

DOCKET

08-AFC-12

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February 4, 2009

Ms. Melissa Jones
Executive Director
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512

Subject: San Joaquin Solar 1 LLC and San Joaquin Solar 2 LLC
Fresno County, California 08-AFC-12
URS Project No. 27658031

Dear Ms. Jones:

In accordance with the provisions of Title 20, California Code of Regulations, San Joaquin Solar 1 LLC and San Joaquin Solar 2 LLC hereby submit this Supplemental Information to 08-AFC-12.

I hereby attest, under penalty of perjury, that the contents of this Supplemental Information are truthful and accurate to the best of my knowledge. San Joaquin Solar 1 LLC and San Joaquin Solar 2 LLC are special purpose entities, each created to develop, construct, own, and operate one solar thermal hybrid power generation plant and supply the electrical output to PG&E under a 20-year power purchase agreement. Martifer Renewables Solar Thermal LLC is the parent of both San Joaquin Solar 1 LLC and San Joaquin Solar 2 LLC.

Should you have any questions regarding the Supplemental Information, the projects or the parties associated thereto, please do not hesitate to me at 858-947-7056.

Dated this 4th day of February, 2009.

Sincerely,



Kent Larsen
VP Project Manager

FEBRUARY 2009

San Joaquin Solar 1 & 2 Hybrid Project

Supplemental Information

In Response to CEC Data Requests, 08-AFC-12

Submitted to:
California Energy
Commission



Submitted by:

MARTIFER

RENEWABLES SOLAR THERMAL

With Support from:

URS



**San Joaquin Solar 1 & 2 Hybrid Project
Supplemental Information
In Response to CEC Data Adequacy Requests
08-AFC-12**

TECHNICAL AREA: AIR QUALITY

Data Adequacy Request 1: Please provide a letter of completeness from San Joaquin Valley Air Pollution Control District. Application forms have not been filed with SJVAPCD. SJVAPCD Rule 2201, Section 5.8.3 requires the District to notify the CEC of completeness within 20 days of receipt of the AFC.

Response: The air permit application package (Authority To Construct (ATC)) was received by the San Joaquin Valley Air Pollution Control District (SJVAPCD) on January 21, 2009. SJVAPCD is reviewing the application and preparing a letter of completeness for the ATC. Once the permit application review has been completed, SJVAPCD will send CEC and the applicant a letter of completeness.

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TECHNICAL AREA: AIR QUALITY

Data Adequacy Request 2: List of potential offset sources including the location of the offset sources and quantity of reductions.

Response: Response to this data adequacy request will be submitted separately under confidential cover.

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TECHNICAL AREA: AIR QUALITY

Data Adequacy Request 3: Please provide a description of mitigation proposed for particulate matter less than 2.5 microns ($PM_{2.5}$) because it is a pollutant that currently exceeds the ambient air quality standards but is not subject to offset requirements under the new source review rule.

Response: SJS 1&2 will obtain ERCs to offset the project related PM_{10} emissions. Since particulate matter less than 2.5 microns ($PM_{2.5}$) constitutes a portion of the particulate matter less than 10 microns (PM_{10}), it is the goal of SJS 1&2 to obtain PM_{10} ERCs that contained approximately the same portion of $PM_{2.5}$ emissions as the Project is anticipated to emit. Thus these PM_{10} ERCs should also offset the Project related $PM_{2.5}$ emissions.

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TECHNICAL AREA: ALTERNATIVES

Data Adequacy Request 1: Please provide a discussion of an air cooling alternative.

Response: An alternate means of process cooling for SJS 1&2 is air cooling. The table below summarizes the heat balance and resulting efficiencies of air cooling and wet cooling alternatives. As shown in the table, air cooling is less efficient than wet cooling.

	Energy generated (KW)	Parasitic Load (KW)	Net Power to Grid (KW)	Heat required to generate energy (btu/hr)	Net Heat rate (Btu/KW-hr)	Theoretical Heat Rate (Btu/KW-hr)	Efficiency
Daytime Solar Wet Cooling	60,200	6,800	53,400	568,881,627	10,653	3,413	32.0%
Daytime Solar Dry Cooling	60,855	7,455	53,400	614,763,252	11,512	3,413	29.6%
Nighttime Biomass Wet cooling	49,240	9,240	40,000	590,381,812	14,760	3,413	23.1%
Nighttime Biomass Dry cooling	49,655	9,655	40,000	636,263,980	15,907	3,413	21.5%

The installed cost of dry (air cooled) condensers for SJS 1&2 is approximately \$26,800,000. The installed cost of wet (water cooled) condensers for the Project is approximately \$13,660,000. The dry cooling alternative would result in a net increased equipment cost of \$13,140,000, which is nearly double the capital investment of wet cooling.

The dry cooling alternative would require air cooling of the power plant auxiliaries. Standard design for cooling water temperature for power plant equipment (heat exchangers, coolers, etc.) is 90°F. An air cooler will produce approximately 143°F cooling water when the outside temperature is 103°F (dry bulb), which is a typical summertime temperature at the project site. The high cooling water temperature of 143°F will require redesign of the power plant auxiliaries at an undetermined cost. Additionally, acceptance of the higher cooling water temperature from the biomass equipment manufacturer is required for equipment performance guarantees.

In summary, due to the lower energy efficiency, increased equipment and operating cost, and undetermined redesign required by air cooling, this alternative was eliminated.

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TECHNICAL AREA: ALTERNATIVES

Data Adequacy Request 2: Fig. 4.2.2 – The light blue shaded parcels are not identified in the legend.

Response: The light blue shaded parcels are parcels which are currently in a Williamson Act Contract. A revised Figure 4.2-2 is attached.

**San Joaquin Solar 1 & 2 Hybrid Project
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TECHNICAL AREA: ALTERNATIVES

Data Adequacy Request 3: Please provide a preferred alternative and alternate for the transmission route.

Response: The preferred transmission route from SJS1&2 to the Gates substation is the southern route. PG&E's Land Department and Transmission Line Asset Strategy Group investigation has determined the existing easement rights along Jayne Avenue (the northern route) can only operate and maintain a wood pole type installation at 70KV transmission circuit voltage. PG&E's easement rights are limited in scope, and do not authorize use of the property for additional facilities that will be installed and maintained by a third party. As such, SJS 1 & 2 will secure necessary land rights along the proposed southern route, separate from those currently held by PG&E. Additionally, the southern route is a more direct route from the plant substation to the Gates Substation, according to the current SJS 1 & 2 configuration. The southern route ROW would have less of an impact on surrounding agricultural activities than adding capacity to the northern PG&E route since the proposed southern route follows an existing County service road eliminating the need to construct access roads. Additionally, the southern route would have less impact on businesses located on the East side of I-5 than the current PG&E ROW.

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TECHNICAL AREA: BIOLOGICAL RESOURCES

Data Adequacy Request 1: Please provide a discussion of direct, indirect, and cumulative impacts to biological resources from construction, operation, and maintenance of the project.

Response: Direct and indirect impacts to the Project site, as discussed in the AFC, will include direct loss of 640 acres of actively cultivated land which supports marginal foraging for some special-status species in the Project vicinity. These impacts include all phases of the Project including construction, operation, and maintenance.

While the locations of impacts have not been spatially determined, direct, permanent impacts resulting from installation of approximately 25-30 poles for the proposed 6-mile transmission line are estimated to total 1.72 acres of vegetation disturbance. Temporary impacts are estimated at approximately 1.38 acres. The poles will be sited so that they will span any habitats that may potentially support special status species, as well as the jurisdictional waters and any associated riparian vegetation associated with Zapato Chino Creek. Operation and maintenance activities associated with the Project are not anticipated to cause significant direct or indirect impacts to habitats within the transmission line alignment.

Potential cumulative impacts to biological resources caused by the construction of two solar hybrid power plants on the 640-acre SJS 1&2 Site will include loss of active croplands (orchards). However, because the adjacent vicinity is either disturbed grassland and valley saltbush scrub habitat or existing intensive agricultural use, this loss is not expected to result in significant cumulative impacts to biological resources in the project area. No significant disruption to wildlife movement is expected.

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TECHNICAL AREA: BIOLOGICAL RESOURCES

Data Adequacy Request 2: Please provide information for sensitive species and habitats on the project site in addition to species on the transmission line route.

Response: The Project site is under active intensive cultivation (orchards) and is continually cultivated and harvested. Therefore, it was found to not contain habitat that is suitable to support sensitive species. CDFG staff agreed that surveys for special-status species were not necessary due to the lack of habitat within the 640 acre site. However, it can be assumed that raptors detected along the transmission line and within the 1-mile assessment buffer of the Project may use the Project site as marginal forage habitat.

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TECHNICAL AREA: BIOLOGICAL RESOURCES

Data Adequacy Request 3: Please provide a list of species actually observed during field surveys on the project site and transmission line route.

Response: Separate lists of wildlife species and plant species that were observed in the survey area (including the Project site and transmission line routes and 1-mile assessment area) can be found in the AFC Appendices F-4 and F-5. The title pages of these appendices contained errors, and may have been misleading; however, the lists provided are those species actually observed during field surveys in 2008 and 2009. Appendix F-2 lists those species with POTENTIAL to occur, but also identifies if the species was observed during site and transmission line surveys.

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TECHNICAL AREA: BIOLOGICAL RESOURCES

Data Adequacy Request 4: Please provide a map of the field survey area that labels where biological surveys were conducted.

Response: Biological surveys were conducted in all areas of the Project; however, focused surveys for special-status species were not conducted on the Project site due to the current level of disturbance and lack of suitable habitat. Focused rare plant surveys and BNLL surveys will occur in Spring 2009 on the proposed southern transmission line alignment. Results of small mammal trapping in suitable habitat along both transmission lines are provided in the appendices of the attached biological technical resources report.

