power to the grid.
- **Scope**
  - Reconductor 34 miles of the Morro Bay - Midway 230 kV line Nos. 1 and 2 between new San Luis Obispo Solar Switching Station and Midway Substation with higher capacity conductors.
- **Other Alternatives Considered**
  - Add a new 230 kV line between the last solar switching station and Morro Bay
- **In Service Date**
  - May 2011
- **Cost**
  - $40M - $50M


Reconductor the 230 kV Lines
Future CKT 3N
Morro Bay
622
612
CKT 2
CKT 1
Future CKT 3N
Future BAY 1 Space
CKT 2
CKT 1
642
632
MIDWAY
Future CKT 3S
BAY 2
Future CKT 3S
BAY 3
Future BAY 4 Space
Q166
Q242
BAY 5
Q194
Future
BAY 6
PG&E SS No. 1 @ Q166 Site

San Joaquin Valley and Los Padres Projects Requiring Further Evaluation

Projects Requiring Further Evaluation

- Central California Clean Energy Project (November 2013)
- E1 Substation (May 2013)
- Borden – Coppermine 70 kV Upgrade (May 2013)
- Paso Robles Area Reinforcement (May 2014)
- Ashlan – Gregg and Ashlan – Herndon 230 kV Reconductor (May 2015)
- Renfro Area Reinforcement (May 2016)
- Lemoore Area Reinforcement (May 2016)
- Corcoran – Guernsey Area Reinforcement (May 2016)
- Arco – Twisselman Area Reinforcement (May 2018)

Questions

Answers

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Class A and B solar projects in DFG Region 4 March 4, 2011												
2	**Project Name**	**County**	**Developer**	**Cap. (MW)**	**Type**	**Acres**	**NEPA Lead**	**CEQA Lead Agency**	**CESA / ESA ITP's (spp.)**	**LSAA (Y,N,?)**	**Notes re spp., permits status, etc.**	**CEQA/NEPA status**	**Class (for solar projects only)***
3	Bakersfield Fuel and Oil Solar Project	Kern	Bakersfield Fuel and Oil	20	Solar PV	140	NA	City of Shafter	no	no	Active Ag site.	Neg Dec 2/11	A
4	McFarland Solar Energy Project	Kern	Integrated Resourced Development, LLC	18	Solar PV	100	NA	City of McFarland	NA	NA	SWHA and kit fox documented in area, but active ag land	Neg Dec 8/10	A
5	Nickles Site	Kern	Fotowatio	?	Solar PV	316	NA	Kern County	N/A	N/A	On Farmland; CDFG visited site with applicant; overall low bio concerns		A
6	North Star Solar I	Fresno	North Light Power, LLC	60	Solar PV	640	NA	Fresno County	?	?	On ag land and likely will not have significant biological issues - is near Mendota WA	pre-consultation 2/2011	A
7	Reddy Site (2 parcels)	Kern	Fotowatio	?	Solar PV	446	NA	Kern County	N/A	N/A	On Farmland; CDFG visited site with applicant; BUOW adjacent to site, raptor nest on transmission tower, but overall low bio concerns		A
8	San Bernard Solar	Kern	enXco	6	Solar PV	43	NA	Kern County	N/A	N/A	Carrot farm, Department requested nesting bird surveys at adjacent trees and raise fence for SJKF movement, but no other bio concerns at this time.	NOP 4/10	A
9	Scarrone Site	Kern	Fotowatio	?	Solar PV	265	NA	Kern County	N/A	N/A	On Farmland; CDFG visited site with applicant; overall low bio concerns	pre-consultation	A
10	SR Solis Huron Solar Generation Facility	Fresno	SR Solis, LLC	20	Solar PV	39	NA	City of Huron	NA	N/A	SWHA and SJKF documented in area, but site is active ag	IS/MND 9/10	A
11	Tehachapi Solar	Kern	Recurrent Energy	20	Solar PV	158	NA	Kern County	NA	NA	irrigated ag	NOP 1/2011	A
12	Tehachapi Solar II	Kern	Recurrent Energy	20	Solar PV	157	NA	Kern County	NA	NA	irrigated ag	NOP 1/2011	A
13	VA Outpatient Clinic, Monterey	Monterey	VANEBC	?	Solar PV	?	?	?	N/A	N/A	Most panels will be on roof or car port; one proposed location in open field near multiple CNDDB records	pre-consultation	A
14	Vie Del Solar Project (?)	Fresno	Vie-Del Company	?	Solar PV	8	NA	Fresno County	NA	NA	heavily disturbed site surrounded by active ag	pre-consultation	A
15	Westlands Solar Farm	Fresno	Westlands Solar Farms, LLC	23	Solar PV	91	NA	Fresno County	NA	NA	Active ag, but SWHA, SJKF documented in area	pre-consultation	A
16	Gestamp Solar Enrio CUP no. 3300	Fresno	Gestamp Solar	26	Solar PV	183	NA	Fresno County	N	N	cotton in a sea of cotton	pre-consultation	A
17	Gestamp Solar Matson CUP No. 3299	Fresno	Gestamp Solar	26	Solar PV	158	NA	Fresno County	N	N	cotton in a sea of cotton	pre-consultation	A
18	McHenry Solar Farm	Stanislaus	Solar Star California VII, LLC	25	Solar PV	157	NA	Modesto Irrigation Distric	N	N	SWHA nest records nearby, likely foraging habitat	NOP 12/10	A
19	Old River	Kern	Recurrent Energy	25	Solar PV	234	NA	Kern County	?	?	not reviewed yet	NOP 12/21/10	A
20	PSP 10-027 Alpaugh Atwell Island	Tulare	Element Power	20	Solar PV	160	NA	Tulare County	N	N	irrigated ag, fence includes openings for wildlife	MND 8-10	A
21	PSP 10-028 Alpaugh Atwell Island	Tulare	Element Power	20	Solar PV	160	NA	Tulare County	N	N	irrigated ag, fence includes openings for wildlife	MND 8-10	A
22	PSP 10-031 White River	Tulare	Solar Project Solutions	20	Solar PV	180	NA	Tulare County	N	N	irrigated ag, fence includes openings for wildlife	MND 8-10	A
23	PSP 10-032 White River	Tulare	Solar Project Solutions	18	Solar PV	149	NA	Tulare County	?	?			A
24	PSP 10-045 White River West	Tulare	Element Power	40	Solar PV	320	NA	Tulare County	N	N	irrigated ag, fence includes openings for wildlife	MND 8-10	A
25	PSP 10-30, 10-29 Alpaugh Solar	Tulare	Solar Project Solutions	70	Solar PV	550.5	NA	Tulare County	N	N	irrigated ag, fence includes openings for wildlife	MND 8-10	A
26	Vaquero Solar	Kern	?	1	Solar PV	8	NA	Kern County	N	N		county exempted it	A
27	Cal Solar Pack XI CUP 10-06 El Nido-	Merced	CAL S.P. XI, LLC	10	Solar PV	97	NA	Merced County	N	N		pre-consultation	A
28	Cal Solar Pack XI CUP 10-17 El Nido-Baird	Merced	CAL S.P. XI, LLC	5	Solar PV	58	NA	Merced County	N	N		pre-consultation	A
29	CalRenew-1	Fresno	Cleantech America	5	Solar PV	50	NA	City of Mendota	N	N	on farm land	approved	A
30	CSU Bakersfield Photovoltaic Project	Kern	CSU Bakersfield	1	Solar PV	375	NA	CSU Trustees	N	N	rooftop and parking lot	approved	A
31	CSU Stanislaus Photovoltaic Project	Stanislaus	CSU Stanislaus	1	Solar PV	?	NA	CSU Trustees	N	N	rooftop and parking lot	approved	A
32	Monterey Pollution Control Agency Recycled Water facility	Monterey	Clean Energy Systems	1	Solar PV	6	NA	gional Water Pollution C	N	N	project built, serves treatment plant	built	A
33	Westlands Solar Park	Fresno, Kings	Westlands Holdings, LLC	5,000	Solar PV	30,000	NA	?	?	?	marginal to non-habitat, area not important to recovery of listed spp.	pre-consultation	A
34	CUP 11-001	Merced	Cenergy Power	3	Solar PV	15	NA	Merced County	N	N	active ag., SWHA foraging habitat loss		A
35	CUP 11-002	Merced	Cenergy Power	3	Solar PV	15	NA	Merced County	N	N	active ag., SWHA foraging habitat loss		A
36	GA Solar, CUP 3292	Fresno	GA Solar	22	Solar PV	318	NA	Fresno County	N	N			A
37	Gestamp Solar CUP 3313 IS 6348	Fresno	Gestamp Solar	14	Solar PV	120	NA	Fresno County	N	N	active ag	pre-consultation	A
38	Huron	Fresno	PG&E	20	Solar PV	?	NA	CPUC*	N	N	project under 131D so no CEQA by CPUC	pre-consultation	A
39	Rocket	Kings	SolarReserve LLC/ SolarGenUSA LLC	20	Solar PV	158	NA	City of Avenal	N	N			A

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Class A and B solar projects in DFG Region 4 March 4, 2011												
2	**Project Name**	**County**	**Developer**	**Cap. (MW)**	**Type**	**Acres**	**NEPA Lead**	**CEQA Lead Agency**	**CESA / ESA ITP's (spp.)**	**LSAA (Y,N,?)**	**Notes re spp., permits status, etc.**	**CEQA/NEPA status**	**Class (for solar projects only)***
40	San Bernard	Kern	PG&E	20	Solar PV	?	NA	CPUC*	N	N	project under 131D so no CEQA by CPUC	pre-consultation	A
41	San Joaquin	Fresno	PG&E	20	Solar PV	?	NA	CPUC*	N	N	project under 131D so no CEQA by CPUC	pre-consultation	A
42	Schindler 1 and 2	Fresno	PG&E	30	Solar PV	320	NA	CPUC*	N	N	project under 131D so no CEQA by CPUC	pre-consultation	A
43	Sirius Solar	Kern	Boulevard Associates, LLC	20	Solar PV	160	NA	Kern County	N	N		pre-consultation	A
44	SR Solis Crown	Tulare	SolarReserve LLC/ SolarGenUSA LLC	15	Solar PV	118	NA	Tulare County	N	N			A
45	Stroud	Fresno	PG&E	20	Solar PV	?	NA	CPUC*	N	N	project under 131D so no CEQA by CPUC	pre-consultation	A
46	Sun City-Sand Drag	Kings	Avenal Solar Holdings, LLC	39	Solar PV	420	NA	Kings County	N/A	N/A	project approved by County, existing ag, fencing raised 5" above ground for wildlife movement	MND 2/10	A
47	Whitney Point Solar	Fresno	Whitney Solar LLC	40	Solar PV	329	NA	Fresno County	N	N		pre-consultation	A
48	Pumpjack	Kern	?	?	Solar PV	480	NA	Kern County	N	N	Adjacent to good occupied habitat for SJV spp., but should be able to avoid take if cooperative. Contacted by bio consultant.	pre-app	A
49	Rio Bravo	Kern	?	?	Solar PV	640	NA	Kern County	N	N	irrigated ag, low potential for TKR, SWHA, BUOW. Contacted by bio consultant.	pre-app	A
50	Wildwood	Kern	?	?	Solar PV	240	NA	Kern County	N	N	Adjacent to good occupied habitat for SJV spp., but should be able to avoid take if cooperative. Contacted by bio consultant.	pre-app	A
51	Angiola	Tulare	DTE Energy	20	Solar PV	160	NA	Tulare County	?	no	CNDDB documents TKR on site.	pre-consultation	B
52	Beltran	Stanislaus	Scatech Solar	50	Solar PV	384	NA	Stanislaus County	no	no	Scatech staff person assigned to this project took a new position at another company. He said someone would contact us. Potential SJKF corridor concerns.	IS/MND in prep	B
53	Cal S.P. IV, LLC 20 MW PV Electrical Generation Facility	Tulare	Cal S.P. IV, LLC	20	Solar PV	215	NA	Tulare County	N	N	Currently active ag; crop is "hay;" SWHA, BUOW, SJKF documented in area	pre-consultation	B
54	Cantil	Kern	Nautilus Solar	9	Solar PV	77	NA	Kern County	?	?	MGS & DETO surveys negative, but reports not submitted	NOP 6/10	B
55	Columbia	Kern	Recurrent Energy	20	Solar PV	165	NA	Kern County	?	?	potential for DT, MGS	NOP 1/2011	B
56	Columbia II	Kern	Recurrent Energy	20	Solar PV	155	NA	Kern County	?	?	potential for DT, MGS	NOP 1/2011	B
57	Columbia III	Kern	Recurrent Energy	10	Solar PV	80	NA	Kern County	?	?	potential for DT, MGS	NOP 1/2011	B
58	Copper Moutain	Stanislaus	World International, LLC	13	Solar PV	124	NA	Stanislaus County	?	yes	reported GOEA and pond turtles on site	pre-consultation	B
59	Elk Hills Solar	Kern	enXco	7	Solar PV	67	NA	Kern County	Unknown	N/A	At south end of Buena Vista Valley - potential SJKF,	NOP 4/10	B
60	Eurus Energy - Lemoore	Kings	Eurus Energy	?	Solar PV	?	NA	Kings County	Unknown	unk	SWHA nest documented near project, CEQA not started		B
61	Goose Lake Solar	Kern	enXco	15	Solar PV	158	NA	Kern County	Unknown	N/A	Adjacent to MBHCP land, potential TKR, SJKF, BNLL,	NOP 4/10	B
62	Great Lakes 40	Kern	Recurrent Energy	5	Solar PV	40	NA	Kern County	?	?	potential for DT, MGS	NOP 1/2011	B
63	Henrietta Solar	Kings	GWF Power	125	Solar PV	957	NA	Kings County	N/A	N/A	BUOW on edge of property; SWHA ~ 1-2 mile from site	IS/MND 10/2010	B
64	Leo Solar	Merced	Fotowatio	170	Solar PV	1,009	NA	Merced	?	?	known through FWS letter, no applicant contact w/ DFG		B
65	Lost Hills Solar	Kern	First Solar	32.5	Solar PV	307	NA	Kern County	?	N/A	potential SJKF, BUOW, BNLL, SJAS all documented nearby; consultant said site completely disked; may seek ITP for O & M - undecided;	DEIR 7/10	B
66	Mojave Solar I	Kern	Fotowatio	20	Solar PV	?	NA	Kern County	?	NA	potential for MGS, DT		B
67	Monte Vista	Kern	First Solar	126	Solar PV	1,040	NA	Kern County	Unknown need - no app yet	Unknown need - no app yet	Haven't heard from applicant. potential DETO, MGS, BUOW, SWHA? Desert washes also described on project site - SAA and ITP may be recommended but no bio report yet.	NOP 4/10	B
68	Rio Grande	Kern	Recurrent Energy	5	Solar PV	46	NA	Kern County	?	?	potential for MGS, DT	NOP 1/2011	B
69	Rosamond 1	Kern	Recurrent Energy	20	Solar PV	160	NA	Kern County	?	?	potential for MGS, DT	NOP 1/2011	B
70	Rosamond 2	Kern	Recurrent Energy	20	Solar PV	160	NA	Kern County	?	?	potential for MGS, DT	NOP 1/2011	B
71	Site 1	Kern	Solar Electric Solutions	TBD	Solar PV	50	NA	City of Taft?	?	?	Based on aerial, some disturabance but appears to be good potential habitat.		B

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Class A and B solar projects in DFG Region 4 March 4, 2011												
2	**Project Name**	**County**	**Developer**	**Cap. (MW)**	**Type**	**Acres**	**NEPA Lead**	**CEQA Lead Agency**	**CESA / ESA ITP's (spp.)**	**LSAA (Y,N,?)**	**Notes re spp., permits status, etc.**	**CEQA/NEPA status**	**Class (for solar projects only)***
72	Site 2	Kern	Solar Electric Solutions	TBD	Solar PV	155	NA	City of Taft?	?	?	This site may have been used as past mitigation. BUOW, SJKF, SJAS likely; some disturbance but good potential habitat		B
73	Smyrna Solar	Kern	enXco	20	Solar PV	176	NA	Kern County	Unknown need - no app yet	Unknown need - no app yet	Adjacent or near to MBHCP lands. Potential SJKF, BNLL, SJAS, BUOW, TKR, plants. LSA hired McCormick Biological to develop species surveys.	NOP 4/10	B
74	South Kern Solar	Kern	Valos Solar Ventures, LLC		Solar PV	165	NA	?	?	?	Email with site location and phone conversation only info to date, unknown impacts		B
75	Avenal Park- Anderson Conditiona Use Permit	Kings	Eurus Energy	9	Solar PV	86	NA	Kings County	N	N	reconductoring in Kettleman Hills	MND done	B
76	Corcoran Irrigation District Solar Generation Facilities Project (CUP 10-04 and 10-05)	Kings	Corcoran Irrigation District	40	Solar PV	320	NA	Kings County	N	N	tilled and irrigated grazing land, bordered by large recharge reservoirs	draft MND 4/29/10	B
77	Fink Road Solar Farm	Stanislaus	JKB Development	100	Solar PV	800	NA	Stanislaus County	N	?	Footprint is orchard and cropland. Low potential for kit fox in this area. Fencing on only two sides and would be elevated for wildlife passage. Potential for BUOW, badgers, spadefoot toad upland habitat (tilled though).	MND circ 12/1/10	B
78	Grangeville	Kings	Recurrent Energy	20	Solar PV	200	NA	Kings County	N	N	SWHA nest records nearby, likely foraging habitat	pre-consultation	B
79	Kansas	Kings	Recurrent Energy	20	Solar PV	170	NA	Kings County	N	N	SWHA nest records nearby, likely foraging habitat	pre-consultation	B
80	Kansas South	Kings	Recurrent Energy	20	Solar PV	200	NA	Kings County	N	N	SWHA nest records nearby, likely foraging habitat	pre-consultation	B
81	Maricopa Sun Solar Complex	Kern	Maricopa Sun, LLC	700	Solar PV	9,027	NA	Kern County	SJKF, TKR, SJAS	N	no DFG applications yet; impacts are mostly during operation--footprint is poor or non-habitat for these spp. Should be easily mitigated through project design, enhancement on applicant-owned lands, and O&M procedures.	DEIR 11/30/10	B
82	Antelope Valley Solar Project	Kern	Renewable Resource Group	650	Solar PV	5,698	NA	Kern County	no	no	SWHA foraging habitat near known nests	NOP 4/10	B
83	Champagne Solar	Kern	Iberdrola	?	Solar PV	?	NA	Kern County	N	N	in ag, 1.3 miles from SWHA nest		B
84	High Desert Solar	Kern	Element Power	?	Solar PV	?	?	?	?	?			B
85	Rosamond Solar Array	Kern	First Solar	155	Solar PV	1,177	NA	Kern County	N	N	SWHA foraging habitat	NOP 4/10	B
86	Rosamond Solar Project	Kern	SGS Antelope Valley	200	Solar PV	960	NA	Kern County	N	N	SWHA foraging habitat	DEIR 7/10	B
87	SinarPower	Kern	SinarPower, Inc.	4	Solar PV	18	NA	Kern County	Y	Y	DT, MGS, Bako Cactus		B
88	SR Solis Firebaugh	Fresno	SolarReserve LLC/ SolarGenUSA LLC	5	Solar PV	52	NA	City of Firebaugh	N	Y		MND 6/10	B
89	SR Solis Ora Loma	Fresno	SolarReserve LLC/ SolarGenUSA LLC	19	Solar PV	?	NA	Fresno County	N	N			B
90	SR Solis Ora Loma Teresina	Fresno	SolarReserve LLC/ SolarGenUSA LLC	19	Solar PV	?	NA	Fresno County	N	N			B
91	SR Solis Terra Bella	Tulare	SolarReserve LLC/ SolarGenUSA LLC	40	Solar PV	128	NA	Tulare County	?	?			B
92	SR Solis Vestal Almond	Tulare	SolarReserve LLC/ SolarGenUSA LLC	18	Solar PV	141	NA	Tulare County	N	N			B
93	SR Solis Vestal Fireman	Tulare	SolarReserve LLC/ SolarGenUSA LLC	19	Solar PV	160	NA	Tulare County	N	?			B
94	SR Solis Vestal Herder	Tulare	SolarReserve LLC/ SolarGenUSA LLC	40	Solar PV	309	NA	Tulare County	N	N			B
95	SunSeeker Solar	Kern	NextEra	?	Solar PV	?	NA	?	Y	?	project dead?, SJAS		B
96													
97	*A: Minimal biological impacts expected, site is highly disturbed and low value habitat, no ITP expected.												
98	B: Biological impacts may require some compensatory mitigation but the impacts can be mitigated fairly easily; may or may not require an ITP.												
99	C: Project is in core habitat--poorly sited and would require a substantial compensatory mitigation effort; take of listed species is substantial and likely.												

May 16, 2011

Sent via e-mail to Lynn.Alexander@hq.doe.gov and U.S. Mail to:

Ms. Lynn Alexander
U.S. Department of Energy
Office of Loan Programs, (LP-100)
1000 Independence Avenue SW
Washington, DC 20585

Re: DOE-EA – Comments on the draft environmental impact statement for DOE's proposed loan guarantee for the construction and startup of the California Valley Solar Ranch in San Luis Obispo County, California.

Dear Ms. Alexander:

Thank you for the opportunity to provide comments on the Department of Energy's ("DOE") Draft Environmental Assessment for Department of Energy's Loan Guarantee to High Plains II, LLC for the California Valley Solar Ranch Project in San Luis Obispo County and Kern County, California dated April 2011 (the "Draft EA"). We refer to the California Valley Solar Ranch as the "CVSR" throughout this letter.

Defenders of Wildlife ("Defenders") is a non-profit public interest conservation organization with more than one million members and supporters nationally, 200,000 of which reside in California. Defenders is dedicated to protecting all wild animals and plants in their natural communities. To this end, we employ science, public education and participation, media, legislative advocacy, litigation, and proactive on-the-ground solutions in order to impede the accelerating rate of extinction of species, associated loss of biological diversity, and habitat alteration and destruction.

Defenders strongly supports the emission reduction goals found in the California Global Warming Solutions Act of 2006 (AB 32), including the development of renewable energy in California. However, we believe that renewable energy projects must be located and developed in a manner that minimizes the adverse environmental consequences of such projects on native wildlife and ecosystems so that renewable energy is truly a "green" alternative to fossil fuels. A utility-scale solar project is, after all, an industrial development covering thousands of acres in many cases. We urge the Corps and other federal agencies responsible for permitting such projects to require that proponents locate and design solar development projects in the most sustainable manner possible, avoiding and, where avoidance is not possible, minimizing and compensating for the impacts to sensitive ecological resources. This is essential to ensure that project approval moves forward expeditiously yet in a manner that does not sacrifice our remaining wildlife heritage and values. DOW-1

As we transition toward a clean energy future, it is imperative for our future and the future of our natural ecosystems and native wildlife that we strike a balance between addressing the near term impact of utility-scale solar development with

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the long-term impacts of climate change on biological diversity, fish and wildlife habitat, and natural landscapes. To ensure that the proper balance is achieved, we need smart planning for renewable power that avoids and minimizes adverse impacts on wildlife and lands with known high-resource values, such as the Carrizo Plain in eastern San Luis Obispo County, California.

We offer the following comments on the Draft EA for the CVSR.

The Proposed Project.

According to the Draft EA, DOE proposes to guarantee a loan to High Plains II, LLC, a wholly-owned subsidiary of SunPower Corporation Systems for the construction and startup of the California Valley Solar Ranch. The project would be located on 4,700 acres of land in eastern San Luis Obispo County, California, immediately north of the California Valley Subdivision and approximately 2 miles from the northern boundary of the Carrizo Plain National Monument. The project lands support a small cattle grazing operation but have not been commercially farmed for more than 30 years.

The proposed project would consist of: (i) 811,000 PV solar panels mounted on SunPower T0 tracker units and arranged in 10 separate arrays throughout the site capable of generating 250 MW of electricity; (ii) an electrical collection system that converts generated power from direct current to alternating current and delivers it to the project substation; (iii) the project substation that collects and converts the generated power from 34.5 kilovolt (kV) to 230 kV; (iv) a 230 kV interconnection line between the project substation and a new switching station to transmit the electricity to the existing PG&E Morro Bay-Midway transmission line; (v) 26 miles of access and maintenance roads; (vi) an operations and maintenance facility; and (vii) a water system including a 400-foot-deep on-site well, reverse osmosis water treatment equipment, two brine evaporation ponds and a 271,000-gallon water tank. The project would also require the reconductoring of approximately 35 miles of the existing PG&E Morro Bay-Midway transmission line. Additionally, SunPower has proposed to expend the existing Twisselman aggregate mine to generate aggregate for use at the project site and the neighboring Topaz solar project.

I. The National Environmental Policy Act requires the preparation of a full environmental impact statement for the CVSR.

A. Background.

The National Environmental Policy Act, 42 U.S.C. § 4321 et seq., ("NEPA") requires federal agencies to prepare an environmental impact statement for "major federal actions significantly affecting the quality of the human environment." 42 U.S.C. § 4332(2)(C). "If the proposed action does not categorically require the preparation of an EIS, the agency must prepare an environmental assessment (EA) to determine whether the action will have a significant effect on the environment." *Kern v. United States BLM*, 284 F.3d 1062, 1067 (9th Cir. 2002) (citing 40 C.F.R. § 1501.4). "If the EA reveals that the proposed action will significantly affect the environment, then the agency must prepare an EIS." *Id.* "If the EA reveals no significant effect, the agency may issue a finding of no significant impact (FONSI)." 40 C.F.R. §§1501.4, 1508.9. NEPA implementing regulations define "significantly" to require "considerations of both context and intensity." 40 C.F.R. § 1508.27. With regard to intensity, the NEPA regulations require that an agency evaluate the following factors, in addition to others, to determine whether or not an action "significantly affects the quality of the human environment": DOW-2 DOW-3

a. "Impacts that may be both beneficial and adverse," noting that a "significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial."

b. "Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas."

c. "The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks."

d. "Whether the action is related to other actions with individually insignificant but cumulatively significant impacts."

e. "The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973."

f. "Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment."

DOW-3 Cont.

40 C.F.R. § 1508.27. In the Draft EA for the CVSR, DOE concludes "that there would be no significant adverse impacts on the resources analyzed in this EA as a result of the proposed action," Draft EA at ES-3, and therefore, a full environmental impact statement is not required. In reaching this conclusion, DOE has ignored the factors set forth in 40 C.F.R. § 1508.27 bearing on the proposed action's intensity for NEPA purposes. Most importantly, the project will have (1) significant impacts on an ecologically critical area containing multiple federally listed threatened and endangered species and (2) significant cumulative impacts on listed species and wildlife corridors. For these reasons, DOE must prepare a full environmental impact statement for the CVSR.

DOW-4

B. The Carrizo Plain is an ecologically critical area that is home to numerous listed species.

1. The Carrizo Plain.

Comment. The Carrizo Plain is an ecologically critical area that is home to numerous threatened and endangered species. The CVSR project site is located only two miles from the northern boundary of the Carrizo Plain National Monument and contains many of the same imperiled species and ecological characteristics as the lands within the monument. President Clinton established the Carrizo Plain National Monument on January 17, 2001, because the region is "[f]ull of natural splendor and rich in human history" and

DOW-5

> The monument offers a refuge for endangered, threatened, and rare animal species such as the San Joaquin kit fox, the California condor, the blunt-nosed leopard lizard, the giant kangaroo rat, the San Joaquin antelope squirrel, the longhorn fairy shrimp, and the vernal pool fairy shrimp. The area is also home to many rare and sensitive plant species, including the California jewelflower, the Hoover's woolly-star, the San Joaquin woolly-threads, the pale-yellow layia, the forked fiddleneck, the Carrizo peppergrass, the Lost Hills saltbush, the Temblor buckwheat, the recurved larkspur, and the Munz's tidy tips. Despite past human use, the size, isolation, and relatively undeveloped nature of the area make it ideal for long-term conservation of the dwindling flora and fauna characteristic of the San Joaquin Valley region.

Proclamation 7393 of January 17, 2001, Establishment of the Carrizo Plain National Monument by the President of the United States, 66 Fed. Reg. 7339 (Jan. 22, 2001). The remarkable ecological characteristics of the Carrizo Plain described in the President's proclamation, including the presence of numerous

threatened and endangered wildlife species, warrant the preparation of a full environmental impact statement by DOE for the CVSR.

2. San Joaquin Kit Fox.

DOW-6

Comment. The San Joaquin kit fox is a federally endangered species that occurs on the CVSR project site. Throughout DOE's draft environmental impact statement prepared for another solar development proposed for the Carrizo Plain, the Topaz solar project, DOE acknowledged that "[i]t is unknown to what degree San Joaquin kit fox would use the solar arrays for movement or foraging." DOE, Draft Environmental Impact Statement, Loan Guarantee to Royal Bank of Scotland for Construction and Startup of the Topaz Solar Farm, San Luis Obispo County, California at 3-260 (Mar. 2011) (hereinafter, the "Topaz Draft EIS"). *See also id.* at 3-169 ("It is unknown how much the kit fox would utilize the site after the Project is built since it would no longer be an open landscape.") In the Draft EA, DOE observes that "[d]irect effects on this species would result from direct loss and/or modification of the 1,685 acres of suitable San Joaquin kit fox habitat within the CVSR site." Draft EA at 3-83. However, DOE concludes that "the photovoltaic arrays were designed to incorporate movement pathways for San Joaquin kit fox, pronghorn antelope, and other species between the arrays, maintaining connectivity within and through the site, thus maintaining the robustness of the kit fox population on the Carrizo Plain during and after CVSR completion." Draft EA at 3-84.

DOW-7

DOE's conclusion regarding the impact of the CVSR on kit fox are directly contradicted by the agency's own analysis in the Topaz Draft EIS. In light of the significant potential barrier to San Joaquin kit fox movement posed by the CVSR and the Topaz solar projects and the disturbance of 1,685 acres of habitat at the CVSR site, the absence of information or analysis of how the species would use the solar arrays is a data gap that the renders the Draft EA legally inadequate. NEPA implementing regulations require that DOE acknowledge missing or incomplete information and conduct an evaluation of impacts "based upon theoretical approaches or research methods generally accepted in the scientific community." 40 C.F.R. § 1502.22. A scientifically-based analysis of whether or not San Joaquin kit fox will use the CVSR solar arrays once installed is an essential part of the analysis of the project's impacts. We recommend that DOE incorporate such analysis into a full environmental impact statement for the project.

DOW-8

Comment. Notwithstanding the incorporation of mitigation measures, we believe that the CVSR's impacts to wildlife connectivity and wildlife corridors for the San Joaquin kit fox will be significant and *unmitigable*. Habitat loss is the primary cause of San Joaquin Valley upland species endangerment. *See* U.S. Fish and Wildlife Service. *Recovery plan for upland species of the San Joaquin Valley, California* (1998) (hereinafter "Upland Species Recovery Plan"). The California Department of Fish and Game's 2008 Wildlife Action Plan states that "[w]ith only about 5 percent of the San Joaquin valley's original natural areas remaining untilled and undeveloped, these Central Coast habitats, *particularly the Carrizo Plain*, are important for the [San Joaquin kit fox's] survival." *Id.* at 206 (emphasis added). Further, this plan references the U.S. Fish and Wildlife Service (FWS) Recovery Plan for the San Joaquin kit fox, and "calls for the protection of a complex of fox populations (a metapopulation), including three core populations (the Carrizo Plain, western Kern County, and Ciervo-Panoche Natural Area)" and "recommends *protecting remaining connections between populations* to counteract interbreeding or declines in any one population." *Id.* at 206 (emphasis added).

DOW-9

We are especially concerned about these impacts to San Joaquin kit fox because the "paths taken by dispersing kit fox are not well understood, nor is the dispersal range well documented. . . ." Topaz Draft EIS at 3-168. The disruption of landscape scale connectivity for the San Joaquin kit fox, and other dispersing wildlife species on the Carrizo Plain like the tule elk and pronghorn antelope cannot be effectively mitigated given the size of the CVSR, the cumulative impact on landscape-scale connectivity caused by the neighboring Topaz solar project, the Twisselman aggregate mine, and the reconductoring of

the Morro Bay-Midway transmission line, and the region's topographic features. We believe that these adverse effects to wildlife connectivity can only be reduced by a reduction in the size and scale of the CVSR and the neighboring Topaz solar project, and we encourage the DOE to analyze alternatives that differ in size, scale and location from the proposed project to ensure that impacts to San Joaquin kit fox are less than significant. DOW-9 Cont.

3. Giant kangaroo rat. DOW-10

Comment. DOE observes that surveys in 2009 and 2010 identified as many as 1,876 individual giant kangaroo rats ("GKR"), a federally endangered species, on between 426-538 acres of the CVSR project site, s*ee* Draft EA at 3-82, and that most of the CVSR site "provides suitable habitat for the giant kangaroo rat," *id.* at 3-82. DOE concludes that the "avoidance of core populations of giant kangaroo rat, micro-siting to reduce impacts to densely populated areas, and preservation of large contiguous blocks of habitat both onsite and offsite, along with other design features . . . would ensure that adverse effects on giant kangaroo rat would be long-term but minor, and impacts would not be significant during construction or operations." *Id.* at 3-83.

In reaching its conclusion, DOE ignores critical data gaps regarding GKR. First, the effect of the array structures on GKR is unknown and may adversely affect the species' ability to use array sites. *See id.* ("Indirect effects on this species could result from the array structures excluding giant kangaroo rats. . . .") Second, the "[e]ffects from grazing regimes changes are unknown and could benefit or exclude this species from some areas." *Id.* 3-83. Third, structures installed as part of the CVSR project could create suitable perches for barn owls and great horned owls "which would enhance foraging on nocturnal giant kangaroo rats along the perimeter of arrays." *Id.* NEPA implementing regulations require that the agencies acknowledge missing or incomplete information and conduct an evaluation of impacts "based upon theoretical approaches or research methods generally accepted in the scientific community." 40 C.F.R. § 1502.22. Additionally, FWS has recommended that "[w]here populations of giant kangaroo rats and associated, listed species appear to be robust, land use should not be changed," Upland Species Recovery Plan, and that 100% of GKR habitat on the Carrizo Plain be conserved, *see* FWS, Giant Kangaroo Rat 5-year review (2010). In light of the critical missing information and FWS's conservation recommendations, a scientifically-based analysis of whether or not GKR will use the solar arrays once installed, the effects of grazing regime changes on GKR, and the effect of increased owl predation on GKR are essential elements of the project's impacts on that must be analyzed in a full environmental impact statement.