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TECHNICAL AREA: BIOLOGICAL RESOURCES

Data Adequacy Request 5: Please provide an aerial photo or wetlands delineation map at a scale of 1:2,400 showing potential jurisdictional and non-jurisdictional wetlands.

Response: Figures showing state-jurisdictional waters are provided in the attached Biological Resources Technical Report. No wetlands are present in the Project survey area.

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TECHNICAL AREA: BIOLOGICAL RESOURCES

Data Adequacy Request 6: Please provide a discussion of the biological resources at the proposed project site by conducting a survey of the project site and within 1 mile of the project site. Provide the results of the December 2008 small mammal trapping survey.

Response: The area within 1 mile of the Project site was surveyed during the 2008 survey season. The habitat that is present within this area is displayed on Figure 5.6-2, and biological resources within 1 mile of the Project area are also displayed and discussed in the AFC.

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TECHNICAL AREA: BIOLOGICAL RESOURCES

Data Adequacy Request 7: Please provide the results of the 2009 transmission line field surveys.

Response: Results of 2009 surveys (Protocol BNLL surveys and focused rare plant surveys) will be provided upon completion of the surveys. Note that the BNLL surveys require 2 survey periods, the second of which is juvenile surveys that ends September 15. Results of adult BNLL surveys will be provided as soon as possible after the adult survey period in July 2009.

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TECHNICAL AREA: BIOLOGICAL RESOURCES

Data Adequacy Request 8: Please provide a list of species observed onsite and within 1 mile of the project site.

Response: Please see responses to Data Adequacy Requests 2, 3, 4, and 6 within the Biological Resources Technical Area.

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TECHNICAL AREA: BIOLOGICAL RESOURCES

Data Adequacy Request 9: Please provide copies of the CNDDB records and field survey forms for all special status species found.

Response: CNDDB records are provided in the attached Biological Resources Technical Report.

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TECHNICAL AREA: BIOLOGICAL RESOURCES

Data Adequacy Request 10: Please conduct and provide results of current biological surveys onsite and within a 1 mile buffer of the site including, the December 2008 small mammal trapping survey, and the 2009 transmission line survey.

Response: Please see responses to Data Adequacy Requests 2, 3, 4 and 6 within the Biological Resources Technical Area. The results of the small mammal trapping survey are provided in the attached biological technical resources report. Results of the 2009 surveys will be provided as soon as possible after completion of the surveys.

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TECHNICAL AREA: BIOLOGICAL RESOURCES

Data Adequacy Request 11: Please provide the Army Corps of Engineers wetland delineation forms and/or determination of wetland status.

Response: Wetland delineation forms and determination are provided in the attached Biological Resources Technical Report.

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TECHNICAL AREA: BIOLOGICAL RESOURCES

Data Adequacy Request 12: Please provide an impact assessment for the project site. Provide information on impacts of the project pertaining to project site preparation, construction, operations, and maintenance activities.

Response: Please see response to Data Adequacy Request 1 within the Biological Resources Technical Area.

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TECHNICAL AREA: BIOLOGICAL RESOURCES

Data Adequacy Request 13: Please provide a discussion of air emission impacts to biological resources.

Response: Impacts to biological resources as a result of air emissions are not anticipated to be significant. None of the special-status species or habitats in the study area are known to be sensitive to emissions or air pollution. All emissions of non-attainment pollutants and their precursors will be offset through mitigation for air quality impacts identified in Section 5.2 of the AFC. Although the SJS 1&2 will contribute to cumulative increases in air emissions, direct and cumulative impacts on biological resources associated with these increases are expected to be less than significant.

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TECHNICAL AREA: BIOLOGICAL RESOURCES

Data Adequacy Request 14: Please identify contacts made regarding offsite habitat compensation and management.

Response: No contacts have been made at this time regarding offsite habitat compensation.

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TECHNICAL AREA: BIOLOGICAL RESOURCES

Data Adequacy Request 15: Please submit copies of preliminary correspondence regarding the proposed project with the USFWS, CDFG, USACE, and RWQCB.

Response: Records of correspondence with CDFG and USFWS are attached. USACE and RWQCB have not been contacted because it is expected that the transmission line will span the creek; therefore, impacts to the jurisdictional waters are not anticipated. Correspondence with RWQCB and USACE will be provided as it occurs.

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TECHNICAL AREA: BIOLOGICAL RESOURCES

Data Adequacy Request 16: Please provide contact information for USACE, RWQCB, and Fresno County.

Response: No contact information is available with respect to this project at this time. See response to Data Adequacy Request 15 within the Biological Resources Technical Area.

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TECHNICAL AREA: HAZARDOUS MATERIALS HANDLING

Data Adequacy Request 1: Please provide a discussion of how facility closure will be accomplished in the event of premature or unexpected cessation of operations.

Response: Per conversation with Rick Tyler this Data Adequacy Request is no longer needed.

**San Joaquin Solar 1 & 2 Hybrid Project
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TECHNICAL AREA: NOISE

Data Adequacy Request 1: Please identify agencies, such as the appropriate office(s) of the Fresno County Government, that would have permit authority were it not for the Energy Commission's exclusive jurisdiction.

Response: William M. Kettler
Principal Staff Analyst
Fresno County Department of Public Works and Planning
Development Services Division
2220 Tulare Street, Suite A
Fresno, CA 93721
559.262.4242

**San Joaquin Solar 1 & 2 Hybrid Project
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TECHNICAL AREA: NOISE

Data Adequacy Request 2: Please identify officials of the Fresno County Government who were contacted, and who will serve as a contact person for Energy Commission staff.

Response: William M. Kettler
Principal Staff Analyst
Fresno County Department of Public Works and Planning
Development Services Division
2220 Tulare Street, Suite A
Fresno, CA 93721
559.262.4242

Steve Baker, P.E.
California Energy Commission
Facility Siting Division
1516 9th Street, MS46
Sacramento, CA 95814
916.654.3915

**San Joaquin Solar 1 & 2 Hybrid Project
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TECHNICAL AREA: PROJECT OVERVIEW

Data Adequacy Request 1: Please identify the preferred transmission route, or state whether the application is seeking certification for both route options.

Response: The preferred transmission route from SJS1&2 to the Gates substation is the southern route. PG&E's Land Department and Transmission Line Asset Strategy Group investigation has determined the existing easement rights along Jayne Avenue (the northern route) can only operate and maintain a wood pole type installation at 70KV transmission circuit voltage. PG&E's easement rights are limited in scope, and do not authorize use of the property for additional facilities that will be installed and maintained by a third party. As such, SJS 1 & 2 will secure necessary land rights along the proposed southern route, separate from those currently held by PG&E. Additionally, the southern route is a more direct route from the plant substation to the Gates Substation, according to the current SJS 1 & 2 configuration. The southern route ROW would have less of an impact on surrounding agricultural activities than adding capacity to the northern PG&E route since the proposed southern route follows an existing County service road eliminating the need to construct access roads. Additionally, the southern route would have less impact on businesses located on the East side of I-5 than the current PG&E ROW.

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TECHNICAL AREA: PROJECT OVERVIEW

Data Adequacy Request 2: Please provide a full-page color photographic reproduction depicting the visual appearance of the site prior to construction.

Response: A full-page color photograph of the site prior to construction is attached as Figure 3.4-2a.

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TECHNICAL AREA: PROJECT OVERVIEW

Data Adequacy Request 3: Please describe the constraints and potential impacts of the transmission line route alternatives, and the selection process in determining the preferred transmission line route.

Response: The preferred transmission route from SJS 1&2 to the Gates substation is the southern route. PG&E's Land Department and Transmission Line Asset Strategy Group investigation has determined the existing easement rights along Jayne Avenue (the northern route) can only operate and maintain a wood pole type installation at 70KV transmission circuit voltage. PG&E's easement rights are limited in scope, and do not authorize use of the property for additional facilities that will be installed and maintained by a third party. As such, SJS 1 & 2 will secure necessary land rights along the proposed southern route, separate from those currently held by PG&E. Additionally, the southern route is a more direct route from the plant substation to the Gates Substation, according to the current SJS 1 & 2 configuration. The southern route ROW would have less of an impact on surrounding agricultural activities than adding capacity to the northern PG&E route since the proposed southern route follows an existing County service road eliminating the need to construct access roads. Additionally, the southern route would have less impact on businesses located on the East side of I-5 than the current PG&E ROW.

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TECHNICAL AREA: RELIABILITY

Data Adequacy Request 1: Please provide projected availability factor for both solar and biomass components, and estimated capacity factor for solar component.

Response: The SJS 1&2 solar component is projected to be available for 96% of daylight hours. The biomass component is projected to have an availability factor of 96%. These availability factors are based on one week of scheduled facility shutdown and one week of unscheduled shutdown each year.

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TECHNICAL AREA: SOCIOECONOMICS

Data Adequacy Request 1: Please provide an estimate of sales taxes generated during construction and separately during an operational year of the project.

Response: The Project's initial capital cost is estimated to be approximately \$485 million. To the extent possible, the Project will purchase materials locally. Currently, the estimated value of materials and supplies purchased within Fresno County during the construction phase is approximately \$23,750,000.

The estimated annual Project operations and maintenance (O&M) budget is \$10,020,000. The estimated value of operational expenditures within Fresno County is \$1.5 million for locally purchased materials.

At a sales tax rate of 7.975% the revenue generated during construction is estimated as \$1,894,063 for the project, or \$1,262,708/yr.

The tax revenue generated per year during operations is estimated to be \$119,625/yr.

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TECHNICAL AREA: SOIL

Data Adequacy Request 1: Please provide a map of the site and surrounding area at a scale of 1:24,000

Response: Requested map is attached as Figure 5.4-2.