Comment. DOE also fails to analyze the impacts of construction vibrations and noise will impact GKR in the vicinity of the project. According to Dr. Jan Randall, a leading GKR expert, GKR have enlarged tympanic bulla and hypertrophied middle ear volumes specialized for hearing low-frequency vibrations. They may also use sematosensory receptors for sound transmission from the feet to middle ear cavity. Loud and persistent seismic vibrations originating from construction and other disturbances could cause permanent damage to the sound receptors, which could affect GKR's ability to detect predators and competitors. *See* Attachment 1. DOE must include an analysis of these impacts to GKR. DOW-11

Comment. Without a more recent survey for GKR, the number of GKR present on the project site is unknown. GKR populations have increased from 2009, and if the wet winter caused an increase in green vegetation which stimulates reproduction, more GKR may now be present on the site. For all of the above cited reasons, the DOE must fully analyze potential impacts to GKR in a full environmental impact statement to ensure that impacts to the species are less than significant. DOW-12

4. Longhorn fairy shrimp and vernal pool fairy shrimp.

Comment. DOE observes that seasonal wetlands on the CVSR project site may support federally listed fairy shrimp species, although surveys have not yet detected these species, and concludes that the seasonal wetlands would be protected from runoff from the project site by a 400-foot no-construction buffer. *See* Draft EA at 3-85. Because of the imperiled status of these species, DOE must provide an analysis of its conclusion that these species will be adequately protected by the buffer in a full environmental impact statement. DOW-13

5. Blunt-nosed leopard lizard.

Comment. The blunt-nosed leopard lizard is a federally endangered species that is also a California fully-protected species. *See* Draft EA at 3-76. On the basis of surveys conducted in 2009 and 2010 and the applicant's proposed continuing surveys for this species, DOE concludes that "adverse effects on blunt-nosed leopard lizard from construction and operation of the proposed action would be negligible and not significant." *Id.* at 3-85. However, as DOE itself observes, the applicant did not survey the *entire* site for blunt-nosed leopard lizard. *See id.* An analysis of complete survey data for the entire CVSR site for the presence of the blunt-nosed leopard lizard is an essential part of the evaluation of the project's impacts. Because the blunt-nosed leopard lizard is both a federally endangered species and a California fully-protected species, its presence on the project site will require the CVSR project to be reconfigured or even relocated to avoid take of this fully-protected species. We recommend that DOE conduct this analysis as part of a full environmental impact statement for the project. DOW-14

6. California condor.

Comment. The project site contains suitable habitat for California condor, a federally endangered species and California fully protected species, and "there is potential for California condors to eventually use the area as foraging habitat as the population recovers." Draft EA at 3-86. DOE dismissed the impact of the CVSR on condor recovery observing that the project will affect less than 1% of the available foraging habitat on the Carrizo Plain. *See id.* However, DOE has not analyzed the cumulative impacts of the CVSR, the Topaz solar project, or other solar projects slated on the recovery potential of the California condor. Because this critically imperiled species is returning from the brink of extinction, DOE must analyze the potential direct and cumulative impacts of the CVSR on its recovery in a full environmental impact statement. DOW-15

Comment. Microtrash – small bits of debris such as bottle caps, rags, screws, bolts, wires, glass, and other materials – presents a considerable threat to the recovery of the California condor. Condors, which are curious by nature, are attracted to microtrash and often ingest it and bring it back to their nests, where condor chicks swallow the small pieces. Microtrash is not digestible and is fatal unless it is surgically removed. Due to the proximity of the project site to the primary southern California condor release site at Hopper Mountain National Wildlife Refuge and active use by condors of the Sierra Madre and La Panza ranges south and west of the project, regular microtrash clean-up and removal of all small metal objects should be implemented throughout the construction and operation phases of the project. We recommend that such clean-up occur at the end of construction activities daily or, at a minimum, weekly to prevent adverse effects to condors. DOW-16

7. Kern primrose sphinx moth.

Comment. DOE concludes that it is unlikely that the Kern primrose sphinx moth, a federally threatened species, occurs on the project site even though the agency does not have the results of surveys underway to detect the species and the species' host plant is found on the site. *See* Draft EA at 3-86. DOE cannot DOW-17

support its conclusions regarding this listed species without analysis of the survey data, and we recommend that such analysis be incorporated into a full environmental impact statement for the project. DOW-17 Cont.

8. Mountain plover.

Comment. We are concerned that the impacts to the mountain plover from the CVSR may be greater than presented in the Draft EA. According to the EA, the project will "result in the direct loss of approximately 1,684 acres of suitable wintering habitat within the CVSR site vicinity because plovers are expected to avoid areas under and near solar panels or near buildings." Draft EA at 3-86. In light of these direct impacts and the potential cumulative impacts resulting from the development of the neighboring Topaz solar project, we recommend that DOE analysis the impacts to mountain plover from the CVSR in greater detail in a full environmental impact statement. DOW-18

9. Other sensitive species.

Comment. In addition to the wildlife species listed under the federal Endangered Species Act, the Carrizo Plain and the CVSR project site provide habitat for numerous other sensitive species, including golden eagles, bald eagles, white-tailed kite, Swainson's hawk, San Joaquin antelope squirrel, San Joaquin whipsnake, western spadefoot toads, burrowing owls, pronghorn antelope, tule elk, and American badger. We are especially concerned that the project will adversely impact burrowing owls in light of the latest statewide data from the Institute for Bird Populations that indicates that all California populations of this species are declining except for the Carrizo Plain population. Additionally, golden eagles, which are a California fully-protected species and protected by the federal Bald and Golden Eagle Act, are known to forage on the Carrizo Plain and the CVSR site. In light of the numerous sensitive species known to occur on the Carrizo Plain in the vicinity of the CVSR project site, we recommend that DOE perform a comprehensive analysis of the project's impacts to these species in a full environmental impact statement to ensure that impacts to these species are less than significant. DOW-19

C. The CVSR will have significant cumulative impacts.

Comment. For NEPA purposes, cumulative impact is defined as "the impact on the environment which results from the incremental impact of the [proposed] action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." 40 C.F.R. § 1508.7. "Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." *Id.* Federal agencies must include cumulative impacts analyses into environmental assessments as well as environmental impact statements. *See e.g., Or. Natural Res. Council v. BLM*, 470 F.3d 818, 823 (9th Cir. 2006). DOW-20

Here, the CVSR is one of two utility-scale solar projects proposed for the Carrizo Plain in San Luis Obispo County, California. In the Draft EA, DOE acknowledges that the "[g]rassland habitats within the Carrizo Plain provide some of the largest remaining contiguous habitats for many endangered, threatened, and rare species," Draft EA at 4-12 - 4-13, and that "[l]arge-scale solar development currently represents a significant potential source of additional habitat loss for these species," Draft EA at 4-13. DOE states that solar development will also "contribute to the fragmentation of habitat by altering wildlife linkages and movement corridors" for San Joaquin kit fox, tule elk, and pronghorn antelope. *Id.* at 4-13 In the Topaz Draft EIS, DOE acknowledged that the "two solar projects proposed to be located in the Carrizo Plain could reduce an existing corridor available to wildlife by 50 percent, nearly bisecting the Carrizo Plain into a north and south section." Topaz Draft EIS at 3-260. With regard to the San Joaquin kit fox, DOE observed that the "USFWS recovery plan for San Joaquin kit fox determined that it was important to

protect and enhance corridors for the movement of kit foxes from the Salinas Valley to the Carrizo Plain and San Joaquin Valley." *Id.* at 260.

Even though DOE identifies significant and extensive cumulative impacts to sensitive species and wildlife connectivity as a result of the CVSR, the agency dismisses these impacts as insignificant without further analysis, relying on the applicants' intended implementation of design features and establishment of compensatory mitigation lands. DOE's conclusion is contradicted by its observation that "[i]t is unclear to what extent wildlife, particularly the giant kangaroo rat, San Joaquin kit fox, tule elk, pronghorn antelope, and American badgers would use the CVSR site or designed movement pathways during and after construction." Draft EA at 4-14. At a bare minimum, the potential for serious, long-term impacts to sensitive species and wildlife connectivity requires DOE to prepare a full environmental impact statement for the CVSR project to ensure that cumulative impacts are reduced to less than significant levels. DOE's recognition that the agency's entire cumulative impacts analysis is underlain by an incomplete understanding of whether or not the affected species will even use the CVSR project site or the designated movement corridors renders the Draft EA legally defective and makes the requirement of a full environmental impact statement a certainty. DOW-21

Comment. NEPA requires that the agencies' cumulative impact analysis "must be more than perfunctory; it must provide a useful analysis of the cumulative impacts of past, present, and future projects." *Ocean Advocates v. United States Army Corps of Eng'rs*, 361 F.3d 1108, 1128 (9th Cir. 2004) ("[I]n considering cumulative impact, an agency must provide some quantified or detailed information; . . . general statements about possible effects and some risk do not constitute a hard look absent justification regarding why a more definitive information could not be provided.") (internal quotations and citations omitted). Here, DOE has identified significant and extensive potential cumulative impacts to wildlife connectivity resulting from the development of two utility-scale solar projects on the Carrizo Plain but has failed to provide any analysis or projected impact to the continued survival and productivity of wildlife populations. More specifically, DOE recognizes that the two projects will, in effect, bisect the Carrizo into a north region and south region; however, the agency makes no attempt to analyze how such an impact will affect the long-term persistence of the Carrizo's San Joaquin kit fox, tule elk, pronghorn antelope or other species whose population viability depends on landscape-level connectivity. The depth of the cumulative impacts analysis is insufficient to establish a clear condition and trend with regard to various sensitive wildlife species that rely on landscape-scale habitat connectivity. For example, we do not know whether the north-south wildlife barrier resulting from the construction of both the CVSR and the Topaz project would cause a decline in productivity of the region's pronghorn antelope herds or pose a threat to the survival of San Joaquin kit fox populations or other species. As a result, neither DOE nor the public can meaningfully evaluate the cumulative impacts of the CVSR. DOW-22

Comment. The cumulative impact of the CVSR on San Joaquin kit fox requires analysis in light of the proposed Panoche Valley solar project. DOE acknowledges that the Panoche Valley solar project "could substantially affect the movement patterns of another core San Joaquin kit fox population," Topaz Draft EIS at 3-260, and that the Panoche Valley is also a core population for the San Joaquin kit fox, *see* Draft EA at 4-7. Together, the CVSR, the Topaz solar project, and the Panoche solar project will convert 11,000 acres of core recovery habitat for the San Joaquin kit fox to utility-scale solar. *See* Draft EA at 4-13. However, other than merely identifying this potentially devastating cumulative impact, DOE does not analyze what it means for the long-term survival and recovery of the species. Without such analysis, neither the agencies nor the public can meaningfully evaluate the cumulative impact of the CVSR. Because both the Panoche Valley and the Carrizo Plain are core recovery areas for the San Joaquin kit fox, the adverse cumulative impacts of utility-scale solar development in these regions are significant and unmitigable. We recommend that DOE analyze the cumulative impacts in a full environmental impact statement. DOW-23

Comment. In addition to the San Joaquin kit fox, tule elk, and pronghorn antelope, we recommend that the agencies conduct an in-depth cumulative effects analysis of the impact of the CVSR and the neighboring Topaz solar project for all sensitive biological resources on the Carrizo Plain. DOW-24

Comment. Throughout the Draft EA, DOE concludes that impacts to sensitive species will be "long-term" but otherwise insignificant. *See e.g.*, Draft EA at 3-83 (concluding that impacts to "giant kangaroo rat would be long-term but minor"). However, DOE does not undertake any analysis of the cumulative effect of a long-term impact on GKR or any of the other sensitive wildlife species present on the CVSR project site. DOE must undertake an analysis of whether the long-term impacts it acknowledges in the Draft EA will amount to "individually minor but collectively significant actions taking place over a period of time." 40 C.F.R. § 1508.7. Long-term stressors, such as the permanent fragmentation of wildlife habitat and the disruption of connectivity for already imperiled wildlife species may result in an unforeseen cumulative adverse effect for these species. DOW-25

II. DOE's statement of purpose and need in the Draft EA is impermissibly narrow.

Comment. In fulfilling their EIS obligations under the National Environmental Policy Act ("NEPA"), federal agencies must "specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action." 40 C.F.R.§ 1502.13. Courts have "interpreted NEPA to preclude agencies from defining the objectives of their actions in terms so unreasonably narrow that they can be accomplished by only one alternative (i.e. the applicant's proposed project)." *Colo. Envtl. Coal. v. Dombeck*, 185 F.3d 1162, 1174 (10th Cir. 1999) (citing *Simmons v. United States Corps of Eng'rs*, 120 F.3d 664, 669 (7th Cir. 1997)). DOW-26

According to the Draft EA, DOE's stated purpose and need for the proposed project is to ". . . comply with DOE's mandate under the EPAct of 2005 [the Energy Policy Act of 2005] to select eligible projects that meet the goals of the Act. DOE is using the National Environmental Policy Act (NEPA) process to assist in determining whether to issue a loan guarantee to the Applicant to support the CVSR Project." Draft EA at 1-1. As a practical matter, DOE's statement of purpose and need is limited to evaluating the CVSR project as proposed by SunPower which impermissibly narrows the range of alternatives the agency considers in the Draft EA. *See Carmel by the Sea v. U.S. DOT*, 123 F.3d 1142, 1155 (9th Cir. 1995). We recommend that the agency use the purpose and need statement to address the broader need to generate greater amounts of electrical energy from renewable energy sources so that dependency on carbon-based fuels is reduced and to contribute to the requirement to generate certain minimum amounts of renewable energy to comply with State and federal standards. This broad statement of purpose will permit the agency to meaningfully consider a range of alternatives to the proposed action, including alternatives that differ in scale, technology and location from the proposed project.

III. DOE fails to consider a range of reasonable alternatives to the CVSR project.

Comment. In addition to properly defining the purpose and need of an agency action, agencies must consider a range of reasonable alternatives to the proposed action in the EIS. *See* 42 U.S.C. § 4332(2)(E). The range of alternatives analysis is the "heart of the environmental impact statement." 40 C.F.R. § 1502.14. NEPA requires DOE to "rigorously explore and objectively evaluate" a range of alternatives to proposed federal actions." *See* 40 C.F.R. §§ 1052.14(a) and 1508(c). The purpose of this requirement is to ensure "that no major federal project should be undertaken without intense consideration of other more ecologically sound courses of action, including shelving the entire project, or of accomplishing the same result by entirely different means." *Envtl. Defense Fund v. Corps of Eng'rs*, 492 F.2d 1123, 1135 (5th Cir. DOW-27

1974); *see also Methow Valley Citizens Council v. Regional Forester*, 833 F.2d 810 (9th Cir. 1987), *rev'd on other grounds*, 490 U.S. 332 (1989).

DOW-27 Cont.

According to the Draft EA, "DOE's proposed action is to issue a federal loan guarantee to the Applicant to support the construction and start up of the CVSR project." Draft EA at 1-11. The Draft EA evaluates the proposed action and a no action alternative. *See* Draft EA at ES-2. The agency rejected consideration of alternative locations and alternative technologies "because they did not meet the criteria or objectives of the CVSR Project." *Id.* at ES-2. More accurately, DOE adopted SunPower's evaluation of alternatives for an environmental impact report prepared for San Luis Obispo County without any independent analysis by the agency. *See* Draft EA at 2-28 – 2-29. As a result, DOE has turned its legal obligation under NEPA to consider alternatives on its head and has instead deferred to the alternatives analysis undertaken by SunPower in its effort to find the most cost-effective location for the development of a utility-scale solar project. DOE has shirked its legal obligation to independently evaluate alternatives so that the adverse environmental impacts of the proposed action are fully understood by the agency and the public. *See e.g.*, 40 C.F.R. § 1502.1 (stating that the purpose of the environmental impact statement is to "inform decisionmakers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment.") Specifically, DOE has failed to evaluate any alternatives to the size and scale of the proposed project in a manner that would minimize the adverse consequences of the CVSR for sensitive wildlife species and wildlife connectivity. We recommend that the agencies analyze the environmental impacts of alternative project sites and locations, including those that may not be located within San Luis Obispo County; project extent and electrical power generation that differ from the company's proposal; and the potential for different technology that may reduce adverse impacts to sensitive environmental resources.

Comment: We understand the CVSR project has undergone one or more revisions since the preparation of the Draft EA and will be installed in a configuration not analyzed. As a result, DOE have not analyzed the project that will actually be developed. We recommend that DOE supplement its analysis in the Draft EA with an analysis of the expected final configuration of the project. In particular, the location of PV arrays within the acres of options acquired by the company has the potential to significantly impede landscape connectivity for wildlife on the Carrizo Plain. Based on the Draft EA, neither the agencies nor the public can meaningfully comment on the impact of the project on landscape connectivity because the actual configuration of the project is not analyzed.

DOW-28

Comment. Defenders has identified criteria for the preferred siting for renewable energy projects. We urge the agencies to analyze alternatives that include the following characteristics:

DOW-29

- Brownfields:
  - Revitalize idle or underutilized industrialized sites.
  - Existing transmission capacity and infrastructure are typically in place.
- Locations adjacent to urbanized areas:[1]
  - Provide jobs for local residents often in underserved communities;
  - Minimize growth-inducing impacts;
  - Provide homes and services for the workforce that will be required at new energy facilities;
  - Minimize workforce commute and associated greenhouse gas emissions.
- Locations that minimize the need to build new roads.
- Locations that could be served by existing substations.

[1] Urbanized areas include communities that welcome local industrial development but do not include communities that are dependent on tourism for their economic survival.

- Areas proximate to sources of municipal wastewater for use in cleaning and employee and visitor sanitation facilities.
- Locations proximate to load centers.

DOW-29 Cont.

IV. DOE's reliance on the protection of compensatory mitigation lands to justify significant extensive impacts to wildlife and wildlife connectivity requires analysis in a full environmental impact statement.