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TECHNICAL AREA: SOIL

Data Adequacy Request 2: Please provide a discussion of the location of any proposed fill disposal or fill procurement (borrow) sites

Response: There are no proposed offsite disposal or fill procurement (borrow) sites. It is anticipated that the site grading will be balanced onsite.

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TECHNICAL AREA: SOIL

Data Adequacy Request 3: Please provide a schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.

Response:

**Table 5.4-6 (Revised)
Applicable Permits**

Responsible Agency	Permit/Approval	Schedule
Regional Water Quality Control Board Colorado River Basin Region 7	Notice of Intent	Apply for application at least 60 days prior to construction.
	National Pollutant Discharge Elimination System General Construction Storm Water Permit	Complete initial Construction SWPPP SWPPP and file Notice of Intent with SWRCB 60 days before operation. Submit copy of SWPPP and Notice of Intent to CEC 30 days before operation (or letter from RWQCB exempting the Project from NPDES Industrial Permit requirements).
Fresno County	Grading Permit, Construction Permit	Apply for application at least 90-120 days prior to construction. Receive permit prior to construction
	Development Permit Requirements to be met	Apply for application at least 90-120 days prior to construction. Receive permit prior to construction
	Septic Tank/Leach Field Permit	Apply for application at least 90-120 days prior to construction. Receive permit prior to construction

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TECHNICAL AREA: TRANSMISSION SYSTEM DESIGN

Data Adequacy Request 1: Submit Pole design diagrams (including deadend structures) for the 230 kV generator overhead tie line showing configuration of insulators and conductors (with conductor sizes and type), and height of the pole/structures.

Response: Requested diagrams are attached as Figures 3.4-11 and 3.4-12.

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TECHNICAL AREA: TRANSMISSION SYSTEM DESIGN

Data Adequacy Request 2: Submit a complete electrical one-line diagram (or resubmit Figure 3.4-6 with missing elements or sizes/ratings) of the proposed San Joaquin Solar 1 & 2 Hybrid (SJSH 1 & 2) project 230 kV switchyard showing all equipment for all new generators' interconnection with the switchyard along with their respective sizes and/or ratings as follows:

- i) Any bus duct connectors or overhead conductors or cables, 13.8 kV switchgear, buses, breakers & disconnect switches on the low side of each Generator step-up transformer (GSU),
- ii) The GSU and short overhead conductors and/or cables from the GSU to the switchyard with the configurations for the switchyard buses, breakers, disconnect switches on the 230 kV side, along with the proposed tie line transmission outlet from the switchyard.

Response: Revised Figure 3.4-6 is attached.

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TECHNICAL AREA: TRANSMISSION SYSTEM DESIGN

Data Adequacy Request 3: Provide a one-line electrical diagram showing the pre-project PG&E Gates 230 kV substation with the existing the transmission outlets along with the configurations for buses, breakers, disconnect switches, and their respective sizes and/or ratings.

Response: One-line diagrams of the PG&E Gates substation are maintained by PG&E. The applicant has requested such drawings, but has not been able to obtain access to them. Copies of email communication with PG&E are attached.

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TECHNICAL AREA: TRANSMISSION SYSTEM DESIGN

Data Adequacy Request 4: Also provide a one-line electrical diagram showing the post-project Gates 230 kV substation with the proposed 230 kV generator tie line interconnection facilities for buses, breakers and disconnect switches and their respective sizes and/or ratings

Response: One-line diagrams of the PG&E Gates substation are maintained by PG&E. The applicant has requested information regarding post-project diagrams, but has been informed that such information will not be available until after the system impact study is complete. SJS 1&2 is in the first cluster of system impact studies which is projected to be complete in July 2009. Copies of email communication with PG&E are attached.

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TECHNICAL AREA: TRANSMISSION SYSTEM DESIGN

Data Adequacy Request 5: Provide a physical layout drawing of the post project Gates substation showing all major equipment and transmission outlets.

Response: Layout drawings of the PG&E Gates substation are maintained by PG&E. The applicant has been unable to obtain such drawings.

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TECHNICAL AREA: TRANSMISSION SYSTEM DESIGN

Data Adequacy Request 6: Select the preferred route of the proposed generator 230 kV overhead transmission tie line to the Gates substation and describe how the route is selected by comparing with any alternate routes and their environmental effects.

Response: The preferred transmission route from SJS 1&2 to the Gates substation is the southern route. PG&E's Land Department and Transmission Line Asset Strategy Group investigation has determined the existing easement rights along Jayne Avenue (the northern route) can only operate and maintain a wood pole type installation at 70KV transmission circuit voltage. PG&E's easement rights are limited in scope, and do not authorize use of the property for additional facilities that will be installed and maintained by a third party. As such, SJS 1 & 2 will secure necessary land rights along the proposed southern route, separate from those currently held by PG&E. Additionally, the southern route is a more direct route from the plant substation to the Gates Substation, according to the current SJS 1 & 2 configuration. The southern route ROW would have less of an impact on surrounding agricultural activities than adding capacity to the northern PG&E route since the proposed southern route follows an existing County service road eliminating the need to construct access roads. Additionally, the southern route would have less impact on businesses located on the East side of I-5 than the current PG&E ROW.

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TECHNICAL AREA: TRANSMISSION SYSTEM DESIGN

Data Adequacy Request 7: The following discrepancies were observed in the Large Generator Interconnection Study Agreement (LGISA) submitted materials:

- i) Whereas the LGISA dated October 24, 2008 was executed and signed between the California ISO and Martifer Renewables Solar Thermal LLC., all requirements for inclusion in the Transition Cluster Generator Queue position including payment of fees were fulfilled by the Bethel 7 & 8 Solar Hybrid project.
- ii) However, the AFC for the proposed San Joaquin Solar 1 & 2 Hybrid (SJSH 1 & 2) project to the Energy Commission was received from the applicant, San Joaquin Solar 1 LLC and San Joaquin Solar 2 LLC.

Please explain whether under the above circumstances the signed LGISA is still valid for the current proposed project and ownership, and as far as the generator California ISO queue position is concerned.

Response:

The “San Joaquin Solar 1&2” and “Bethel 7&8 Solar Hybrid” projects are the same project. The project owners have changed from Bethel Energy to Martifer Renewables Solar Thermal LLC between the time the initial Interconnection Request was filed in December 2007 and the start of the Phase I Interconnection Study (December 2008) – see information below for further details. In addition to the ownership change, the project’s name was also changed at the time the Acquisition Agreement was signed. The projects are now registered as: “San Joaquin Solar 1 LLC” and “San Joaquin Solar 2 LLC.” However, CAISO informed the applicant that the project name could not be changed in their records due to an accounting limitation (see attached email correspondence).

As summarized in the chart below, Bethel Energy LLC filed an Interconnection Request in December 2007 for the above named projects. Shortly after the Interconnection Feasibility Study Agreement was executed (between Bethel Energy LLC and CAISO), the projects were sold to “Eviva California Solar Holdings LLC,” a Martifer subsidiary, pursuant to an Acquisition Agreement, dated March 14, 2008. As a result of re-branding and re-organization efforts by Martifer in the U.S., the name of the acquiring entity (“Eviva California Solar Holdings LLC”) was subsequently changed to “Martifer Renewables Solar Thermal LLC”. Consent to Assignment documents were filed with CAISO in September 2008 to correct their records regarding project ownership prior to the execution of the LGIP agreement in October 2008. (See attached documents for reference) Details of the name changes and the relevant dates are in the following table:

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DATE	ACTION	REASON
12-December-2007	Interconnection request submitted to CAISO by "Bethel Energy LLC" for two projects named "Bethel 7&8"	
3-March-2008	Interconnection Feasibility Study Agreement signed between CAISO and "Bethel Energy LLC"	
14-March-2008	Acquisition Agreement signed in which "Bethel Solar Partners LLC" sold the two projects to "Eviva California Solar Holdings LLC," a Martifer subsidiary	Projects sold to Martifer in order to increase the financial capacity of the projects
28-April-2008	Amended Certificate of Registration executed in State of California to change the name of "Eviva California Solar Holdings LLC" to "Martifer Renewables Solar LLC"	Result of Martifer re-branding its efforts in North America
23-July-2008	Amended Certificate of Registration executed in State of California to change the name of "Martifer Renewables Solar LLC" to "Martifer Renewables Solar Thermal LLC"	Result of Martifer establishing different operating companies and organizational chart for their North American operations
25-September-2008	Executed two Consent to Assignment agreements with CAISO to update the project ownership to "Martifer Renewables Solar Thermal LLC" from "Bethel Energy LLC"	Update CAISO's records to reflect current project ownership, per events listed above
24-October-2008	LGIP Study Process Agreement executed between CAISO and "Martifer Renewables Solar Thermal LLC" for the project to be included in the Transition Cluster study starting 12/1/2008	

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TECHNICAL AREA: WASTE MANAGEMENT

Data Adequacy Request 1: Please provide a discussion of temporary or permanent closure in the event of premature or unexpected cessation of operations. AFC, Section 5.14.2.3, refers to a facility closure plan that is not included in the document.

Response: Facility Closure

Facility closure will be outlined in the facility's closure plan which will be prepared prior to operation of the facility. Closure of the facility may be temporary or permanent. Temporary closure would be for a period of time greater than the time required for normal maintenance. Reasons for temporary closure would include damage to the plant from earthquake, fire, storm, etc. Permanent closure would end plant operations with no intent to restart operations. The closure plan will outline steps to secure hazardous and non-hazardous materials and wastes. The plan will include monitoring the vessels and receptacles of materials or wastes, safe cessation of processes using hazardous materials or storing hazardous wastes and the inspection of secondary containment structures.

Temporary Closure

The facility's closure plan will outline measures for temporary closure that guarantee that all hazardous materials and waste will be removed from the facility, or that the site will have 24-hour security monitoring. The CEC will be notified prior to closure. Temporary contingency closure measures will be prepared as part of the facility closure plan prior to startup of the facility, and will be developed consistent with BMPs, the HMBP, and the RMP as well as the measures identified in Section 5.15 of the project AFC. The measures will be in accordance with all applicable LORS and will be implemented to protect health and safety and the environment.

Permanent Closure

The planned permanent closure will be incorporated into the facility closure plan and evaluated at the end of the generating station's economic operation. The facility closure plan will outline measures for permanent closure to secure materials and waste, including the inventory, management, and disposal of materials and wastes, and permanent closure of permitted hazardous materials and waste storage units. The permanent closure measures will be prepared as part of the facility closure plan prior to startup of the facility, and will be developed consistent with BMPs, the HMBP, and the RMP as well as the measures identified in Section 5.15 of the project AFC. The measures will be in accordance with all applicable LORS and will be implemented to protect health and safety and the environment.

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TECHNICAL AREA: WASTE MANAGEMENT

Data Adequacy Request 2: Please provide a discussion of the cumulative impacts expected from the construction, operation, and maintenance of the project, including information on available landfill capacity and comparisons of the available landfill capacity to the total volumes of nonhazardous and hazardous wastes that would be generated during project construction and operation.

Response: The project will generate non-hazardous solid waste that will add to the total waste generated in Fresno County and in California. However, there is adequate recycling and landfill capacity to dispose of the waste generated by the project as well as additional projects in Fresno County. The project will recycle the majority of the waste generated during construction and operation. The project is anticipated to generate approximately 500 tons of solid waste during construction and approximately 50 tons of solid waste annually from operations that will be sent to landfills. Fresno County reportedly landfilled 475,052 tons of solid waste in 2008 (CIWMB). Therefore, the impact of the project on solid waste disposal capacity will not be significant.

The project will generate hazardous waste that will add to the total waste generated in Fresno County and in California. Most hazardous waste that is generated by the project will be recycled. Hazardous waste treatment and disposal capacity in California is adequate to handle the hazardous waste generated by the project. Therefore the effect of the project on hazardous waste recycling, treatment and disposal capacity will not be significant.

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TECHNICAL AREA: WATER RESOURCES

Data Adequacy Request 1: Please provide a discussion of direct or indirect impacts due to construction, operation and maintenance of project.

Response: Potential, direct, indirect, and cumulative impacts due to construction, operation, and maintenance of the project were evaluated. Specifically, potential impacts to surface and groundwater supply, use, and quality were evaluated and described in the AFC section 5.5.2, Environmental Consequences.

Direct Impacts

From a surface water perspective, the Project will create new impervious surfaces that will have the potential to create additional runoff and subsequent erosion and sedimentation. To minimize potential surface water impacts, site grades will be established to minimize the amount of earthwork required to construct the facilities and to maintain control of stormwater runoff. Selected areas will be covered with appropriate material, as conditions require (e.g., asphalt concrete for road base and gravel for other facility area surfaces). Finish grading will be performed to conform to the finished design elevations for surface drainage and to prepare the areas for the specified surface finishes. Rainfall from vehicle parking and paved areas in the power block will be collected and directed to an oil/water separator prior to discharge to the raw water tank for recovery.

Rainfall from each plant's solar field will continue to be drained by sheet flow. Drainage and erosion will be controlled through implementation of appropriate post construction BMPs such as appropriately sized swales, culverts, and velocity dissipation devices. An infiltration basin will be installed at the southwest corner of the project to allow the rainfall to be absorbed into the ground replenishing local ground water levels and designed to match existing runoff rates to offsite areas. The current estimate of average annual site runoff is approximately 120 AF, assuming 7.5 inches of annual rainfall over the 640 acre site and using a runoff coefficient of 0.3. Although the Project would increase runoff coefficients in localized areas onsite (site facilities area), the Project drainage design, along with the proposed infiltration area in the southwest corner of the solar field will allow percolation and evaporation to match the current runoff rates to downstream offsite areas.

The solar field is designed with a slight berm on the exterior edges to contain collected rain water in the field for natural infiltration and evaporation. The power island is 1 foot higher than the solar field so that runoff travels to the solar fields and infiltrates or evaporates. In areas of potential HTF contamination, the runoff will be diverted to the lined evaporation pond(s).

As stated in the AFC, solely based upon comparison of the location of the Project in relation to the neighboring wells, along with the anticipated long term decline in Project reliance on groundwater, it is not anticipated that the Project groundwater usage will adversely impact groundwater levels or quality in the surrounding area. Aquifer test information for a neighboring well is submitted for reference.

The Project is designed as a "zero discharge" facility. All non-recycled wastewater streams, including the RO reject water will be contained onsite through the use of a lined evaporation pond(s). The evaporation pond will be

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sized to accommodate the wastewater amounts and will be designed in accordance with applicable state, regional, and local regulatory requirements. An onsite contained septic system will be used for sewage.

With implementation of storm drainage, erosion and sediment control design features (including implementation of an Industrial SWPPP), ultimate utilization of City wastewater for the primary water source, and recycling of all available onsite wastewater streams will result in minimization of direct project impacts on surrounding properties.

Construction Related Impacts

From a construction water use perspective, water requirements for construction will be on a temporary basis and will include primary water uses for grading/compaction, dust control, and concrete mixing. The water supply for construction will be from the existing onsite well and augmented with trucked water from offsite if needed during peak use conditions. A more detailed discussion of construction water use is provided in Water Resources Data Adequacy Response 8.

From a drainage, erosion and sediment control perspective, the project will implement a construction SWPPP that will provide BMPs for erosion, sediment, tracking, wind, non-stormwater, and waste management. Implementation of these BMPs will provide compliance with the State NPDES General Construction Permit.

Indirect Impacts

There are no identified indirect impacts related to the project that would not be mitigated by implementation of the stormwater and groundwater design features identified above.

Cumulative Impacts

As stated in the AFC, mitigation measures for the Project would be applied in situations where the Project has or would have an unmitigated significant impact. As discussed above, the evaluation of water resources impacts considered both the occurrence and the quality of water in the area. Furthermore, after implementation of the drainage, erosion and sediment control design features, water quality treatment facilities, and evaporation pond, the Project will not have a significant effect on water quality in the area or surface water runoff flowrates, volumes, or floodplain impacts.

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TECHNICAL AREA: WATER RESOURCES

Data Adequacy Request 2: Please provide figures depicting hydrogeologic conditions, groundwater bodies or related geologic structures.

Response: Figure 5.5-1 in the AFC presents the groundwater sub-basins in the vicinity of the project. Figure 5.5-5 (new figure) taken from Westlands Water District report entitled "Deep Groundwater Conditions Report," dated March 2008 (available online at: www.westlandswater.org/short/200805/525r07.pdf), presents a general hydrogeologic condition of the valley adjacent to Coalinga within the Westlands Water District. This report, available from Westlands Water District, provides general hydrogeologic conditions in the area. The project is located several miles west of the San Luis Canal as depicted on Figure 5.5-5. The existing onsite well (as currently screened) likely draws water from both the upper and lower water bearing zones. More detailed hydrogeologic conditions at the site will be provided along with the aquifer test results. Note that the project is located within the Pleasant Valley Groundwater Sub-basin and Water District (west of Westlands Water District), so the information provided in the Westlands Water District report, while informative in a general sense, may not reflect actual conditions within the Pleasant Valley Water District.

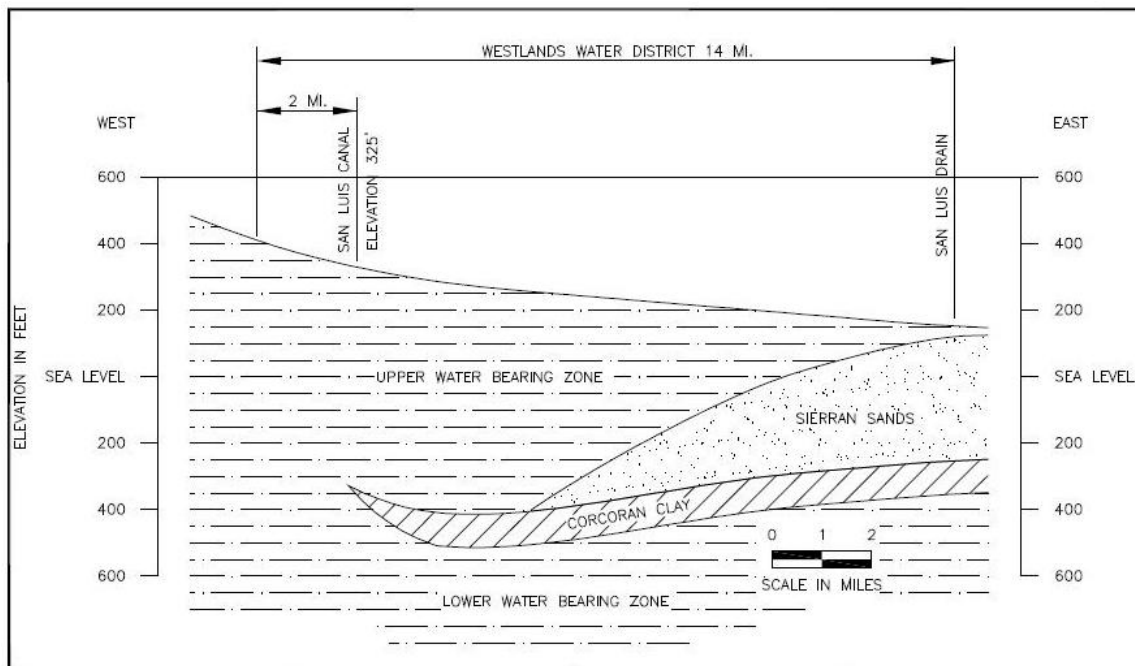


Figure 5.5-5 - General Hydrogeologic Conditions

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Data Adequacy Request 3: Please provide aquifer testing information to support estimated well yield and drawdown estimates to evaluate potential for impact to other wells.