DOW-30

Comment. DOE states that "the CVSR Project's biological resource conservation strategy would ensure conservation such that, overall, there would be a net benefit to species that would be impacted." Draft EA at 3-87. According to DOE, one of the principle mechanisms SunPower will employ to conserve wildlife species will be the "conservation, preservation, enhancement, and management of on-site and off-site conservation lands in perpetuity." *Id.* DOE fails to undertake any analysis of whether or not such compensatory mitigation is likely to achieve conservation goals or meets the habitat needs of sensitive species, fails to review and analyze SunPower's habitat management and monitoring plans, and fails to require details about the conservation easements proposed as the mechanism for protection in perpetuity. Mitigation lands proposed by SunPower for GKR in October 2010 are unlikely to provide suitable habitat for the species. Additionally, in many cases, the compensatory mitigation proposed by SunPower may occur on lands that are already suitable habitat for sensitive species and, therefore, their protection will not result in the net conservation benefit claimed by DOE. Finally, DOE acknowledges throughout the Draft EA significant missing information for how San Joaquin kit fox, GKR, tule elk, pronghorn antelope, and other species will use and move through the solar arrays once installed. For these reasons, DOE's reliance on the proposed protection of compensatory mitigation lands in the vicinity of the project is arbitrary. The anticipated effect of this conservation strategy must receive detailed analysis before the agency can rely upon it to justify significant extensive impacts to wildlife and wildlife connectivity.

Comment. The most important compensatory mitigation lands for GKR are the California Valley subdivision parcels. Even though the Draft EA acknowledges the purported "California Valley Land Acquisition Program" for acquisition of the subdivision properties, such program appears to be purely aspirational. DOE includes no information on what if any parcels are available for acquisition or when such acquisitions shall be completed. We believe that DOE's reliance on the California Valley Land Acquisition Program as mitigation for the impacts of the CVSR is unjustified without the agency examining the details of such program. Because we believe these are the most important mitigation lands for GKR, without which the CVSR should not proceed, the absence of any meaningful information about such program is a fatal defect for Draft EA.

DOW-31

V. DOE fails to analyze the CVSR project's impacts in light the anticipated effects of global climate change on the Carrizo Plain.

DOW-32

Comment. The Draft EA analyzes the project's climate change impacts by analyzing the expected contribution and reduction of greenhouse gases resulting from the project. *See* Draft EA at 3-44 – 3-45. DOE does not analyze the impacts climate change will have on species and the effects of climate change on habitats that would be required to sustain viable populations of at risk species. NEPA's "hard look" requires that federal agencies consider climate change in environmental impact statements. DOE must consider the effect of the CVSR project on climate change, the effect of climate change on the CVSR project, *and* the effect of climate change on the affected environment, i.e. the wildlife and wildlife habitats of the Carrizo Plain. Climate change considerations are relevant throughout the NEPA process, from the scope of the environmental document and the description of the affected environment to the design of the proposed action, alternatives to the proposed action, and the environmental impacts of the proposed action and alternatives. According to the U.S. Global Climate Change Research Program, average

temperatures in the Southwestern U.S. – including California – are projected to rise from four to as much as 10ºF over the baseline years (1960-1979) by the year 2090. An increase of between seven and 10ºF associated with the higher greenhouse gas emission scenario is more likely than the lower range of temperature increase associated with the lower emissions.

DOW-32 Cont.

DOE must evaluate the impacts of the CVSR project on wildlife species, wildlife habitat, and wildlife connectivity in the Carrizo Plain in light of the projected effects of global climate change. Such changes include, for example, movement of certain species to higher elevations and/or latitudes as temperatures increase, shifts in natural communities' species composition, and changes in precipitation patterns. Planning for species adaptation must be essential components of the analysis and decision for the project contained in the NEPA documents.

Comment. We are especially concerned that the disruption of landscape-scale connectivity caused by the CVSR project will impede the ability of plant and animal species to respond to climate change and to persist on the landscape of the Carrizo Plain. We recommend that DOE specifically incorporate an analysis of the project's impacts on landscape-scale connectivity for wildlife and wildlife habitat in light of the anticipate impact of climate change for the Carrizo Plain. Additionally, we recommend that the agencies consider the following impacts of climate change on the wildlife and wildlife habitat of the Carrizo Plain:

DOW-33

- Fish and wildlife: habitat, composition, shifts to higher elevation/latitudes, reduced vegetation food sources, altered migration routes, less available water sources.
- Increases in the frequency, severity, duration and extent of extreme events such as drought, flooding, storms, and heat waves.
- Soil: erosion, impacts to soil moisture, fugitive dust concentrations.
- Threatened and endangered species: effects of moisture-related stress on species, changes to migration patterns.
- Vegetation: preferential CO_2 metabolites, species migration, establishment of invasive species, pathogens, warm/cool season plants, growing season.
- Water: changes to availability, quality, quantity, precipitation patterns, flow regimes, dilution, water temperatures, elevation of snow pack, annual snow pack longevity, groundwater elevations, water rights.
- Wildfire: fire frequency, fuel load quantity and composition, fuel temperatures, relative humidity, water availability for fire suppression, drought, increased severe precipitation/soil loss.
- Invasive species.

Conclusion

DOW-34

The Department of Energy's proposal to provide a loan guarantee for the California Valley Solar Ranch project is a major federal action significantly affecting the quality of the human environment. More specifically, as proposed, the CVSR will have adverse impacts to an ecologically critical area, the Carrizo Plain, and numerous threatened and endangered species and other sensitive and special status species. Additionally, the cumulative impacts of the development of utility-scale solar power on the Carrizo Plain will have potentially devastating impacts for landscape-level connectivity for San Joaquin kit fox, tule elk, and pronghorn antelope. For these reasons, and the additional reasons set forth above, the Draft Environmental Assessment for the CVSR is substantively and legally deficient. We recommend that DOE undertake a comprehensive environmental impact statement in order to fully understand and account for the broad adverse impacts expected from the development of this project.

Thank you once again for the opportunity to provide comments on the California Valley Solar Ranch and for considering our comments. Defenders requests all notices for the above-referenced project. The requested notices should be mailed to Pamela Flick, Defenders of Wildlife, 1303 J Street, Suite 270, Sacramento, CA 95814.

If you have any questions, please contact me at (916)313-5800 x105 or via email at pflick@defenders.org.

Sincerely,

Pamela Flick, California Program Coordinator
Defenders of Wildlife

References

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ATTACHMENT 1

15 May 2011

Re: Draft Environment Assessment for Department of Energy Loan Guarantee to High Plains II, LLC for the California Valley Solar Ranch

From: Dr. Jan A. Randall, Professor Emerita, San Francisco State University. I am a behavioral ecologist with over 30 years of experience doing research on kangaroo rats and also a member of the Giant Kangaroo Rat Science Advisory Committee for the CVSR.

A number of details seem lacking in this report. The most important one is specific information about mediation lands for the giant kangaroo rats' habitats that are affected by construction of the solar arrays. These lands are not identified, and there is no mandated time line for any acquisitions.

Below is a direct quote from the EA, page 3-83, which seems to refer to the acquisition of 2.5 acre parcels in the California Valley Development Area that would make the mitigated habitat of the giant kangaroo rat contiguous with those in the Carrizo Plain National Monument, as suggested at the 21October 2010 meeting of the Giant Kangaroo Rat Work Group. To my knowledge, there has been little or no action to obtain these parcels.

SunPower promised $500,000.00 to buy them, but the amount is grossly inadequate. These lots sold 3 years ago for up to $20,000. Even if Sun Power could obtain them for $10,000, this is only 50 lots or 125 acres. A much larger sum is necessary with much more effort made to locate the owners of the lots and to purchase them. I consider the acquisition of this habitat the most important aspect of mitigation for loss of giant kangaroo rat habitat from the CVSR project.

"Large contiguous habitat areas supporting the greatest densities of giant kangaroo rats within the CVSR site would be preserved and managed as giant kangaroo rat habitat."

The report also mentions offsite mitigations sites, but these are not specified. Scientists were shown mitigation lands southwest of the California Valley Center on 20 October 2010. The scientists agreed that this site was unlikely to be suitable for the giant kangaroo rats as a mitigation site. To my knowledge no other lands have been proposed, and we are waiting for a soil analysis to help ascertain what habitats might be the most suitable for the kangaroo rats.

Another concern is on page 3-35, "Construction Ground borne Vibration/Groundborne Noise." There is no consideration for how ground borne vibrations affect the kangaroo rats hearing. Kangaroo rats have enlarged tympanic bulla and hypertrophied middle ear volumes specialized for hearing low-frequency vibrations. They may also use sematosensory receptors for sound transmission from the feet to the middle ear cavity. Loud and persistent seismic vibrations originating from construction and other disturbances could cause permanent damage to the sound receptors, which could affect the kangaroo rats' ability to detect predators and competitors.

Without a more recent survey, the number of kangaroo rats present on the site is unknown. Reproduction occurs in the winter so by early May at the end of the breeding season an estimate of the population is possible. Populations have increased from 2009, and if the wet winter caused growth of green vegetation that stimulates reproduction, there may be more kangaroo rats on the proposed site than is in the report.

Finally, I disagree with the statement at the bottom of page 3-90, "Therefore, impacts on these species would not be significant during construction." The impact will be significant, despite the efforts to minimize it. The best solution is to avoid construction in all areas with kangaroo rat burrows.

CENTER *for* BIOLOGICAL DIVERSITY *Because life is good.*

protecting and restoring natural ecosystems and imperiled species through science, education, policy, and environmental law

Sent by electronic mail and USPS Mail

May 16, 2011

Ms. Lynn Alexander,
U.S. Department of Energy,
Loan Programs Office (LP-10),
1000 Independence Ave, SW,
Washington, DC 20585
Lynn.Alexander@hq.doe.gov

RE: Comments on Draft Environmental Assessment for Department of Energy Loan Guarantee to High Plains II, LLC for the California Valley Solar Ranch Project in San Luis Obispo County and Kern County, California DOE/EA–1840, April 2011

Dear Ms. Alexander:

These comments are submitted on behalf of the Center for Biological Diversity's 320,000 staff, members and on-line activists in California and throughout the western states, regarding the Draft Environmental Assessment for Department of Energy Loan Guarantee to High Plains II, LLC for the California Valley Solar Ranch Project in San Luis Obispo County and Kern County, California DOE/EA–1840, April 2011 issued by the Department of Energy (DOE).

The development of renewable energy is a critical component of efforts to reduce greenhouse gas emissions, avoid the worst consequences of global warming, and to comply with Section 211 of the Energy Policy Act of 2005, as well as Executive Order 13212, and to assist California in meeting emission reductions set by AB 32, the recently signed law requiring 33% of energy be renewable by 2020. The Center for Biological Diversity (the "Center") strongly supports the development of renewable energy production, and the generation of electricity from solar power, in particular. However, like any project, proposed solar power projects should be thoughtfully planned to minimize impacts to the environment. In particular, renewable energy projects should avoid impacts to sensitive species and habitats, and should be sited in proximity to the areas of electricity end-use in order to reduce the need for extensive new transmission corridors and lines and the efficiency loss associated with extended energy transmission. Only by maintaining the highest environmental standards with regard to local impacts, and effects on species and habitat, can renewable energy production be truly sustainable.

The proposed project is proposed on the north and south sides of Highway 58 and is located approximately 2 miles north of the Carrizo Plain National Monument.. It includes approximately 811,000 PV solar panels on approximately 1,205 acres throughout an approximately 4,700 acre site (over 7 square miles). Other components of the proposed project include:

- a direct current collection system from the solar panels to centralized inverters,
- an alternating current, medium-voltage collection system,

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- new substation,
- 4-mile 230-kV interconnection line would transmit the generated electrical power to the Morro Bay–Midway transmission line,
- A permanent operations and maintenance facility,
- An outdoor viewing summit,
- re-establishing the Twisselman aggregate mine (not apart of this Environmental Assessment),

The proposed project also includes the Morro Bay–Midway transmission line reconductoring which proposes to:

- Reconductor of approximately 35 miles of the Morro Bay–Midway transmission line, from the proposed Topaz Solar Farm to the Midway substation in Kern County.
- Build a new switching station (the Caliente switching station).
- Install a new optical ground wire (both a static line and a fiber optic communication line).

(DEA at 2-2). Confusingly the reconductoring project appears to also be included as a part of the Topaz Solar Project Draft Environmental Impact Statement (DEIS), although the project descriptions differ significantly between this DEA and the DEIS. CBD-1

Currently, the proposed project site is home to at least twenty-seven imperiled species – many of them listed under state or federal endangered species act protection - that were documented to occur on site (DEA at Table 3.8-2). With twenty-seven rare and endangered species documented on site and additional species likely to be present, the EA shows that the DOE needs to produce an Environmental Impact Statement to adequately address the avoidance, minimization, impacts and mitigation. CBD-2

The proposed project would impact one of only three core areas for the endangered species addressed in the Recovery Plan for the Upland Species of the San Joaquin Valley[1]. The species included in the Recovery Plan are already critically endangered due to habitat loss and only persist on the peripheries of their former ranges. Indeed it is hard to imagine a project proposed in a more sensitive habitat type which is home to so many endangered and imperiled species. Despite the erroneous determination in the DEA, the proposed project will in fact result in significant unmitigable impacts to biological resources both on the proposed project site and cumulatively for the region. For those reasons alone, this proposed project should be denied by the DOE. CBD-3

The DEA for the proposed project fails to provide adequate identification and analysis of all of the impacts of the proposed project on the San Joaquin kit fox, giant kangaroo rat, longhorn fairy shrimp, golden eagles and other rare plants and animals. The DEA also fails to adequately address the significant cumulative impacts of the project, and lacks consideration of a reasonable range of alternatives. CBD-4 CBD-5

1 USFWS 1998

Of particular concern is the DEA's failure to include adequate information regarding the impacts to resources and the failure to fully examine the impact of the proposed project along with other similar proposed projects. As a result, this current piecemeal process may lead to the approval of industrial sites sprawling across and throughout the California Valley and adjacent areas, within core habitat and connectivity corridors that will detrimentally affect the recognized conservation investments of the Carrizo Plain National Monument as well as severely compromising the goals of the Recovery Plan for the Upland Species of the San Joaquin Valley. CBD-5 Cont.

The DEA fails to consider potential alternatives that would protect the most sensitive lands from future development. Alternative siting such as the Westlands Solar Park[2], which is on abandoned agricultural fields with no habitat or connectivity value, and alternative technologies (including distributed PV on commercial rooftops and near existing substations) should have been fully considered in the DEA, because these alternatives would eliminate the impacts to species, soils, and water resources in the California Valley, which is part of the larger Carrizo Plain habitat. CBD-6

In the CEQA and other NEPA processes, the Center and others raised concerns about the impacts that development in this portion of the Carrizo Plain would have to species and habitats and particularly to connectivity. As the conservation organizations have emphasized in comments on the various large-scale industrial solar proposals in sensitive habitats throughout California, planning should be done *before* site specific projects are approved in order to ensure that resources are adequately protected from sprawl development and project impacts are first avoided, then minimized and lastly mitigated. CBD-7

In the sections that follow, the Center provides detailed comments on the ways in which the DEA fails to adequately identify and analyze many of the impacts that could result from the proposed project, including but not limited to: impacts to biological resources, impacts to water resources, impacts to soils, and cumulative impacts.

I. The DEA Fails to Comply with NEPA.

NEPA is the "basic charter for protection of the environment." 40 C.F.R. § 1500.1(a). In NEPA, Congress declared a national policy of "creat[ing] and maintain[ing] conditions under which man and nature can exist in productive harmony." *Or. Natural Desert Ass'n v. Bureau of Land Mgmt.,* 531 F.3d 1114, 1120 (9th Cir. 2008) (quoting 42 U.S.C. § 4331(a)). NEPA is intended to "ensure that [federal agencies] … will have detailed information concerning significant environmental impacts" and "guarantee[] that the relevant information will be made available to the larger [public] audience." *Blue Mountains Biodiversity Project v. Blackwood,* 161 F.3d 1208, 1212 (9th Cir. 1998).

Under NEPA, before a federal agency takes a "'major [f]ederal action[] significantly affecting the quality' of the environment," the agency must prepare an environmental impact statement (EIS). *Kern v. U.S. Bureau of Land Mgmt.,* 284 F.3d 1062, 1067 (9th Cir. 2002) (quoting 43 U.S.C. § 4332(2)(C)). "An EIS is a thorough analysis of the potential environmental impact that 'provide[s] full and fair discussion of significant environmental impacts and … inform[s] decisionmakers and the public of the reasonable alternatives which would avoid or CBD-8

2 http://www.westlandssolarpark.com/

minimize adverse impacts or enhance the quality of the human environment.'" *Klamath-Siskiyou Wildlands Ctr. v. Bureau of Land Mgmt.*, 387 F.3d 989, 993 (9th Cir. 2004) (citing 40 C.F.R. § 1502.1). An EIS is NEPA's "chief tool" and is "designed as an 'action-forcing device to [e]nsure that the policies and goals defined in the Act are infused into the ongoing programs and actions of the Federal Government.'" *Or. Natural Desert Ass'n*, 531 F.3d at 1121 (quoting 40 C.F.R. § 1502.1). "If an agency decides not to prepare an EIS, it must supply a convincing statement of reasons to explain why a project's impacts are insignificant." *Ctr. for Biol. Diversity v. NHTSA*, 538 F.3d 1172, 1220 (9th Cir. 2008) (quotations omitted). Assessing likely adverse impacts to listed species and other sensitive resources often requires an EIS given the potential for significant effects. *See Native Ecosystems Council v. Tidwell*, 599 F.3d 926, 936-38 (9th Cir. 2010) (agency violated NEPA in failing to address adverse impacts on sage-grouse habitat); *ONRC v. Goodman*, 505 F.3d 884 (9th Cir. 2007) (agency violated NEPA in not analyzing logging impacts on sensitive species habitat). An agency's refusal to prepare a site-specific EIS, may be overturned where "that there are substantial questions whether a project may have a significant effect on the environment." *Anderson v. Evans*, 314 F.3d 1006, 1017 (9th Cir. 2002).

CBD-8 Cont.

Significance is determined under NEPA by reference to both context and intensity. 40 C.F.R. § 1508.27. The context of this project is the California Valley and Carrizo Plain which provides core habitat identified in the FWS recovery plan which is critical to the survival of a suite of imperiled species. 40 C.F.R. § 1508.27(a). Ten "intensity" factors help determine whether an agency action "may" cause significant impacts. 40 C.F.R. § 1508.27(b). The presence of even just "one of these factors may be sufficient to require preparation of an EIS in appropriate circumstances." *Ocean Advocates v. U.S. Army Corps of Eng'rs*, 402 F.3d 846,865 (9th Cir. 2005). Intensity factors triggered here include, but are not limited to: the "[u]nique characteristics of the geographic area such as proximity to . . . ecologically critical areas"; that approving a large-scale industrial project in core habitat could establish a precedent for future projects; cumulative impacts across the ecosystem particularly impacts to movement corridors; significant adverse impacts to endangered species and core habitat identified in the recovery plan; and potential violations of the ESA because the proposed project may jeopardize endangered species and push them further towards extinction. 40 C.F.R. § 1508.27id. § 1508.27(b)(3), (b)(5), (b)(6), (b)(7). (b)(5), (b)(9) and (b)(10).

The uncertainty of the impacts and the efficacy of the proposed mitigation measures are of particular concern. In *Anderson*, the Ninth Circuit held that the uncertainty of impacts on whales from a planned hunt triggered an EIS where the number of whales recruited to the area was uncertain, it was "difficult to predict" how the hunt would affect the population. *Anderson*, 314 F.3d at 1020–1021. So too here, the uncertainty of the impacts and the effectiveness of the mitigation measures, requires more through analysis of the project in an EIS

CBD-9

An EIS must identify and analyze the direct, indirect, and cumulative effects of the proposed action. This requires more than "general statements about possible effects and some risk" or simply conclusory statements regarding the impacts of a project. *Klamath Siskiyou Wildlands Center v. BLM*, 387 F.3d 989, 995 (9th Cir. 2004) (citation omitted); *Oregon Natural Resources Council v. BLM*, 470 F.3d 818, 822-23 (9th Cir. 2006). Conclusory statements alone

"do not equip a decisionmaker to make an informed decision about alternative courses of action or a court to review the Secretary's reasoning." *NRDC v. Hodel*, 865 F.2d 288, 298 (D.C. Cir. 1988).

A. Purpose And Need and Project Description are Too Narrowly Construed and Unlawfully Segment the Analysis

Agencies cannot narrow the purpose and need statement to fit only the proposed project and then shape their findings to approve that project without a "hard look" at the environmental consequences. To do so would allow an agency to circumvent environmental laws by simply "going-through-the-motions." It is well established that NEPA review cannot be "used to rationalize or justify decisions already made." 40 C.F.R. § 1502.5; *Metcalf v. Daley*, 214 F.3d 1135, 1141-42 (9th Cir. 2000) ("the comprehensive 'hard look' mandated by Congress and required by the statute must be timely, and it must be taken objectively and in good faith, not as an exercise in form over substance, and not as a subterfuge designed to rationalize a decision already made.") As Ninth Circuit noted an "agency cannot define its objectives in unreasonably narrow terms." *City of Carmel-by-the-Sea v. U.S. Dept. of Transportation*, 123 F.3d 1142, 1155 (9th Cir. 1997); *Muckleshot Indian Tribe v. U.S. Forest Service*, 177 F. 3d 900, 812 (9th Cir. 1999). The statement of purpose and alternatives are closely linked since "the stated goal of a project necessarily dictates the range of 'reasonable' alternatives." *City of Carmel*, 123 F.3d at 1155. The Ninth Circuit recently reaffirmed this point in *National Parks Conservation Assn v. BLM*, 586 F.3d 735, 746-48 (9th Cir. 2009) (holding that "[a]s a result of [an] unreasonably narrow purpose and need statement, the BLM necessarily considered an unreasonably narrow range of alternatives" in violation of NEPA).

The purpose behind the requirement that the purpose and need statement not be unreasonably narrow, and NEPA in general is, in large part, to "guarantee[ ] that the relevant information will be made available to the larger audience that may also play a role in both the decision-making process and the implementation of that decision." *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989). The agency cannot camouflage its analysis or avoid robust public input, because "the very purpose of a draft and the ensuing comment period is to elicit suggestions and criticisms to enhance the proposed project." *City of Carmel-by-the-Sea*, 123 F.3d at 1156. The agency cannot circumvent relevant public input by narrowing the purpose and need so that no alternatives can be meaningfully explored or by failing to review a reasonable range of alternatives.

The DOE's purpose and need for the proposed Topaz Solar project is:

CBD-10

> "is to comply with DOE's mandate under the EPAct of 2005 by selecting eligible projects that meet the goals of the Act. DOE is using the National Environmental Policy Act (NEPA) process to assist in determining whether to issue a loan guarantee to the Applicant to support the CVSR Project.."

(DEA at 1-1). In fact, the DEA is flawed in its presumption that:

"an environmental benefit from the CVSR Project design—255,600 to 333,558 metric tons of carbon dioxide equivalent (CO_2e) GHG emissions (depending upon the calculation method used) from electricity produced by conventional fossil-fueled power plants would be potentially avoided each year for the life of the CVSR Project (approximately 25 years)", but the DEA fails to identify which, if any, fossil-fueled fired power plants will be shut down based on the implementation of this project.

(DEA at 1-2) CBD-11

The Center is well aware that deadlines for funding, particularly for the DOE Loan Guarantee funds that have driven the pace of the environmental review for this project and others and, while such funding mechanisms are important, deadlines cannot be used as an excuse for rushed and inadequate NEPA review. The DOE must be concerned with the adequacy of the NEPA review and even if the agencies can properly have an objective of *timely* approval of projects they cannot properly have as purpose and need of the project a *rushed* inadequate environmental impact review. CBD-12

Moreover, in its discussion of the need for renewable energy production the DEA fails to address risks associated with global climate change in context of including both the need for climate change mitigation strategies (e.g., reducing greenhouse gas emissions) and the need for climate change adaptation strategies (e.g., conserving intact wild lands and the corridors that connect them). All climate change adaptation strategies underline the importance of protecting intact wild lands and associated wildlife corridors as a priority adaptation strategy measure. CBD-13

The habitat fragmentation, loss of connectivity for terrestrial wildlife, and introduction of predators and invasive weed species associated with the proposed project in the proposed location may run contrary to an effective climate change adaptation strategy. Siting the proposed project in the proposed location partially impacting ecologically functioning ecosystems, occupied habitat and important habitat linkage areas, major washes and other resources could undermine a meaningful climate change adaptation strategy with a poorly executed climate change mitigation strategy. CBD-14

Moreover, the project itself will emit greenhouse gases during construction and manufacturing in particular and the DEA contains little discussion of ways to avoid, minimize or off-set these emissions although such mitigation is clearly necessary. The way to maintain healthy, vibrant ecosystems is not to fragment them and reduce their biodiversity. CBD-15

B. The DEA Does Not Adequately Describe Environmental Baseline

The establishment of the baseline conditions of the affected environment is a practical requirement of the NEPA process. In *Half Moon Bay Fisherman's Marketing Ass'n v. Carlucci*, 857 F.2d 505, 510 (9th Cir. 1988), the Ninth Circuit states that "without establishing . . . baseline conditions . . . there is simply no way to determine what effect [an action] will have on the environment, and consequently, no way to comply with NEPA." Similarly, without a clear understanding of the current status of these public lands BLM cannot make a rational decision regarding proposed project. *See Center for Biological Diversity v. U.S. Bureau of Land Management, et al*., 422 F. Supp. 2d 1115, 1166-68 (N.D. Cal. 2006) (holding that it was

arbitrary and capricious for BLM to approve a project based on outdated and inaccurate information regarding biological resources found on public lands).

The DEA fails to provide adequate baseline information and description of the environmental setting in many areas including in particular the status of rare plants, animals and communities including San Joaquin kit fox, blunt-nosed leopard lizard, giant kangaroo rat, Kern primrose sphinx moth, golden eagles, rare plants, and other species, particularly with regard to the reconductoring project. CBD-16

The baseline descriptions in the DEA are inadequate particularly for the areas where surveys were a single season, a day, or not performed at all. As discussed below, because of the deficiencies of the baseline data for the proposed project area, the DEA fails to adequately describe the environmental baseline. Many of the rare and common but essential species and habitats have incomplete and/or vague on-site descriptions that make determining the proposed project's impacts difficult at best. Some of the rare species/habitats baseline conditions are vague and as a result, an inadequate impact assessment is provided. An environmental impact statement is required to fully identify the baseline conditions of the site, and that baseline needs to be used to evaluate the impacts of the proposed projects.

C. Failure to Identify and Analyze Direct and Indirect Impacts to Biological Resources

The DEA fails to adequately analyze the direct, indirect, and cumulative impacts of the proposed project on the environment. The Ninth Circuit has made clear that NEPA requires agencies to take a "hard look" at the effects of proposed actions; a cursory review of environmental impacts will not stand. *Idaho Sporting Congress v. Thomas*, 137 F.3d 1146, 1150-52, 1154 (9th Cir. 1998). Where the DOE has incomplete or insufficient information, NEPA requires the agency to do the necessary work to obtain it where possible. 40 C.F.R. §1502.22; *see National Parks & Conservation Ass'n v. Babbitt*, 241 F.3d 722, 733 (9th Cir. 2001) ("lack of knowledge does not excuse the preparation of an EIS; rather it requires [the agency] to do the necessary work to obtain it.") CBD-17

Moreover, DOE must look at reasonable mitigation measures to avoid impacts in the DEA but failed to do so here. Even in those cases where the extent of impacts may be somewhat uncertain due to the complexity of the issues, DOE is not relieved of its responsibility under NEPA to discuss mitigation of reasonably likely impacts at the outset. Even if the discussion may of necessity be tentative or contingent, NEPA requires that the DOE provide some information regarding whether significant impacts could be avoided. *South Fork Band Council of Western Shoshone v. DOI* , 588 F.3d 718 , 727 (9th Cir. 2009). CBD-18

The lack of comprehensive surveys is particularly problematic. Failure to conduct sufficient surveys prior to environmental documentation of the project also effectively eliminates the most important function of surveys - using the information from the surveys to avoid and minimize harm caused by the project and reduce the need for mitigation. Often efforts to mitigate harm are far less effective than avoiding and preventing the harm in the first place. In CBD-19

addition, without understanding the scope of harm before it occurs, it is difficult to quantify an appropriate amount and type of mitigation. CBD-19 Cont.

The DEA fails to provide all of the information necessary for decisionmakers and the public to adequately review the proposed project. Therefore the impacts cannot be fully analyzed or mitigated appropriately or fully. For this reason alone, an EIS needs to be provided and additional alternatives included (including a preferred alternative) that avoids and reduces the impacts to biological resources. CBD-20

The DEA also acknowledges that some essential species specific surveys are still in process. For instance, for the federally threatened Kern sphinx moth "Focused surveys for the species on the CVSR site are currently being conducted….." (DEA at 3-86). Typically a project of this size and in this very sensitive location with potentially so many rare, threatened and endangered species would involve many seasons (not just a single year) of surveys to thoroughly document all of the resources that occur on the site. For this project, the surveys have only been implemented in the last three years. Multiple years of surveys are particularly important in arid regions of California, like the Carrizo Plain, because of the unpredictable and variable precipitation patterns. Therefore, it is impossible to evaluate the potential impact of the proposed project based on the lack of pertinent survey data and an insufficient number of years of surveys. CBD-21

Lastly, the whole inadequate mitigation strategy seems to be – develop the core habitat for the rare, threatened and endangered species and mitigate through acquisition of compensation lands. The generalized strategy of a mitigation ratio for San Joaquin kit fox is proposed to mitigate a multitude of other species – golden eagles, migratory/special status species birds, bats, badger, kit fox, and rare plants. Furthermore, the document actually fails to require that acquired mitigation lands must be habitat for these impacted species. Because any acquired habitat is already inhabited by the same species for which mitigation is sought, this mitigation strategy ensures a *net decrease* in habitat for impacted species. To actually provide mitigation that staunches species' habitat losses, mitigation ratios must be actually address the impacts to each species and must be high enough to fully mitigate the impacts to those species [3]. A *minimum* 5:1 mitigation should be required for development in a core area for the San Joaquin kit fox[4]. especially when the project sites are documented to include kit fox known dens, successful natal dens and documented regular on-site use by kit fox (DEA, Appendix D). The proposed mitigation ratios for kit fox mitigation are inadequate and unjustified for this highly imperiled species. Additionally, any mitigation strategy needs to assure that mitigations actually focus on impacted species. For example, mitigation for impacts to kit fox may not meet the mitigation needs for impacted rare plants, and therefore can not be "nested". This realistic strategy is also essential to prevent future listings under Endangered Species Acts – both state and federal. CBD-22

Many of the plans that are identified in the DEA to adequately minimize or mitigate impacts are simply not provided in the DEA for public review. For example, the Fire Safety Plan (DEA at ES-6), revegetation plan (DEA at 2-26), decommissioning plan (DEA at 2-26), controlled grazing plan (DEA at 3-7) Habitat Restoration and Revegetation Plan (DE at 3-51), CBD-23

3 Moilen et al. 2009, Norton 2009
4 USFWS 2010a

Groundwater Monitoring and Reporting Plan (DEA at 3-61), groundwater management plan (DEA at 3-61), a water supply contingency plan (DEA at 3-61), and a drought management plan (DEA at 3-61), Habitat Mitigation Plan (DEA at 3-89), among other identified but unavailable plans, are key plans for minimization and mitigation. Grazing is proposed (DEA at 3-61) despite the fact that domestic grazing in has been shown to be incompatible with endangered species conservation on the Carrizo Plain[5], While the Center supports the development and implementation of these plans in general, in the absence of even a draft plan being presented in the DEA, it is impossible to evaluate or determine the efficacy of proposed minimization and mitigation to actually adequately mitigate impacts. While the NEPA lead has the responsibility of assuring that mitigation meets all the LORS and conditions, the Center has not always found that to be the case. Studies of mitigation compliance have borne this out as well.[6] Making all of the plans available as part of the public process is important to assure the public that their public resources are being protected – without public disclosure of these plans during the process there is no way to evaluate whether the NEPA lead, in this case the DOE, has put in place adequate plans to prevent degradation of our natural heritage, clean air and water. The DOE must supply these essential plans as part of the public process that enables public input on the plethora of "mitigation" plans that are being proposed as conditions of this proposed project.

CBD-23 Cont.

The Center failed to find a quantitative analysis of impacts other than the number of acres that will be impacted. The DEA fails to adequately identify the on-the-ground impacts to connectivity, and species essential habitat types (breeding/foraging etc.), leaving the public and decisionmakers clueless as to true nature of the impacts. Because of the failure to identify the true impacts, it is impossible to evaluate if the proposed mitigation would be adequate

CBD-24

1. San Joaquin Kit Fox

The DEA fails to actually provide the number of San Joaquin kit fox (SJKF), kit fox dens and kit fox natal dens that would be impacted by the project proposal in the text of the DEA. That information is buried in the Appendix D3. The Biological Assessment documents extensive evidence of the state and federally listed endangered San Joaquin kit fox on the project including " Five natal dens, 3 of which were confirmed to be active, were recorded within the Project site south of SR 58" and "Numerous non-natal dens, and "potential dens"" (DEA at Appendix D-3). The DEA fails to identify the number of SJKF that are currently utilizing the site. The information conflicts with the San Luis Obispo County's FEIR information which "identified 43 potential or active kit fox dens within the project site, 5 of which were identified as natal dens. An additional seven dens appropriately sized for kit fox were found to be excavated by American badgers (*Taxidea taxus*) and 20 that appeared to be excavated by coyote (*Canis latrans*). (FEIR at C.6-15). Regardless, no definitive estimations of the population or number and location of home ranges of kit fox are provided in the DEA, leaving the public and decisionmakers unclear about the magnitude of the impact to the SJKF..

CBD-25

The San Joaquin kit fox has been under California Endangered Species Act protection for over 39 years and under Federal Endangered Species Act protection for over 43 years. Despite

5 Kimball and Schiffman 2003
6 Moilen et al. 2009, Norton 2009, Ambrose 2000

years of conservation efforts, kit fox populations and amount of habitat continue to decline. Modeling suggests that the San Joaquin kit fox is threatened with extinction in the San Joaquin Valley by 2022[7], making the peripheries of its range - areas like California Valley where the project is proposed - even more important for the survival of this imperiled and declining species. Indeed, studies have shown that the most cost-efficient protection for the San Joaquin kit fox is protecting habitat in the Carrizo Plain (including the California Valley) rather than in other remaining areas of the species range[8]. U.S. Fish and Wildlife Service reconfirmed that only three remaining core areas for the San Joaquin kit fox (SJKF) occur in the species range[9]. The large number of kit fox and sign on the project areas are not surprising considering that the Carrizo Plain including the California Valley is only one of three core areas that remain for the declining San Joaquin kit fox on the planet. In the Recovery Plan for the Upland Species of the San Joaquin Valley, the Carrizo Plain including the California Valley is one of only three key recovery areas also[10]. The Carrizo Plain including the California Valley is a refugia and stronghold for the kit fox. Based on this dire situation, the Center submitted a petition to the U.S. Fish and Wildlife Service identifying critical habitat for the San Joaquin kit fox and includes the Carrizo Plain including the California Valley within that proposal. Unfortunately the petition was rejected. This California endemic species is clearly in significant decline, and the proposed project will only promote further declines by impacting occupied core and recovery habitat and fragmenting linkages and movement corridors. The DEA completely fails to acknowledge the importance of the proposed project site to the existence much less the recovery of the San Joaquin kit fox. It also fails to adequately assess how degrading the Carrizo Plain population may affect this core and recovery area, or the connectivity between other populations or its effects on the persistence of smaller, satellite populations as well as the entire population as a whole. Clearly this missing analysis must be included in a Draft EIS.