Response: Attached is the groundwater drawdown result from a similar well located within 1 mile of the Project's on-site well in an attempt to satisfy this data adequacy requirement. Aquifer testing information to support estimated on-site well yield and drawdown estimates will be submitted to the CEC as soon as the test results are complete and validated.

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TECHNICAL AREA: WATER RESOURCES

Data Adequacy Request 4: Please provide a discussion or figures describing nearby surface water bodies.

Response: The sub-basin boundaries for nearby streams have been derived from both hydrologic and political criteria. Several small, ephemeral streams enter the basin from the surrounding mountains; these streams include Los Gatos, Warthan, Jacalitos, Avenal, and Zapato Chino Creeks. The Project surface water drainage is tributary to Zapato Chino Creek, just south of the project as shown on USGS topographic maps of the area. Zapato Chino Creek is a FEMA mapped floodplain as shown on Figure 5.5-3 of the AFC, and its location is also shown on a USGS map included as Figure 5.5-4 of the AFC

The Project is not located within a Federal Emergency Management Agency (FEMA) designated floodplain. The Project is within FEMA's Flood Insurance Rate Map (FIRM) Community Panel Numbers 06019C3275F, effective date July 19, 2001 and 06019C3405F, effective date July 19, 2001. The FIRMs illustrate that the Project site is entirely within Zone X, defined as areas determined to be outside the 500-year floodplain.

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TECHNICAL AREA: WATER RESOURCES

Data Adequacy Request 5: Please provide a description of recycled wastewater quality.

Response: Figure 5.5-3 (Water Balance Diagram) was updated to reflect that the project will receive tertiary treated water from the City of Coalinga.

The City Wastewater Treatment Facility effluent water will ultimately be utilized as the main supply source for the project. The City wastewater will be tertiary level treated water to be supplied to the project via a pipeline and temporarily stored onsite in a holding tank prior to further onsite treatment. Because the City Wastewater Treatment Facility is not yet constructed the final operational wastewater quality from the plan is not know at this time. The water quality from the City facility will be consistent with the Waste Discharge Requirements issued by the State or Regional Water Quality Control Board for the facility. Because the City Wastewater Treatment Facility is not yet constructed and operating, actual effluent water quality data from the plant cannot be provided at this time.

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TECHNICAL AREA: WATER RESOURCES

Data Adequacy Request 6: Needs a description of post treatment water quality from both water sources.

Response:

1. The groundwater well supply leaving the Reverse Osmosis units (accepts) will have 11.25ppm TDS @ 7.7pH
2. The recycled water leaving the Tertiary Treatment System will have approximately 700ppm TDS @ 7-8pH (Used for condenser cooling)
3. Water to be recycled onsite will pass through the 'tertiary treatment system' (to treat water received from the City Wastewater Plan). All of the water to be recycled goes to the "Secondary Gray Water Receiving Tank" and is fed to the Tertiary Treatment System". (See Figure 5.5-3)

The water to be recycled will be:

- | | |
|--|-------------------------|
| 1. Steam System Blowdown | 1000ppm TDS @ 8.5-9.5pH |
| 2. Cooling Tower Blowdown | 4,950ppm TDS @ 7-8pH |
| 3. RO System Rejects | 5,150ppm TDS @ 7-8pH |
| 4. Gray Water from Coalinga | 500-1000ppm TDS @ 7.5pH |
| 5. Water from Control Room,
Offices sinks, sample coolers | 250ppm TDS @ 7pH |

The Tertiary Treatment System cleans the recycled water listed above to produce recycled water quality of approximately 700ppm TDS @ 7-8pH.

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TECHNICAL AREA: WATER RESOURCES

Data Adequacy Request 7: Needs a description of water quality proposed for discharge to the evaporation ponds.

Response: Based upon the current design assumptions and onsite treatment system design, the water going to the evaporation pond (Tertiary Treatment System Rejects) will have approximately 7,000ppm @ 7-8pH.

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TECHNICAL AREA: WATER RESOURCES

Data Adequacy Request 8: Please provide a description of construction water use.

Response: During the first two to three months of the project the largest quantity of construction water will be required. This water will be used for compaction and dust suppression for the cut and fill required to create the three terraces of SJS 1&2. It is estimated that 150,000 to 200,000 gallons per week will be required to perform this activity (15 to 20 gallons per minute [gpm] assuming constant groundwater pumping).

After the initial grading is completed on the project, approximately 50,000 gallons of water a week (15 gpm) will continue to be used for dust suppression. In addition to this another 50,000 to 75,000 gallons per week (5 to 7.5 gpm) will be used in a concrete batch plant during the six months of civil work.

Finally about 2,000 gallons per week (2 gpm) will be used for construction clean-up purposes (i.e. equipment cleaning, personnel clean up etc).

It is assumed that bottled or trucked potable water will be used during construction.

With these various requirements, it is estimated that the maximum water use during construction would be approximately 25 gpm. Daily water usage rates in gallons per minute would likely exceed this rate, but based upon an average daily basis this rate would be less than during long term operations.

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TECHNICAL AREA: WATER RESOURCES

Data Adequacy Request 9: Please provide a description of design storm. Need storm water collection system design, storm water collection system description and storm water collection system diagrams.

Response: The onsite stormwater conveyance systems will be designed in accordance with the Fresno County drainage standards for swales, pipes, infiltration basins, etc. Fresno County has a draft hydrology/hydraulic design manual that will be utilized to design and protect facilities from damage from 100-year flooding.

The currently proposed design will sheet flow accumulated runoff through each of the four main pad areas. Flows may be concentrated at select locations including: roadside swales, road cross culverts, terrace downdrains, and at the entrance to the infiltration area in the southwest corner of the site. The infiltration area will be designed to accept and infiltrate annual runoff volumes to reduce post project flows to at or below existing levels. Accumulated runoff that cannot be stored and infiltrated will be discharged out of the basin in a controlled method to prevent erosion at the outlet and receiving water. Figure 5.5-6 (shown below) shows the general pad grades (610 feet in the northeast quadrant, 590 in the northwest quadrant, 590 in the powerblock area, 569 in the southeast and southwest quadrants, and 567 within the southwestern infiltration area), general flow directions and location of the infiltration area in the southwest corner of the site.

As indicated in the AFC, site grades will be established to minimize the amount of earthwork required to construct the facilities and to maintain control of stormwater runoff. All areas disturbed during construction will be graded to a smooth surface. Selected areas will be covered with appropriate material, as conditions require (e.g., asphalt concrete for road base and gravel for other facility area surfaces). Finish grading will be performed to conform to the finished design elevations for surface drainage and to prepare the areas for the specified surface finishes. Rainfall from vehicle parking and paved areas in the power block will be collected and directed to an oil/water separator prior to discharge to the raw water tank for recovery.

Rainfall from each plant's solar field will continue to be drained by sheet flow. Drainage and erosion will be controlled through infiltration basins to allow the rainfall to be absorbed into the ground replenishing local ground water levels and designed to match existing runoff rates to offsite areas. The current estimate of average annual site runoff is approximately 120 acre-feet (AF), assuming 7.5 inches of annual rainfall over the 640 acre site and using a runoff coefficient of 0.3. Although the Project would increase runoff coefficients in localized areas onsite (site facilities area), the Project drainage design, along with the proposed infiltration areas in the solar field will allow percolation and evaporation to match the current runoff rates to downstream offsite areas.

The solar field is designed with a slight berm on the exterior edges to contain collected rain water in the field for natural infiltration and evaporation. The power island is 1 foot higher than the solar field so that runoff travels to the solar fields and infiltrates or evaporates. In areas of potential HTF contamination, the runoff will be diverted to the lined evaporation pond(s).

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The project will comply with the applicable Fresno County drainage and flood control policies including the following Fresno County Flood Control Policies:

- Policy PF-E.5: The County shall only approve land use-related projects that will not render inoperative any existing canal, encroach upon natural channels, and/or restrict natural channels in such a way as to increase potential flooding damage.
- Policy PF-E.6: The County shall require that drainage facilities be installed concurrently with and as a condition of development activity to ensure the protection of the new improvements as well as existing development that might exist within the watershed.
- Policy PF-E.7: The County shall require new development to pay its fair share of the costs of Fresno County storm drainage and flood control improvements within unincorporated areas.
- Policy PF-E.9: The County shall require new development to provide protection from the 100-year flood as a minimum.
- Policy PF-E.11: The County shall encourage project designs that minimize drainage concentrations and maintain, to the extent feasible, natural site drainage patterns.
- Policy PF-E.13: The County shall encourage the use of natural storm water drainage systems to preserve and enhance natural drainage features.
- Policy PF-E.14: The County shall encourage the use of retention-recharge basins for the conservation of water and the recharging of the groundwater supply.
- Policy PF-E.21: The County shall require the use of feasible and practical best management practices (BMPs) to protect streams from the adverse effects of construction activities, and shall encourage the urban storm drainage systems and agricultural activities to use BMPs.