CBD-26

The DEA fails to disclose that the project area actually lies within one of the 3 cores areas recently identified by U.S. Fish and Wildlife Service[11] Consequently, no analysis of the impact of this proposed project on the core areas of the San Joaquin kit fox is included. Neither are cumulative impacts from other proposed projects (including oil and gas development) within these same core areas.

CBD-27

The DEA fails to analyze that within this important core area for SJKF the proposed project would reduce the width of the least cost path (highly permeable areas) for the SJKF. In fact, the proposed project lies within the best part of the existing connectivity corridor between conservation investments south of the projects site (Carrizo Plain National Monument) and the Palo Prieto-Cholame Valley[12]. In addition, the proposed project poses a significant barrier to the "least cost path" for SJKF in this part of the Carrizo Plain[13]. Failing to analyze how the connectivity would be compromised by the proposed project, leaves the public and decisionmakers without essential information on project impacts.

CBD-28

7 McDonald-Madden et al. 2008
8 Haight et al. 2004
9 USFWS 2010a
10 USFWS 1998
11 USFWS. 2010a
12 Penrod et al. 2010
13 Ibid

The DEA is incorrect in its determination that "The CVSR site ranges from medium-high to low permeability for San Joaquin kit fox and pronghorn antelope and from low to high for tule elk." (DEA at ES-5). Based on the best available science[14], the permeability of a vast majority of the proposed project site is *high* for SJKF It is mostly *high to medium high* permeability for pronghorn, which actually are not antelope. The proposed project area is also a core area for pronghorn. It is mostly *medium-high to high* permeability for Tule elk and is partially in a core area for Tule elk. The DEA therefore extensively misleads decisionmakers and the public in its representation of the potential impacts on the highly endangered kit fox and its habitat and the charismatic re-introduced ungulates, which were re-introduced at public expense. CBD-29

The DEA recognizes that the proposed minimization and mitigation strategies on site are experimental – "It is unclear to what extent wildlife, particularly the giant kangaroo rat, San Joaquin kit fox, tule elk, pronghorn antelope, and American badgers would use the CVSR site or designed movement pathways during and after construction" (DEA at 4-14).. It is unknown how much the kit fox would utilize the site after the Project is built since it would no longer be an open landscape. No studies are presented that document that the SJKF (or other species) will pass through or utilize areas where the solar arrays are proposed. Project structures will potentially conceal kit fox predators (such as coyotes and red foxes) or provide predators roosts (such as barn owls)[15] CBD-30

The proposed mitigation to reduce impacts from the proposed project includes construction of artificial and escape dens, and the placement of SJKF passages through perimeter fencing. While artificial dens have been documented to be used by SJKF[16], they are not typically a successful mitigation strategy[17]. Furthermore we question the need for impacting crucial occupied habitat when less environmentally impacting alternatives are available. We also question that type of approach as mitigation for this proposed project, because the proposed project site is currently already occupied habitat, and increasing on-site populations which would be then in harms way, seems counterintuitive. The recovery of SJKF as identified in USFWS' Recovery Plan for the Upland Species of the San Joaquin Valley states "a central component of species recovery is to establish a network of conservation areas and reserves that represent all of the pertinent terrestrial and riparian natural communities in the San Joaquin Valley. Habitat protection does not necessarily require land acquisition or easement. The most important aspect of habitat protection is that *land uses maintain or enhance species habitat values*."[18] [emphasis added] Industrial development in a core area fundamentally undermines the conservation for this highly imperiled and declining species. CBD-31

The failure of the DEA to provide adequate data on the highly imperiled San Joaquin kit fox and its status on the proposed project site makes any analysis of potential direct or indirect impacts impossible. The DEA makes little attempt to avoid or minimize any potential impacts to CBD-32

14 Ibid
15 USFWS 2010a
16 Warrick et al. 2007
17 Cypher et al. 2009.
18 USFWS 1998 at pg. ix

the kit fox. Instead it relies largely on mitigation lands, which remain unidentified, without an evaluation that adequate mitigation lands are even available. In addition, the proposed 4:1 mitigation on the project site is inadequate even if the mitigation lands are truly habitat for the kit fox, due to the proposed project being within a core area. The proposed 3:1 mitigation ratio for permanent impacts on the reconductoring is not only inadequate, but the DEA fails to address the reason for two different mitigation standards for the same impact to this highly imperiled species. Because the proposed projects sit directly within one of the last remaining core and recovery areas and significantly narrows the only linkage for the species between the southern and northern parts of its range, required mitigation should be at a minimum 5:1 for all of the lands impacted by the projects and *must* include highly suitable habitat as well as identified linkages and movement corridors. It is unclear if such mitigation lands are even available, and the DEA fails to analyze this essential fact.

CBD-32 Cont.

Additionally, the failure to identify the potential mitigation lands and how those lands would be managed further obfuscates the adequacy of the proposed mitigation. As mentioned above, scientific literature indicates that grazing is not compatible with the survival and recovery of many of the endangered species on the Carrizo Plain[19]. The proposed grazing plan, which is not available for review, may reduce the likelihood that SJKF will even utilize the mitigation areas.

CBD-33

Rodenticides are known to be a leading cause of mortality in SJKR, yet the project only proposes to "avoid the use of rodenticides in management practices" (DEA at 2-49). The DEA proposes conflicting guidance on rodenticide use. It notes that "To prevent take of San Joaquin kit foxes, all construction requirements described in the USFWS Standardized Recommendations for the Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance (USFWS 1999) would be followed." DEA at ES-4. First, more recent Standardized Recommendations for Protection of the San Joaquin Kit Fox[20] are available, which allow for some rodenticide use. But more important, the Biological Assessment states that "No rodenticides will be used on the Project site to avoid the potential for poisoning of giant kangaroo rats and San Joaquin antelope squirrels and to avoid the secondary poisoning of San Joaquin kit foxes, California condors (*Gymnogyps californianus*), and other predators and scavengers. The rodenticide ban will also be applied to temporary residential facilities in the temporary construction trailer park." (DEA Appendix D-3 at 46). The DEA's conflicting requirements on this important issue renders it confusing at best,

CBD-34

Based on the DEIS' failure to provide essential data, subsequent analysis of project impacts and adequate mitigation (including an analysis if full mitigation can even be accomplished) for this imperiled and declining species, we strongly urge the DOE to comprehensively address these issues in a supplemental or revised draft EIS.

CBD-35

19 Kimball and Schiffman 2003
20 USFWS 2011

2. Giant Kangaroo Rat

Giant kangaroo rats (GKR) are abundant on the proposed project site (DEA at 3-82), the Twisselman mine (DEA at 9-93) and the reconductoring line site (DEA at 3-75) . The amount of the federally and state listed endangered giant kangaroo rat (GKR) habitat currently extant is only 3% of its historic habitat[21]. In USFWS' five year review for the GKR, recommendations for the Carrizo Plain including the California Valley is to conserve 100% of occupied habitat, include all existing habitat[22]. In addition USFWS' Recovery Plan for Upland Species of the San Joaquin Valley[23] states that for GKR, "Where populations of giant kangaroo rats and associated, listed species appear to be robust, land use should not be changed when ownership or conservation status of parcels changes unless there are compelling reasons to do so." None of these recommendations are acknowledged in the DEA, even as part of an avoidance, minimization or mitigation strategy. While the DEA states that "large contiguous habitat areas supporting the greatest densities of giant kangaroo rats, a federal endangered species, would be preserved and managed as giant kangaroo rat habitat" (DEA at ES-4) it fails to identify how much habitat will be preserved and fails to present data that the adjacent change in land use will prevent degradation of the GKR and its habitat on the preserved lands. Because of the experimental nature of the "preserved" areas for occupation by GKR in perpetuity, these conserved areas should not be included as mitigation. Mitigation should be based on the full project area, because the whole site has the potential for being occupied GKR habitat[24] and no data are provided to show that no indirect impacts will occur. In fact it is likely that indirect impacts will occur to the GKR in the "conserved" areas of the proposed project site. CBD-36

Identification of movement corridors and linkages are conspicuously absent for the GKR and must be identified and analyzed for impacts as well as conservation opportunities. Conservation of potentially occupied habitat, maintenance of connectivity and enhancement of effective dispersal between populations are the keys to recovering this imperiled species[25], yet are conspicuously absent in the impact analysis. CBD-37

While the DEA states that " a Giant Kangaroo Rat Science Advisory Committee for the CVSR Project was formed (which includes the USFWS and BLM) to provide recommendations for and technical review of proposed giant kangaroo rat conservation and restoration of on-site and off-site habitat" (DEA at 1-10), the document does not provide any of those recommendations of the committee in the DEA. While the members of the presumed committee are listed in the Plan for Relocation of GKR (DEA, Appendix C of Appendix D-3), it does not indicate that the plan was reviewed by or commented on by the listed scientists. CBD-38

The DEA is unclear if surveys were done for GKR on the powerline reconductoring project or the Twisselman mine. It is impossible to evaluate the impacts of the proposed projects in these areas, if no surveys were done. As stated above the value of surveys is to identify where species occur and avoid impacting them, and absent occurrence data this can not occur. CBD-39

21 Loew et al. 2005.
22 USFWS 2010b
23 USFWS 1998.
24 DFG 2010
25 Loew et al. 2005

The DEA fails to evaluate the fragmentation effects on the GKR and other species. Fragmentation of habitat is well documented to cause loss of diversity, both biological and genetic, and reduces species fitness to respond to habitat degradation, climate change and other ecological perturbations[26], Because the project will impact species such as the GKR that are already identified as being perilously close to extinction, the DEA fails significantly in analyzing the fragmentation effects on these species. CBD-40

While the implementation of a grazing plan is identified in the DEA (at 3-83), the plan is not available for review. Grazing studies in the adjacent Carrizo Plains National Monument indicate the domestic livestock grazing is not typically compatible with endemic rare species including GKR[27] and other studies show sheep grazing as incompatible with GKR[28]. Therefore it is impossible for decisionmakers and the public to evaluate the impact to GKR from this unavailable plan. CBD-41

3. Tipton kangaroo rat

It is unclear if surveys were performed for the Tipton kangaroo rat or if any were found on the reconductoring site, where habitat was identified, or in other areas of the proposed projects (project site or Twisselman mine). Absent clear information on this federally endangered species presence/absence, the evaluation of impacts can not be adequately evaluated, and therefore is in violation of NEPA. CBD-42

4. Blunt-nosed Leopard Lizard

The DEA recognizes that protocol surveys for blunt-nosed leopard lizard (BNLL) were not done in all of the proposed project areas (DEA at 3-85). One of the important purposes of comprehensive protocol level surveys is to identify where rare resources are located. It is particularly essential for species that are fully protected under State law, as the blunt-nosed leopard lizard is (see below for discussion of fully protected species). By failing to execute protocol level surveys over the whole site, the DOE loses the opportunity to identify presence of the species on-site and avoid potential impacts to this declining and fully protected species, for which the State cannot issue a "take" permit. CBD-43

The recent 5-yer review by the USFWS for the blunt-nosed leopard lizard recognizes that the establishment of the Carrizo Plains National Monument aids in the recovery of the blunt-nosed leopard lizard[29]. It is a key conservation area for this endangered species that has been under state and federal endangered species act protections for over 40 years. While surveys on the proposed project site to date have not located any blunt-nosed leopard lizards, the site still harbors habitat for the species and therefore is essential to this species recovery from the brink of extinction. Generally such large and controversial projects located on such sensitive habitat

26 Bolger et al. 1997, Debinski and Holt 2000, Vandergast et al 2007.
27 Kimball and Schiffman 2003
28 Hawbecker 1944
29 USFWS 2010c

require multiple years of surveys. Adequate surveys should have been conducted prior to impact analysis, because the most important reason for surveys is to minimize the impacts to rare species and habitats. Instead, the DOE has based its analysis on one season of surveys on just part of the site, and proposes a mitigation measure of more surveys (which is not a mitigation measure). Then if BNLL are found, the proposed mitigation can not fully mitigate for this species because BNLL is a fully protected species under California law. The DOE must agree and publish as part of the NEPA documentation that if BNLL are found on the site that the project must be redesigned to avoid this fully protected species and its occupied habitat. CBD-43 Cont.

While the DEA recognizes that BNLL habitat will be affected by the reconductoring project, and proposes mitigation at a 3:1 (DEA at 3-88), the DEA fails to require any mitigation for the BNLL *habitat* for other parts of the project, which is recognized as occurring on the solar and the Twisselman mine sites and that will be impacted by the project. That fact coupled with the failure to perform adequate surveys on the project site and the associated reconductoring project makes the analysis makes the NEPA analysis and proposed mitigation inadequate

5. Kern Primrose Sphinx Moth

The DEA draws the conclusion that "It is unlikely that the Kern primrose sphinx moth occurs within the CVSR site" (DEA at 3-86) yet it goes on to say that surveys are currently being conducted. Host plants are known from the project site (DEA at 3-86). The DEIS needs to include the results of these surveys, upon which a reasoned impact analysis can be done for this federally threatened species. CBD-44

6. Rare Plants

Both the California jewel-flower and the San Joaquin woolly threads are federally listed endangered species. Yet the DEA proposes to mitigate permanent impacts to these species' habitat at a 1:1 ratio. (DEA at ES-4). This proposed mitigation is inadequate and a net loss to the species habitat. Like kit fox and GKR, the mitigation ratio for habitat should be a minimum of 5:1 for these imperiled species. CBD-45

7. Mountain Plover

Currently the proposed project site is one of the few locations in California where the mountain plover winters. While the DEA acknowledges that "Direct effects would result in the direct loss of approximately 1,684 acres of suitable wintering habitat within the CVSR site vicinity because plovers are expected to avoid areas under and near solar panels or near buildings." (DEA at 3-86). Mitigation is to occur on acquisition lands, however no evaluation of the quality of habitat and therefore the adequacy of mitigation is provided. CBD-46

8. State fully Protected Species

Two of the rare species that occur on the project site are fully-protected species under California law (Fish and Game Code §5050), meaning that individuals of the species may not be

"taken" (as defined in the Fish and Game Code) at any time, and CDFG may not authorize take except for scientific research purposes. Therefore all impacts must be avoided. In addition to the two species listed below please refer to the blunt-nosed leopard lizard comments above, which is also a state-fully protected species.

a. Golden eagles

The DEA fails to discuss the golden eagle impacts on the site, particularly with regards to the impacts to foraging. Golden eagles were documented foraging on the project site (FEIR at C.6-16). Aerial surveys for eagle nests were completed but the actual number of eagles' nests and territories is not included in the Appendices other than as a link which is not longer valid. Twenty-two golden eagle nests are located within a 10-mile radius of the proposed project, representing 11 territories. The DEA fails to identify how many eagle territories will be impacted by the proposed project and how mitigation for the over 4,000+ acres of foraging habitat will be mitigated. The fact remains that significant amounts of foraging habitat will decrease carrying capacity of the landscape and could result in a potential loss of habitat needed to support a nesting pair, which would impact reproductive capacity and ultimately result in a "take". It is unclear if mitigation for golden eagle foraging habitat is reliant on SJKF mitigation, and as the Center has pointed out previously, any acquired mitigation lands will likely already be supporting golden eagle foraging, so despite "mitigation' the species will experience a *net loss of habitat*. CBD-47

Scientific literature on this subject is clear - the presence of humans detected by a raptor in its nesting or hunting habitat can be a significant habitat-altering disturbance even if the human is far from an active nest[30]. Regardless of distance, a straight-line view of disturbance affects raptors, and an effective approach to mitigate impacts of disturbance for golden eagles involves calculation of viewsheds using a three-dimensional GIS tool and development of buffers based on the modeling[31]. Golden eagles have also been documented to avoid industrialized areas that are developed in their territory.[32] While the DEIS references the Bald Eagle and Golden Eagle Protection Act, which prohibits, except under certain specified conditions, the take, possession, and commerce of such birds, it fails completely to identify or analyze the foraging habitat impacts, which could constitute a "take" of this species and is clearly not allowed under state law.

b. Bald Eagles

While no bald eagles were identified on the site , the DEA does recognize that there is potential for the bald eagle to use the site for foraging during migration. (DEA at 3-72). However, no impact analysis if provided for this rare species under the Bald Eagle and Golden Eagle Protection Act, which prohibits, except under certain specified conditions, the take, possession, and commerce of such birds, and which is clearly not allowed under state law. CBD-48