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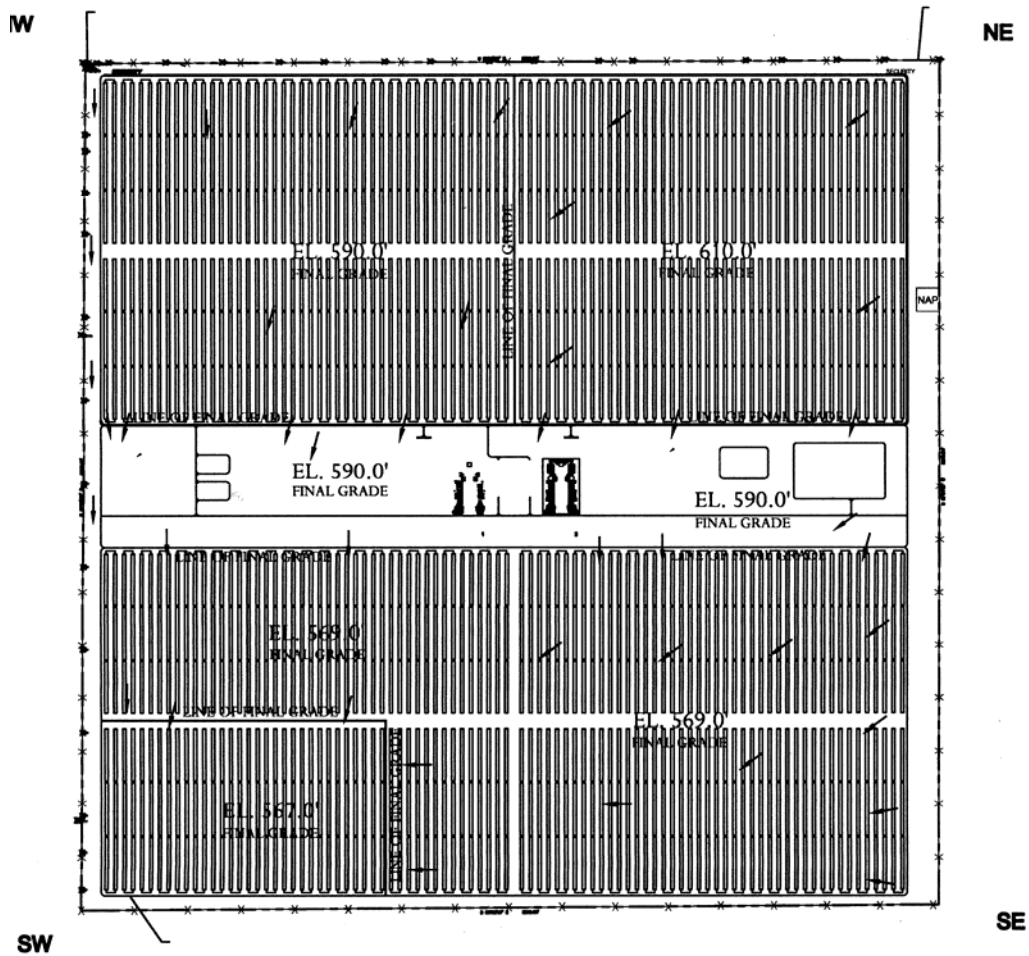


FIGURE 5.5-6 - GENERAL SITE GRADING

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TECHNICAL AREA: WATER RESOURCES

Data Adequacy Request 10: Please provide all assumptions and calculations used to calculate runoff and to estimate changes in flow rates between pre- and post construction

Response: The current estimate of average annual site runoff is approximately 120 acre-feet (AF), assuming 7.5 inches of annual rainfall over the 640 acre site and using a runoff coefficient of 0.3. Although the Project would increase runoff coefficients in localized areas onsite (site facilities area), the Project drainage design, along with the proposed infiltration areas in the solar field will allow percolation and evaporation to match the current runoff rates to downstream offsite areas. A post construction runoff coefficient estimate of 0.35 to 0.40 is anticipated. This would result in a total average runoff volume of 160 acre feet. This would require a 40 acre feet of storage to reduce runoff volume to existing conditions. The proposed infiltration area in the southwest corner of the site provides approximately 60-80 acre feet of storage which should be adequate to detain or infiltrate the increase in runoff volume. The runoff coefficients were assumed based upon general coefficients for agricultural land and adjusted upward for post project condition based upon anticipated grading and facility construction.

Additional calculations will be provided during further site development to analyze drainage and flooding conditions up through the 100-year storm to ensure continued site access and function. The site will be designed to ensure no adverse flooding impacts to adjacent properties.

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TECHNICAL AREA: WATER RESOURCES

Data Adequacy Request 11: Please provide a copy of applicable regional and local requirements regulating the drainage systems, and a discussion of how the project's drainage design complies with these requirements

Response: Fresno County has general policies regarding drainage and flood control. They also have draft drainage design standards. The project will be designed in accordance with these standards along with applicable Basin Plan requirements. Data Adequacy Request Response #9 within the Water Resources Technical Area provides Fresno County flood control policies.

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TECHNICAL AREA: WATER RESOURCES

Data Adequacy Request 12: Please provide an impacts analysis of the proposed project on water resources and a discussion of conformance with water-related LORS and policy including the effects of project demand on the water supply and other users of these sources, including, but not limited to, water availability for other uses during construction or after the power plant begins operation, consistency of the water use with applicable RWQCB basin plans or other applicable resource management plans, and any changes in the physical or chemical conditions of existing water supplies as a result of water use by the power plant

Response: The impacts analysis is provided in the AFC Sections 5.5.2 and 5.5.3 and also in response to Water Resources Data Adequacy Response 1. Discussion of compliance with LORS is provided in AFC Section 5.5.4.

Impacts analysis related to additional groundwater well yield/testing information will be provided when available. Estimated water quality information is provided in Data Adequacy Responses 5 through 8 within the Water Resources Technical Area.

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TECHNICAL AREA: WATER RESOURCES

Data Adequacy Request 13: Please provide an estimation of aquifer drawdown based on a computer modeling study that shall be conducted by a professional geologist and discuss any effects on the migration of groundwater contaminants, and the likelihood of any changes in existing physical or chemical conditions of groundwater resources

Response: Submission of the neighboring well aquifer test information (attached) should satisfy the data adequacy need for groundwater well yield/aquifer analysis. Results of the onsite well aquifer information will be provided when available.

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TECHNICAL AREA: WATER RESOURCES

Data Adequacy Request 14: Please provide a table or matrix that explicitly references pages in the application wherein conformance, with each law or standard during both construction and operation of the facility is discussed

Response:

**Table 5.5-8 (Revised)
Summary of LORS**

Jurisdiction	LORS	Requirements	Conformance Section	Administering Agency	AFC Page Number
Federal					
	CWA § 402; 33 USC § 1342; 40 CFR Parts 110, 112, 116	Requires NPDES Permits for construction and industrial stormwater discharges. Requires preparation of a SWPPP and Monitoring Program.	Coverage under NPDES industrial stormwater permit maybe required. NOI for coverage under NPDES construction stormwater permit will be filed prior to construction.	SWRCB and RWQCB	5.5-15
	CWA § 311; 33 USC § 1342; 40 CFR Parts 122-136	Requires reporting of any prohibited discharge of oil or hazardous substance.	Project will conform by proper management of oils and hazardous substances both during construction and operation. If an accidental release or unintended spill occurs it will promptly be reported.	RWQCB and DTSC	5.5-16
	Code of Federal Regulations (CFR), Title 40, Parts 124, 144 to 147	Requires protection of underground water resources	Project will utilize lined evaporation ponds for wastewater disposal.	Environmental Protection Agency (EPA)	5.5-16
State					
	CWC § 13552.6	Use of potable domestic water for cooling towers and air conditioning is unreasonable use if suitable recycled water is available.	The Project proposes to use recycled wastewater as a main water supply source.	SWRCB and RWQCB	5.5-16, 17, 18

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Jurisdiction	LORS	Requirements	Conformance Section	Administering Agency	AFC Page Number
	California Constitution Article 10 § 2	Avoid the waste or unreasonable uses of water. Regulates methods of use and diversion of water.	Project includes appropriate water conservation measures, both during construction and operation.	SWRCB and RWQCB	5.5-16, 17, 18
	State Water Resources Control Board, Resolution No. 75-58	Addresses sources and use of cooling water supplies for power plants which depend on inland waters for cooling and in areas subject to general water shortages.	The Project proposes to use recycled wastewater as a main water supply source.	SWRCB and RWQCB	5.5-16
	Porter-Cologne Water Quality Act of 1972; CWC § 13000-14957, Division 7, Water Quality	Requires State and Regional Water Quality Control Boards to adopt water quality initiatives to protect state waters. Those criteria include identification of beneficial uses, narrative and numerical water quality standards.	Project will conform to applicable state water standards, both qualitative and quantitative, prior to and during operation. Applicable permits will be obtained from Regional Water Quality Control Board.	SWRCB and RWQCB	5.5-15, 16
	Title 22, CCR	Addresses the use of recycled water for cooling equipment	The Project proposes to use recycled wastewater as a main water supply source.	California Department of Health Services	5.5-16
	The Safe Drinking Water and Toxic Enforcement Act of 1986 (proposition 65), Health and Safety Code 25241.5 et seq.	Prohibits the discharge or release of chemicals known to cause cancer or reproductive toxicity into drinking water sources.	The Project will conform to all state water quality standards, both qualitative and quantitative. The Project will not discharge into any drinking water source. If an unintended spill occurs, reporting of spill will be prompt.	California Department of Health Services	5.5-17