30 Richardson and Miller 1997
31 Camp et al. 1997; Richardson and Miller 1997
32 Walker et al. 2005

c. White-tailed kite

While the white-tailed kite was not located on the project site, habitat was identified as occurring on the proposed project site (DEIS at 3-143). As with the eagles above, no actual analysis of how the proposed project would affect the foraging ability of this fully protected species, and if the decrease in foraging could result in "take". Furthermore, the number of kites that occur in the area as well as on the proposed project site, should be clearly identified. This deficiency needs to be included in the EIS. CBD-49

9. Swainson's hawk/Peregrine Falcon

Both the State-threatened Swainson's hawk and American peregrine falcon is identified as potentially occurring on the proposed project site (DEA at 3-73), but no actual analysis of impacts is provided. The number and location of the Swainson's hawk, which is also protected under the Migratory Bird Treaty Act, are unclear. The potential impact to them is unanalyzed in the DEA and therefore is inadequate in disclosing all of the environmental impacts. Few avoidance, minimization and mitigation measures are not provided other than powerline avoidance. We fail to see how the proposed mitigation strategy including mitigation measures actually mitigates the loss of foraging habitat for these species. CBD-50

10. San Joaquin Antelope Squirrel (ST)

The state threatened San Joaquin antelope squirrel is known from the project sites (DEA at 3-73). It is unclear other than the 7 acres of habitat that will be impacted by the Twisselman mine, where locations of the San Joaquin antelope squirrel are, avoidance and minimization measures, how much will be impacted by the project, or what the mitigation strategy is. The DEA completely blows off this species' impact analysis. CBD-51

11. . California Condor

While the California condor was not detected in the project area, we note that this wide-ranging species is recovering from the brink of extinction aided by substantial investments from both the public and private sector. Condors are currently significantly expanding their range into their historic range. The proposed project site is well within the historic range for the California condor and lies less than six miles from federally designated condor critical habitat. The DEA dismisses the development of over 4,700 acres of potential foraging habitat for the California condor as it does for many of the wide-ranging avian species, and therefore fails to consider local and cumulative impacts to this species. CBD-52

12 . Species of Concern

Numerous species of concern of both State and federal resource agencies are identified to inhabit the proposed project site and have potential to be significantly impacted. Species specific issues are discussed below:

a. Badger

Badgers were identified to occur on the proposed project (DEA at 3-73). Literature on the highly territorial badger indicates that badger home territories range from 340 to 1,230 hectares[33]. Therefore, the proposed project could displace *at least* one badger territory. While surveys prior to construction are clearly essential, even passive relocation of badgers into suitable habitat may result in "take". Surveys need to be conducted for both on- and off-site badger territories if animals are to be passively relocated in order to increase chances of persistence. At a minimum, the revised or supplemental DEIS should identify suitable habitat nearby if the project is relying on passive relocation as a mitigation strategy. CBD-53

b. San Joaquin Whipsnake (Coachwhip)

The San Joaquin coachwhip (whipsnake), is present on the proposed project site (DEA at 3-72). The DEA fails to estimate the amount habitat that would be impacted by the proposed project for this species or address any avoidance, minimization or mitigation measures. Eliminating additional on-site habitat pushes this imperiled species closer towards extinction and to Endangered Species Act protection. CBD-54

c. Migratory Birds and Sensitive Birds

Numerous migratory birds have been documented on the site. The DEA fails to note that the proposed project is located in a globally recognized Important Bird Area[34]. The DEA downplays the fatalities that have been documented to occur from birds running into panels[35] as well as impacts to avian species from reflective surfaces and power lines[36]. Adjacent to the proposed project site are agricultural fields and rangelands, which attract birds. The DEA does not quantify the number of birds (rare, migratory or otherwise) that use/traverse the project site from the avian point count surveys (which don't seem to have been done), nor does it evaluate the impact to those birds. The revised DEA needs to analyze likely impacts to birds from the proposed project and PV configuration based on the point counts. The failure to provide the baseline data from which to make any impact assessment violates NEPA. This failure to analyze impacts is not only a NEPA violation, but for migratory birds, may also lead to a violation of the Migratory Bird Treaty Act, 16 U.S.C. §§ 703 -711, because migratory birds may be "taken" if the proposed project is constructed. The DEA does not identify that an Avian Protection Plan is needed. We request that at a minimum, the EIS include such a plan. CBD-55

Additionally Executive Order 13186 states "Each Federal agency taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations is directed to develop and implement, within 2 years, a Memorandum of Understanding (MOU) with the Fish and Wildlife Service (Service) that shall promote the conservation of migratory bird

33 Long 1973, Goodrich and Buskirk 1998
34 http://ca.audubon.org/maps/pdf/Carrizo_Plain.pdf
35 McCrary 1986
36 Klem 1990, Erickson et al. 2005

populations." [37] Because the proposed project is tied to federal actions, it too must abide by this EO. Furthermore the EO states that goals pursuant to the MOU include "3) prevent or abate the pollution or detrimental alteration of the Environment for the benefit of migratory birds, as practicable;" and "(6) ensure that environmental analyses of Federal actions required by the NEPA or other established environmental review processes evaluate the effects of actions and agency plans on migratory birds, with emphasis on species of concern;". Clearly, the EIS needs to adequately identify the migratory bird issues on site and evaluate the impact to those species in light of the guidance in Executive Order 13186.

CBD-55 Cont.

d. . Burrowing owl

The DEA notes that burrowing owls occur on the project sites (DEA at 3-72). However, it does not identify how many burrowing owls are present or the number of active nest burrows that occur at any of the proposed project sites. . Preliminary results from the 2006-7 statewide burrowing owl census identified that the central western interior area actually harbors few Western burrowing owls.[38] The stronghold for burrowing owls in California – the Imperial Valley – has had a recently documented decline of 27% in the past 2 years[39], resulting in an even more dire state for burrowing owls in California. Because burrowing owls are in decline throughout California and elsewhere, and now their "stronghold" is documented to be declining severely, the burrowing owls on this proposed project site (and on other renewable energy projects) become even more important to species conservation efforts.

CBD-56

Mean burrowing owl foraging territories are 242 hectares in size, although foraging territories for owl in heavily cultivated areas is only 35 hectares[40]. Mitigation is proposed as habitat acquisition for SJKF. Adequate acquisition of burrowing owl habitat needs to be acquired, calculated using the mean foraging territory size times the number of owls. Also using the average foraging territory size for mitigation calculations may not accurately predict the carrying capacity of the mitigation lands. It may be that in this arid region of California, the acres necessary to support a burrowing owl is much larger. While CDFG provided mitigation guidance in 2003, that guidance is now out of date in light of identified population declines[41], a more thorough census of burrowing owls throughout the state[42] and additional research on the species habitat[43]. Because the long-term persistence of burrowing owls lie in their ability to utilize natural landscapes, not human-created ones and the carrying capacity is tied to habitat quality, mitigation must include lands that are native habitats on undisturbed lands, not cultivated lands, which are subject to the whims of land use changes.

The DEA not only fails to identify the number and location of burrowing owls on the project sites, but also fails to do any type of avoidance, minimization or impact analysis of the

37 http://ceq.hss.doe.gov/nepa/regs/eos/eo13186.html
38 IBP 2008
39 Manning 2009.
40 USFWS 2003
41 Manning 2009
42 Wilkerson and Siegel 2010
43 USFWS 2003

project on this declining raptor species. The DEA fails to provide the public and decisionmakers adequate information on burrowing owls on the proposed project site.

13. Rare Plant Species and Communities

While the DEIS states that none of the rare plants found on the project site are listed as threatened or endangered, six species are California list 1B plants. List 1B plants are eligible for listing under the California Endangered Species Act, due to rarity and threat. The DEA proposes no clear avoidance, minimization or mitigation strategy for these unique California species, and therefore fails to meet NEPA standards. CBD-57

14. Insects

Besides for the Kern sphinx moth being surveyed for after the DEA was published, the DEA fails to provide any information on other rare insects on the proposed project site. In fact no surveys or evaluation of rare or common insects are included in the DEA. The project site may provide habitat for rare insects, which are commonly overlooked in environmental documentation[44]. Because of the ecosystem services that insects provide, the EIS needs to include results of surveys and an analysis of impacts to insects, in particular rare ones. CBD-58

15. State Protected Game Species

The DEA recognizes that both pronghorn and Tule elk (reintroduced at taxpayer expense onto the Carrizo Plain) use the proposed project sites (DEA at 4-14). Connectivity maps for these species indicate that the general area of the proposed project site impact the connectivity for these important species[45]. Significant public and private resources have been invested in order to re-establish these charismatic species back into their historic ranges. While the elk have re-established well and populations are robust, the pronghorn has not fared so well. CBD-59

Other federal projects in San Luis Obispo County to the north of this project have recognized that development actions will cause a significant impact on the connectivity of the pronghorn through population isolation[46] We believe the industrial scale of the proposed project and the development of the proposed project may in fact isolate the populations of pronghorn in the northern and southern portion of the Carrizo plain. Because these populations are small to begin with, there is potential for this isolation to significantly negatively affect pronghorn populations on the Carrizo Plain including in those in the National Monument. Yet the DEA completely fails to identify or analyze these potential impacts. This analysis must be included in the EIS.

In addition thirty other rare species have high to moderate potential to occur onsite. With the paucity of survey effort on such a large proposed project site (typically a project site with such a density of rare species has many more years of study than two years), it is certainly CBD-60

44 Dunn 2005.
45 Penrod et al. 2010
46 DOT-FHA & CalTrans 2006

conceivable that additional rare species will be discovered in subsequent years. However, no evaluation or modeling was undertaken to identify potential habitat and quantify potential impacts or propose potential mitigation

CBD-60 Cont.

16. Polarized Light Pollution

The DEIS fails to consider the impact on species of thousands of acres of solar panels that produce polarized light. Polarized light can serve as ecological traps that threaten populations of polarization-sensitive species, can disrupt the predatory relationships between species maintained by naturally occurring patterns of polarized light, and has the potential to alter community structure, diversity, and dynamics[47].In addition to the lack of surveys for insects identified above, the DEA also fails to evaluate the impact to insects from the polarized light produced by the solar panels on reproduction[48].

CBD-61

D. The DEIS Fails to Adequately Identify and Analyze Biological Resources under Climate Change.

CBD-62

In its discussion of the need for renewable energy production, the DEA fails to address risks associated with global climate change in context the need for climate change adaptation strategies (e.g., conserving intact wild lands and the corridors that connect them). All climate change adaptation strategies underline the importance of protecting intact wild lands and associated wildlife corridors as a priority adaptation strategy measure.

The habitat fragmentation, loss of connectivity for terrestrial wildlife, and introduction of predators and invasive weed species associated with the proposed project in the proposed location may run contrary to an effective climate change adaptation strategy. As pointed out above, the proposed project virtually bisects the connectivity between the Carrizo Plain National Monument and other conservation investments to the north for numerous species. Use of the proposed project site by species that currently occupy the site is speculative at best. The project impacts short grass prairie and core, occupied habitat and important habitat linkage areas for numerous endangered species, major washes and other fragile biological resources could undermine a meaningful climate change adaptation strategy with a poorly executed climate change mitigation strategy. The way to maintain healthy, vibrant ecosystems is not to fragment them and reduce their biodiversity.

E. Impacts to Water Resources— Surface and Groundwater Water Impacts

Because of the generally flat terrain of the Carrizo Plain, the proposed project will impact surface flow areas that may not be jurisdictional, but still provide important habitat values that may be lost by the construction of the proposed for the project site. Ephemeral and intermittent streams make up over 81% in the arid and semi-arid southwest (Arizona, New Mexico, Nevada, Utah, Colorado and California). These “streams” provide a variety of ecosystem services including

- landscape hydrologic connections;

47 Horvath et al. 2009
48 Horvath et al. 2010

- stream energy dissipation during high-water flows to reduce erosion and improve water quality;
- surface and subsurface water storage and exchange;
- ground-water recharge and discharge;
- sediment transport, storage, and deposition to aid in floodplain maintenance and development;
- nutrient storage and cycling;
- wildlife habitat and migration corridors;
- support for vegetation communities to help stabilize stream banks and provide wildlife services; and
- water supply and water-quality filtering[49].

Yet the DEA fails to evaluate the impact of the proposed project on the ephemeral and intermittent streams and the ecosystem processes that they provide both on and off of the proposed project site. The EIS will need to include an analysis of these important issues. CBD-63

F. The DEA Fails to Adequately Identify, Analyze and Off-set Impacts to Air Quality and GHG Emissions.

Federal courts have squarely held that NEPA requires federal agencies to analyze climate change impacts. *Center for Biological Diversity v. National Highway Traffic Safety Administration*, 508 F.3d 508 (9th Cir. 2007). As most relevant here, NEPA requires consideration of greenhouse gas emissions ("GHG emissions") associated with all projects and, in order to fulfill this requirement the agencies should look at all aspects of the project which may create greenhouse gas emissions including operations, construction, *and life-cycle emissions from materials*. Where a proposed project will have significant GHG emissions, the agency should identify alternatives and/or mitigation measures that will lessen such effects.

As part of the NEPA analysis federal agencies must assess and, wherever possible, quantify or estimate GHG emissions by type and source by analyzing the direct operational impacts of proposed actions. Assessment of direct emissions of GHG from on-site combustion sources is relatively straightforward. For the proposed project, energy consumption for manufacturing, transportation and construction, will be the major source of GHGs. The indirect effects of a project may be more far-reaching and will require careful analysis. Within this category, for example, the DOE should evaluate, GHG and GHG-precursor emissions associated with construction, electricity use, fossil fuel use, water consumption, waste disposal, transportation, the manufacture of building materials (lifecycle analysis), and land conversion. Moreover, because many projects may undermine or destroy the value of carbon sinks, including arid soils, projects may have additional indirect effects from reduction in carbon sequestration, therefore both the direct and quantifiable GHG emissions as well as the GHG effects of destruction of carbon sinks should be analyzed.

49 Levick et al. 2008.

The discussion of greenhouse gas emissions ("GHG") in the DEIS notes that the solar project will produce GHGs primarily from construction. The GHG emissions from the construction phase of the project are stated to be over 74,000 tons CO2 equivalent and for operations approximately 500 tons per year (DEIS at 3-55). There is no discussion of reducing these emissions by using more efficient equipment or vehicles. CBD-64

The DEA fails to identify any significant GHG emissions and therefore does not provide for avoidance, minimization, or mitigation. Moreover, it is undisputed that in the near-term GHG emissions will increase emissions during construction, and in the manufacturing and transportation of the components. The DEA fails to consider any alternatives to the project that would minimize such emissions or to require that these near-term emissions be off set in any way.

Although the proposed project may reduce GHG's overall it will also emit GHGs during construction and due to the manufacturing process that are not accounted for or off-set, DOE completely fails to explore this aspect of the impacts of the project in the DEA in violation of NEPA.

G. The Analysis of Cumulative Impacts in the DEA Is Inadequate

A cumulative impact is "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." 40 C.F.R. § 1508.7. This is critical because "[s]ometimes the total impact from a set of actions may be greater than the sum of the parts . . . . the addition of a small amount here, a small amount there, and still more at another point could add up to something with a much greater impact." *Klamath-Siskiyou Wildlands Ctr. v. BLM*, 387 F.3d 989, 994 (9th Cir. 2004). "A proper consideration of the cumulative impacts of a project requires some quantified or detailed information; . . . [g]eneral statements about possible effects and some risk do not constitute a hard look absent a justification regarding why more definitive information could not be provided." *Id*. at 993 (quotations omitted). The analysis must be "more than perfunctory" and "provide a useful analysis." *Id*. Federal agencies must "catalogue" and provide useful analysis of past, present, and future projects. *City of Carmel-By-The-Sea v. U.S. Dept. of Transp.*, 123 F.3d 1142, 1160 (9th Cir. 1997); *Muckleshoot Indian Tribe v. U.S. Forest Service*, 177 F.3d 800, 809-810 (9th Cir. 1999). "[V]ague and conclusory statements," without supporting data, are not adequate. *Great Basin Mine Watch v. Hankins*, 456 F.3d 955, 972–73 (9th Cir. 2006). This requirement extends with equal force to both EAs and EISs. *Te-Moak Tribe v. U.S. Dep't of the Interior*, 608 F.3d 592, 603 (9th Cir. 2010).

"In determining whether a proposed action will significantly impact the human environment, the agency must consider '[w]hether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment.' 40 C.F.R. § 1508.27(b)(7)." *Oregon Natural Resources Council v. BLM*, 470 F.3d 818, 822-823 (9th Cir.

2006). NEPA requires that cumulative impacts analysis provide "some quantified or detailed information," because "[w]ithout such information, neither courts nor the public . . . can be assured that the Forest Service provided the hard look that it is required to provide." *Neighbors of Cuddy Mountain v. United States Forest Service*, 137 F.3d 1372, 1379 (9th Cir. 1988); *see also id*. ("very general" cumulative impacts information was not hard look required by NEPA). The discussion of future foreseeable actions requires more than a list of the number of acres affected, which is a necessary but not sufficient component of a NEPA analysis; the agency must also consider the actual environmental effects that can be expected from the projects on those acres. *See Klamath-Siskiyou Wildlands Ctr. v. BLM*, 387 F.3d 989, 995-96 (9th Cir. 2004) (finding that the environmental review documents "do not sufficiently identify or discuss the incremental impact that can be expected from each [project], or how those individual impacts might combine or synergistically interact with each other to affect the [] environment. As a result, they do not satisfy the requirements of the NEPA.") Finally, cumulative analysis must be done as early in the environmental review process as possible, it is not appropriate to "defer consideration of cumulative impacts to a future date. 'NEPA requires consideration of the potential impacts of an action *before* the action takes place.'" *Neighbors*, 137 F.3d at 1380 *quoting City of Tenakee Springs v. Clough*, 915 F.2d 1308, 1313 (9th Cir. 1990) (emphasis in original).

The DEA identifies many of the cumulative projects but does not meaningfully analyze the cumulative impacts to resources in the Carrizo Plain and other areas of rare species habitat from the many proposed projects (including all energy projects, transmission, and others types of development). Moreover, because the initial identification and analysis of impacts is unfinished, the cumulative impacts analysis cannot be complete. For example, because the identification of potentially occurring rare insects on site is unfinished and incomplete, the cumulative impacts are also therefore inadequate. CBD-65

The DEA also fails to consider all reasonably foreseeable impacts in the context of the cumulative impacts analysis. *See Native Ecosystems Council v. Dombek, et al*, 304 F.3d 886 (9th Cir. 2002) (finding future timber sales and related forest road restriction amendments were "reasonably foreseeable cumulative impacts"). The DEA also fails to provide the needed analysis of how the impacts might combine or synergistically interact to affect the environment in this valley or region. *See Klamath-Siskiyou Wildlands Ctr. v. BLM*, 387 F.3d 989, 995-96 (9th Cir. 2004). CBD-66

The NEPA regulations also require that indirect effects including changes to land use patterns and induced growth be analyzed. "Indirect effects," include those that "are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include *growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems*." 40 C.F.R. s.1508.8(b) (emphasis added). *See TOMAC v. Norton*, 240 F. Supp.2d 45, 50-52 (D.D.C. 2003) (finding NEPA review lacking where the agency failed to address secondary growth as it pertained to impacts to groundwater, prime farmland, floodplains and stormwater run-off, wetlands and wildlife and vegetation); *Friends of the Earth v. United States Army Corps of Eng'rs*, 109 F. Supp.2d 30, 43 (D.D.C. 2000) (finding NEPA required analysis of inevitable secondary development that would result from casinos, and the agency failed to adequately consider the

cumulative impact of casino construction in the area); *see also Mullin v. Skinner*, 756 F. Supp. 904, 925 (E.D.N.C. 1990) (Agency enjoined from proceeding with bridge project which induced growth in island community until it prepared an adequate EIS identifying and discussing in detail the direct, indirect, and cumulative impacts of and alternatives to the proposed Project); *City of Davis v. Coleman*, 521 F.2d 661 (9th Cir. 1975) (requiring agency to prepare an EIS on effects of proposed freeway interchange on a major interstate highway in an agricultural area and to include a full analysis of both the environmental effects of the exchange itself and of the development potential that it would create).

Among the cumulative impacts to resources that have not been fully analyzed are impacts to San Joaquin kit fox, impacts to connectivity for kit fox, GKR, Tipton kangaroo rat, San Joaquin antelope squirrel and pronghorn, impacts to blunt-nosed leopard lizard, impacts to golden eagles, and impacts to water resources. The cumulative impacts to the resources of the upland species of the San Joaquin Valley has not been fully identified or analyzed, and mitigation measures have not been fully analyzed as well. CBD-67

H. The DEA's Alternatives Analysis is Inadequate

NEPA requires that an EIS contain a discussion of the "alternatives to the proposed action." 42 U.S.C. §§ 4332(C)(iii),(E). The discussion of alternatives is at "the heart" of the NEPA process, and is intended to provide a "clear basis for choice among options by the decisionmaker and the public." 40 C.F.R. §1502.14; *Idaho Sporting Congress*, 222 F.3d at 567 (compliance with NEPA's procedures "is not an end in itself . . . [but] it is through NEPA's action forcing procedures that the sweeping policy goals announced in § 101 of NEPA are realized.") (internal citations omitted). NEPA's regulations and Ninth Circuit case law require the agency to "rigorously explore" and objectively evaluate "all reasonable alternatives." 40 C.F.R. § 1502.14(a) (emphasis added); *Envtl. Prot. Info. Ctr. v. U.S. Forest Serv.*, 234 Fed. Appx. 440, 442 (9th Cir. 2007). "The purpose of NEPA's alternatives requirement is to ensure agencies do not undertake projects "without intense consideration of other more ecologically sound courses of action, including shelving the entire project, or of accomplishing the same result by entirely different means." *Envtl. Defense Fund, Inc. v. U.S. Army Corps of Engrs.*, 492 F.2d 1123, 1135 (5th Cir. 1974). An agency will be found in compliance with NEPA only when "all reasonable alternatives have been considered and an appropriate explanation is provided as to why an alternative was eliminated." *Native Ecosystems Council v. U.S. Forest Serv.*, 428 F.3d 1233, 1246 (9th Cir. 2005); *Bob Marshall Alliance v. Hodel*, 852 F.2d 1223, 1228-1229 (9th Cir. 1988). The courts, in the Ninth Circuit as elsewhere, have consistently held that an agency's failure to consider a reasonable alternative is fatal to an agency's NEPA analysis. *See, e.g., Idaho Conserv. League v. Mumma*, 956 F.2d 1508, 1519-20 (9th Cir. 1992) ("The existence of a viable, but unexamined alternative renders an environmental impact statement inadequate.").

If DOE rejects an alternative from consideration, it must explain why a particular option is not feasible and was therefore eliminated from further consideration. 40 C.F.R. § 1502.14(a). The courts will scrutinize this explanation to ensure that the reasons given are adequately supported by the record. *See Muckleshoot Indian Tribe v. U.S. Forest Service*, 177 F.3d 800, 813-15 (9th Cir. 1999); *Idaho Conserv. League*, 956 F.2d at 1522 (while agencies can use CBD-68

criteria to determine which options to fully evaluate, those criteria are subject to judicial review); *Citizens for a Better Henderson*, 768 F.2d at 1057.

Here, DOE too narrowly construed the project purpose and need such that the DEA did not consider an adequate range of alternatives to the proposed project. The alternatives analysis is inadequate even with the inclusion of the alternative site configuration. Additional feasible alternatives should be considered which would avoid all of occupied San Joaquin kit fox and GKR habitat. In addition, a phased alternative should have been included which could allow some portions of the project that have the fewest impacts to move forward while also affording the project proponent time to find and acquire permits for more appropriate sites for one or more additional phases of the project reconfigured on other lands (for example such as the abandoned farmlands in the Westlands Solar Park) and also to explore other off-site alternatives.

The document did not consider a distributed renewable energy alternative. The DOE should have also looked alternative siting on previously degraded lands that are not habitat for endangered species such as nearby farmlands, distributed solar alternatives, and other alternatives that could avoid impacts of the proposed project as well as impacts of the associated reconductoring of the transmission line. In addition, as discussed above, the DOE should have looked at alternatives for construction and operations that would reduce GHG emissions through offsets or other means. CBD-69

The DOE failed to consider any off-site alternative that would significantly reduce the impacts to biological resources including occupied kit fox habitat, key movement corridors, golden eagles, and others. Because such alternatives are feasible, on this basis and other the range of alternatives is inadequate. The Center urges the DOE to complete an EIS and to adequately address a range of feasible alternatives and other issues detailed above and then to circulate it for public comment. CBD-70

In addition, in order to meet the DOE's purpose and need "is to comply with DOE's mandate under the EPAct of 2005 by selecting eligible projects that meet the goals of the Act. DOE is using the National Environmental Policy Act (NEPA) process to assist in determining whether to issue a loan guarantee to the Applicant to support the CVSR Project." (DEA at 1-1). DOE is using the NEPA process and this EA to assist in determining whether to issue a loan guarantee to the Project Proponent to support the Proposed Project. Assuming for the sake of argument alone that this is a proper project objective, the DEA should have considered alternatives that would provide funding to other types of projects. Such alternatives could include, for example, conservation and efficiency measures that both avoid and reduce energy use within high-energy use load-centers including the greater Los Angeles. CBD-71

Alternative measures could include funding community projects for training and implementation of conservation measures such as increased insulation, sealing and caulking, and new windows for older buildings and new or improved technologies for accomplishing these important goals. For example, air conditioning creates the largest demand for energy during peak times and there already exist methods to reduce the energy use from air conditioning but implementation has lagged well behind technology. Conservation and efficiency measures are

an excellent and quick way of reducing demand in both the short- and long-term and reduce the need for additional power sources. In addition, many of the existing conservation and efficiency measures can provide immediate jobs and training in high population areas with significant unemployment (particularly among low skilled workers and youth), thus fulfilling the purpose and objectives of the ARRA. CBD-72

The existence of these and other feasible but unexplored alternatives shows that the DOE's analysis of alternatives in the DEA is inadequate.

II. Conclusion

Thank you for your consideration of these comments. We also submitted extensive comments on the Draft Environmental Impact Report for California Valley Solar Ranch (High Plains Ranch II, LLC, aka 'SunPower') Conditional Use Permit, and Twisselman Conditional Use Permit/ Reclamation Plan (DRC2008-00097, DRC2009-00004)which we incorporate here by reference.

In light of the many omissions in the environmental review to date, we urge the DOE to initiate an EIS before making any decision regarding the proposed project, as it has done on the other large solar plant proposed in the same area – the Draft Environmental Impact Statement (DEIS) No. 20110087 for Topaz Solar Farm Project, and Issuing a Loan Guarantee to Royal Bank of Scotland for Construction and Startup in San Luis Obispo County, CA. (76FR16767). In the event the Agencies choose not to prepare an EIS and provide adequate analysis, the DOE should not issue a loan guarantee High Plains II, LLC for the California Valley Solar Ranch Project in San Luis Obispo County and Kern County, California. Please feel free to contact me if you have any questions about these comments or the documents provided. CBD-73

Sincerely,

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May 17, 2011

Lynn Alexander
Environmental Protection Specialist
U.S. Department of Energy
Loan Programs Office, LP-10
1000 Independence Ave, SW
Washington, DC 20585

Via e-mail: Lynn.Alexander@hq.doe.gov

RE: DOE/EA–1840: Draft Environmental Assessment for the for Department of Energy Loan Guarantee to High Plains II, LLC for the California Valley Solar Ranch Project in San Luis Obispo County and Kern County, California.

Dear Ms. Alexander,

The Sierra Club is the oldest and largest grassroots environmental organization in the United States. The mission of our 1 million members and supporters is to explore, enjoy, and protect the wild places of the earth; practice and promote the responsible use of the earth's ecosystems and resources; and educate and enlist humanity to protect and restore the quality of the natural and human environment. Our members who live in or travel to San Luis Obispo County frequently visit the Carrizo Plain, and engage in conservation work there for the protection of its species and habitat. We affirm the goal of meeting a greater percentage of California's current and future energy needs with renewable energy generation, and the role of central station solar energy facilities, along with necessary increases in energy efficiency, conservation, and the installation of small-scale solar and wind power, CHP, etc., in achieving significant reductions in future greenhouse gas emissions via the avoided generation of electricity from fossil fuel sources.

The proper siting of utility-scale renewable energy facilities is an essential feature of the effort to move California toward a future of renewable energy. The sustainability of this project depends on both the source of the energy and the impacts of the project on the habitat and wildlife. Hence the Sierra Club's greatest concern is the impacts to Biological Resources resulting from the Project, and the proposed measures to mitigate of those impacts.

The EA states: "If no significant impacts are identified during preparation of this EA, DOE will issue a Finding of No Significant Impact (FONSI). If potentially significant impacts are identified, DOE will prepare an Environmental Impact Statement (EIS)." (ES-1)

The California Dept. of Fish and Game has pointed out that the currently proposed M3 array layout will result in substantial impacts to the giant kangaroo rat, and that the reconfigured array appears to have reduced, but not eliminated, significant connectivity issues affecting other species. In light of these significant impacts, the effectiveness of the proposed mitigation measures must be subject to closer scrutiny. SC-1

The EA states: "Within the CVSR site, large contiguous habitat areas supporting the greatest densities of giant kangaroo rats, a federal endangered species, would be preserved and managed as giant kangaroo rat habitat. Where giant kangaroo rats cannot be avoided, giant kangaroo rats would be relocated to off-site conservation land" (ES-5). GKR precincts were surveyed in two 1-day studies in 2009 and 2010, with each grid sector surveyed in less than one day. These studies provided an accurate snapshot of where GKR were and were not on the day it was taken, but should not be used as predictors of where GKR will be – or would be if they could, absent the development of their habitat – years hence. Signs of occupancy, as well as actual occupancy, can vary greatly throughout the year. While the applicant has variously sought to portray these studies in man-hour aggregates or in totals representing the hours spent on all grid sectors combined, the fact remains that the impacts of the three-year construction project are based on the assumption that these single-day studies are sufficient to predict what precincts GKR may or may not attempt to inhabit three years hence. The studies are not adequate to support these assumptions of impacts or the mitigations proposed for them, and the EA therefore should not rely on the County EIR's findings in this regard. SC-2

The EA states that "permanent loss of habitat for listed species would be compensated by the preservation, enhancement, and management in perpetuity of suitable lands outside the CVSR site. The CVSR Project would compensate for the permanent loss of giant kangaroo rat and San Joaquin kit fox habitat at a ratio of at least 4:1" (ES-5)

The applicant has not attained the 4:1 ratio with mitigation lands thus far acquired, and this mitigation ratio is clearly inadequate as compensation for the impacts of the project. A 4:1 mitigation ratio for impacts to kit fox habitat is the ratio at which San Luis Obispo County's kit fox evaluation form would score a project in this area at a size of <u>40 acres or less.</u> The 4:1 mitigation ratio is to be applied <u>only</u> for projects of that size in this location, with no kit fox observed on site. Neither of those conditions pertain to the Project. As mitigation ratios are based, in part, on the overall size of the project, and impacts can increase geometrically with project size, with higher ratios accorded to projects which have a larger footprint, a 5:1 mitigation ratio is clearly the minimum appropriate mitigation level for this project's impacts to wildlife habitat. SC-3

The EIR's assertion that reducing the SJKF's movement corridor by half is not a significant impact and that kit fox will use the "movement pathways" between solar arrays is not supported by scientific evidence. The mitigation measures therefore do not meet the requirements of NEPA. SC-4

The applicant has cited migration routes established for pronghorn in Wyoming down to 150 yards wide as support for the contention that the project's significant reduction of wildlife corridors is not anticipated to result in adverse impacts to antelope movement. Wildlife corridors on the Carrizo are not comparable to migration corridors in Wyoming. The Wyoming migration corridors are essential for migrating pronghorn to get from point A to point B to avoid freezing or starving. The Carrizo pronghorn do not migrate, they simply move within their home range throughout any given year. This is not comparable to a migratory event. Pronghorn are extremely susceptible to habitat fragmentation; if they deem an area no longer suitable, with insufficient space to successfully avoid predators, they simply stop using it. SC-5

The project's proposal to use grazing as mitigation for impacts is contradicted by the best available science. While a 3-year ongoing study on the Carrizo has found that far more GKR have in fact been found in ungrazed pastures than grazed lands, there are no conclusive findings in the scientific literature that show grazing to be beneficial to GKR. The data available is not a sufficient basis for a conclusion that livestock grazing will constitute a benefit to the species. We note: SC-6

"Contrary to many other recent grazing studies done in California, the results from the Carrizo grazing study do not support the general hypothesis that grazing is beneficial for native plant communities, nor is there support from these data for the hypothesis that grazing is important for maintaining GKR habitat. The native plant community finding is in keeping with results from a previous study done at Carrizo Plain. … As with most grazing studies conducted in California grasslands, the results from the Carrizo study are complex. However, unlike findings from previous studies done elsewhere in the state, the cover and richness of native annual forb species – by far the most diverse group of plants at Carrizo Plain – was significantly lower in grazed areas compared to ungrazed ones. However, the magnitude of the grazing effects depended on vegetation type: the negative effects of grazing were greatest in scrub and annual grassland communities and grazing had less of an impact on the areas more recently cultivated. These results suggest that the more disturbed areas lack a sufficient native seed bank. In contrast, the cover of exotic annual grasses increased with greater levels of cattle grazing, however this effect was most pronounced in certain soil types, such as those found on alluvial flats and sands. Thus, two of the primary management objectives for using grazing as a vegetation management tool – to enhance native plant species and to decrease exotic ones – are not supported by this study…. The results of the monitoring study revealed that, overall, the density of giant kangaroo rat precincts was significantly lower in grazed areas than ungrazed areas. In addition, there was a significant interaction between grazing and year, indicating that the negative effects of grazing were significantly greater in some years (1998, 1999, 2000, 2002)."

- *Summary of the Carrizo Plain Grazing Monitoring Study* (Christian 2008) SC-7

Based on the foregoing, Sierra Club respectfully requests that the Dept. of Energy must, under the law, withdraw the EA and conduct a full and proper Environmental Impact Statement which includes all feasible measures to mitigate the Project's significant impacts on sensitive and listed wildlife species and their habitat. SC-8

Thank you for your consideration of these issues,

Andrew Christie
Chapter Director

Kern Minority Contractors Assoication
1330 E. Truxtun Ave, Bakersfield, Ca. 93305
PH # 661-324-7535 Fax # 661-323-9287

Date: May 15, 2011

Lynn Alexander
US Department of Energy

Re: CVSR Project Draft EA Comment

Notice of Availability CVRSP
Draft Environmental Assessment

Our **comment & request**

This project **be require** to have **MBE/WBE/DBE/SBE/DVBE/SEC-3 contracting goals**.

KMCA-1

As a condition of **receiving federal loan guarantee** to High Plains Ranch ll LLC (**aka Sun Power)** for construction & start up.

Kern Minority Contractors Assoication is base in Kern County we can assist Sun Power locate local MBE/WBE/DBE/SBE/DVBE/SEC-3 sub-contractors for this project.

Sincerely,

Marvin Dean, President
Behalf of KMCA Membership