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Jurisdiction	LORS	Requirements	Conformance Section	Administering Agency	AFC Page Number
	CWC Section 461	Encourages the conservation of water resources and the maximum reuse of wastewater, particularly in areas where water is in short supply.	The Project proposes to use recycled wastewater as a main water supply source.	SWRCB and RWQCB	5.5-16-18
	CWC Section 5002	Requires a "Notice of Extraction and Diversion of Water" to be filed with the State Water Resources Control Board on or before March 1st of the succeeding year.	Notice will be filed as required by state law.	SWRCB and RWQCB	5.5-16-18
	CWC Section 13751	Requires a "Report of Completion" to be filed with the State Water Resources Control Board within 60 days of well construction.	If a new well is required, the Project will file a report of well completion.	SWRCB and RWQCB	5.5-16-18
	California Public Resources Code § 25523(a); 20 CCR §§ 1752, 1752.5, 2300 – 2309, and Chapter 2 Subchapter 5, Article 1, Appendix B, Part (1)	The code provides for the inclusion of requirements in CEC's decision on an AFC to assure protection of environmental quality, and requires submission of information to the CEC concerning proposed water resources and water quality protection.	The Project will comply with CEC requirements to assure protection of water resources.	CEC and RWQCB	5.5-16-18
	CWC §§ 13271 – 13272; 23 CCR §§ 2250 – 2260	Reporting of releases of reportable quantities of hazardous substances or sewage and releases of specified quantities of oil or petroleum products.	No releases of hazardous substances are anticipated; however, the Project will conform to all state water quality standards, both qualitative and quantitative. If an unintended spill occurs, reporting of spill will be prompt.	SWRCB and RWQCB	5.5-16-18

**San Joaquin Solar 1 & 2 Hybrid Project
Supplemental Information
In Response to CEC Data Adequacy Requests
08-AFC-12**

Jurisdiction	LORS	Requirements	Conformance Section	Administering Agency	AFC Page Number
	CWC §13260 – 13269; 23 CCR Chapter 9	Requires the filing of a Report of Waste Discharge (ROWD) and provides for the issuance of WDRs with respect to the discharge of any waste that can affect the quality of the waters of the state.	RWQCB will be contacted regarding the requirements for an ROWD and WDRs	SWRCB and RWQCB	5.5-16-18
	CEQA, Public Resources Code § 21000 et seq.; CEQA Guidelines, 14 CCR § 15000 et seq.; Appendix G	CEQA Guidelines (Appendix G) contain definitions of projects which can be considered to cause significant impacts to water resources.	The Project will comply with the requirements of the CEC to assure protection of water resources.	CEC	5.5-16-18
	Title 27, CCR Division 2. §20375. SWRCB - Special Requirements for Surface Impoundments. (C15: §2548)	This regulation governs the design requirements for surface impoundments.	The evaporation pond for process wastewater disposal will be designed and operated in accordance with the requirements of this section.	SWRCB and RWQCB	5.5-16-18
Local					
	Fresno County Department of Community Health, Environmental Health System, California Well Standards Ordinance and California Well Standards, Bulletins 74-81 and 74-90.	Regulates construction of new water wells, reconstruction, repair or deepening of existing wells and destruction of abandoned wells.	The Project will conform to all Fresno County water well construction standards.		5.5-18

**San Joaquin Solar 1 & 2 Hybrid Project
Supplemental Information
In Response to CEC Data Adequacy Requests
08-AFC-12**

Jurisdiction	LORS	Requirements	Conformance Section	Administering Agency	AFC Page Number
	Fresno County General Plan Water Quality Policies and Programs.	Non-point sources of water pollution, such as runoff from urban areas, grading, construction, and agricultural activities shall be recognized as potentially significant impacts of development.	The Project will conform to all water quality policies and programs, and will have zero discharge off-site from industrial activities. Grading and erosion control plans will minimize or prevent construction phase impacts.		5.5-18

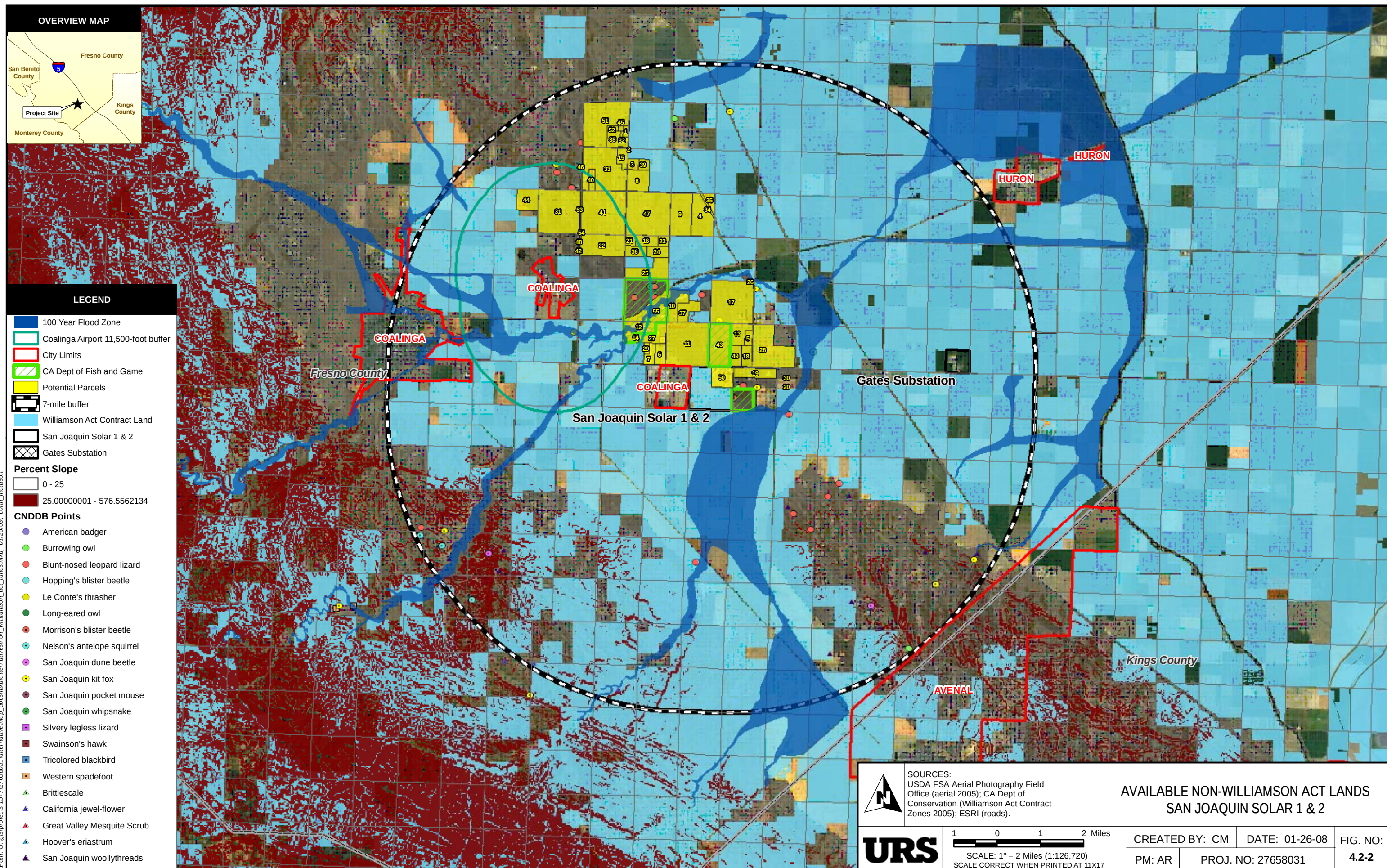
Notes:

LORS = laws, ordinances, regulations, and standards

**San Joaquin Solar 1 & 2 Hybrid Project
Supplemental Information
In Response to CEC Data Adequacy Requests
08-AFC-12**

ATTACHMENTS:

Figure 4.2-2, Revised
Biological Technical Report
Correspondence with CDFG and USFWS
Figure 3.4-2a
Figure 5.4-2
Figure 3.4-11
Figure 3.4-12
Figure 3.4-6, Revised
CAISO Confirmation of Project Name
CAISO Bethel Energy to BSP Consent to Assignment
CAISO Bethel to Martifer Consent to Assignment
Figure 5.5-3, Revised
SJS 1&2 Anticipated Well Performance



R E P O R T

BIOLOGICAL RESOURCES
TECHNICAL REPORT
FOR THE SAN JOAQUIN
SOLAR POWER GENERATING FACILITY,
FRESNO COUNTY,
CALIFORNIA

Prepared for

Martifer Renewables Solar Thermal LLC

URS Project No. 27658031.00900

January 22, 2009



1615 Murray Canyon Road, Suite 1000
San Diego, CA 92108-4314
Phone: 619.294.9400
Fax: 619.293.7920

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EXECUTIVE SUMMARY

The purpose of this Biological Resources Technical Report is to describe biological resources within the areas of potential effect for the Martifer Renewables Solar Thermal LLC Project Site. This report details the results of general wildlife surveys, focused and protocol special status species surveys, vegetation mapping, and a jurisdictional waters delineation conducted in the Project area.

The Project area is defined as the area that could potentially be directly or indirectly impacted during Project construction and operation. This includes the 640-acre Project site and a 500-foot buffer, and a 400-foot buffer on each side of the two proposed approximately 6-mile transmission line alternative routes. In addition to the immediate Project survey area, the habitats within 1 mile of the Project site and ¼ mile of the proposed transmission lines were characterized per California Energy Commission Guidance. The Project site is located on one section of land on the south side of Jayne Avenue approximately 6 miles east of Coalinga and approximately 3 miles west of Interstate 5, on the northern perimeter of the San Joaquin Valley farm district. The 6-mile offsite transmission line alignments start at the north and south boundaries of the Project site and go to the Gates substation. Figure 1, Regional Map San Joaquin Solar 1&2, displays the general topography of the Project Area and vicinity.

Prior to conducting field surveys, a review of literature was performed, including a query of the California Native Plant Society (CNPS) Inventory of Rare Plants Database, United States Fish and Wildlife Service (USFWS) species database, and the California Department of Fish and Game (CDFG) California Natural Diversity Database (CNDDB) to identify special-status species previously documented within the Project survey area and vicinity. Biological field surveys were conducted by URS in April and May 2008, June through August 2008, and December 1-12, 2008 in accordance with CEC regulations (CEC 2000, revised 2007), and CDFG and USFWS protocols for surveys of special-status species. The Project site was surveyed and found to be under active agricultural activities; therefore, no focused surveys for special-status species were conducted on the Project site.

Surveys of the northern transmission line routes included habitat assessment, vegetation and general wildlife surveys, and CDFG-protocol surveys for blunt-nosed leopard lizards (BNLL) (*Gambelia sila*) within 400 feet of the north and south sides of each of the alignment in June, July, and August 2008. Protocol small-mammal trapping surveys were conducted on both of the proposed alignments in December, 2008. CDFG0-protocol rare plant surveys will be conducted in spring 2009 on both alignments, and BNLL surveys will be performed on the southern transmission line alternative during the 2009 survey season.

The observed vegetation in and surrounding the Project study area is disturbed in nature and includes a disturbed grassland and saltbush scrub matrix and agricultural vegetation communities, (Figure 2). A CNDDB query of the Project area and assessment buffers listed six special-status plant species that historically occurred or have the potential to occur within ten miles of the Project study site and alternative transmission line alignments, although none of these plant species were observed during field surveys. The CNDDB lists 22 special-status wildlife species as historically detected and potentially occurring in the Project vicinity, with only a few special-status wildlife species having a low to moderate potential to occur in the Project study area. Five special-status wildlife species were observed along the transmission line routes during the 2008 surveys; none were observed within the Project site.

Biological field surveys resulted in the detection of the following special status species along the alternative transmission line routes:

Wildlife

Loggerhead shrike (*Lanius ludovicianus*)

Golden eagle (*Aquila chrysaetos*)

Northern harrier (*Circus cyaneus*)

Blunt-nosed leopard lizard (*Gambelia sila*)

American badger (*Taxidea taxus*)

SECTION 1 INTRODUCTION

This Biological Resources Technical Report has been prepared to support environmental compliance and permitting for the proposed development of a MRST solar-powered electric generating facility near Coalinga, California, at a site designated as San Joaquin Solar (SJS) 1&2, collectively referred to herein as the Project area. The purpose of this Biological Resources Technical Report is to describe biological resources within the areas of potential effect for the Project Site. This report details the results of special status species protocol and general wildlife surveys, vegetation mapping, and a jurisdictional waters delineation conducted in the Project area.

1.1 PROJECT DESCRIPTION

San Joaquin Solar 1&2 are two 53.4 MW net solar hybrid power stations. Martifer Renewables Solar Thermal LLC (MRST) will be leasing the property for use as a solar and biomass energy generation facility. Clean renewable energy will be produced from heat derived from the collection of solar radiation and the combustion of biomass, both employed to power a conventional steam turbine cycle.

Two alternative transmission line routes have been identified and evaluated. One proposed transmission line (the northern route) extends from the northeast corner of the Project site east, along the south side of West Jayne Avenue in or near the existing PG&E ROW to a point south of the Gates Substation. The second proposed transmission line (the southern route) extends from the southeast corner of the Project site east, along the section boundary line one mile south of and parallel to West Jayne Avenue to a point south of the Gates Substation. The southern route then turns north to Gates Substation. For both route options, the overhead line will begin at the dead-end structure in each Plant's switchyard and will continue east along the northern edge of SJS 2 solar field for approximately 1,500 feet, then either north or south for about 1,500 feet to the respective corner of the Project site. The transmission line will be approximately 6 miles long and will use 85-foot 230 kV Type A wood poles.

SECTION 2 ENVIRONMENTAL SETTING**2.1 PROJECT SETTING**

The proposed Project site is situated on 640 acres, located on the south side of Jayne Avenue, approximately 6 miles east of Coalinga and approximately 3 miles west of Interstate 5 on the northern perimeter of the San Joaquin Valley farm district. The Project site is located entirely within Section 3 of Township 21 South, Range 16 East on the Gujarral Hills and Avenal USGS 7.5-minute quadrangle maps. The northern Project boundary borders West Jayne Avenue (Figure 1). The northern route of the transmission line alternative is in or near an existing transmission right-of-way along the south side of West Jayne Avenue from the northeast corner of the Project area to the PG&E Gates Substation, and the southern alternative route is one-mile south of the northern route. Land use at the Project site, transmission line alignments, and vicinity is designated agricultural and rangeland, as well as public facilities. Land use in the immediate site vicinity includes livestock-related agriculture, cultivated crops, rural residential, and public facilities. The non-agricultural uses within a 1-mile radius of the Project site include Coalinga State Hospital and Pleasant Valley State Prison. Land use on both the northern and southern transmission line routes is comprised of disturbed native habitat for approximately 2 miles, then becomes intensive agricultural such as orchards and other cultivated crops. Both routes of the alignment would span Zapato Chino Creek.

The Project site is currently active farmland recently cleared and planted with wheat and pistachio crops, and has supported several types of crops, including cotton, safflower and garlic. Development onsite includes several unpaved service roads that separate different fields, an extensive irrigation system, a groundwater well with associated irrigation pump equipment above-ground storage tanks located near the southwestern corner of the site, and an abandoned concrete pad in the vacant, northwestern corner of the site. An approximately 1-acre area along the eastern property boundary is not part of the project. Based on historical information reviewed, the majority of the Project site has supported agricultural and livestock uses since approximately 1970.

2.2 FIELD SURVEY METHODOLOGY

The Project area is defined as the area that could potentially be directly or indirectly impacted during Project construction and operation. The 640-acre Project site includes the two solar field sites, construction laydown and parking areas, two biomass facilities, two power blocks, and transmission line connections. The Project survey area includes the Project site and a 500-foot buffer, and a 400-foot buffer on each side of the two proposed approximately 6-mile transmission line alternative routes. In addition to the immediate Project survey area, the habitats within 1 mile of the Project site and ¼ mile of the proposed transmission lines were characterized per California Energy Commission Guidance.

A site visit was conducted with URS staff and Justin Sloan, California Department of Fish and Game (CDFG) biologist on April 11, 2008 to allow CDFG staff to examine the site and agree on survey protocols prior to commencement of the survey season. Biological field surveys were conducted in accordance with CEC regulations (CEC 2000, revised 2007), CDFG and United States Fish and Wildlife Service (USFWS) protocols for surveys of special-status species. Surveys were conducted by URS, Quad Knopf, and AlphaBiota biologists from April through August 2008, and in December 2008, as defined by

protocol requirements described below (see Appendix C). A habitat assessment survey was conducted of the Project site and both sides of the northern transmission line alignment to the Gates substation connection in April and May, 2008. Areas that supported suitable habitat (i.e., were not under active agriculture including crop cultivation and orchards) were the areas where focused surveys for special status botanical and wildlife resources were conducted in 2008 (Figure 2; Figure 3 in Appendix H). The southern transmission alternative route was added to the assessment in late 2008. General wildlife and plant surveys, as well as focused botanical and protocol BNLL surveys will be performed on the proposed southern transmission line alternative route in spring and summer 2009.

Prior to conducting field surveys, a review of literature was performed, including a query of the California Native Plant Society (CNPS) Inventory of Rare Plants Database, USFWS, and the CDFG California Natural Diversity Database (CNDDDB) to identify special-status species previously documented within 10 miles of the Project survey area. These searches revealed a number of historical sensitive plant and animal locations within 10 miles of the Project site; however, only a few species were located within the Project survey area (Appendix B). The USFWS Recovery Plan for Upland Species of the San Joaquin Valley was also reviewed, as well as several documents that were developed in association with the City of Coalinga and Pleasant Valley Habitat Conservation Plan (HCP) processes in the Coalinga area in 2005-2007.

Based on the vegetation and habitat assessment survey of the 640-acre Project site (the site is currently active agriculture, including barley, row and pistachio crops), focused special-status species surveys were not conducted on the Project site. CDFG staff concurred with this assessment in April 2008. General plant and wildlife surveys, and CDFG-protocol surveys for blunt-nosed leopard lizards (BNLL) and San Joaquin antelope squirrel (SJAS) were conducted within 400 feet on the north and south sides of the proposed northern transmission line alignment adjacent to West Jayne Avenue in June, July, and August 2008. General wildlife surveys were conducted concurrently during these surveys. Protocol small-mammal trapping surveys were conducted in December, 2008. CDFG-protocol focused botanical surveys will be conducted on the northern and southern transmission line alignments, and protocol BNLL surveys will be conducted on the southern transmission line alignment in spring 2009.

The habitat assessment surveys of the Project survey area were conducted by URS senior biologists Dr. Patrick Mock and Theresa Miller on April 11, 2008 and by Theresa Miller on May 15, 2008. Vegetation types were delineated onto the aerial map in the field, and then later digitized into a geographical information system (GIS), including those areas within 1 mile of the Project study area. All areas were surveyed on foot, and all areas were visible from the survey routes. Animals were identified using scat, tracks, burrows, recognition of vocalizations, or direct visual observations with the aid of binoculars. All botanical and wildlife species detected during surveys were recorded, and locations of sensitive resources were mapped in the field with the aid of handheld Global Positioning System (GPS) units (5-meter accuracy) and plotted on a rectified 2005 aerial photograph using GIS.

Based on the habitat assessment and discussions with CDFG staff, CDFG-protocol surveys were conducted for the BNLL on the proposed northern transmission line route. Because the 640-acre Project site currently supports active agriculture, CDFG staff concurred that focused surveys for BNLL were not necessary on the Project site. Two BNLL survey periods are specified in the protocol: twelve (12) adult surveys between April 15 and July 31 and five (5) juvenile surveys between August 1 and September 15.

During the adult survey period, 12 transect surveys were completed within an 800-foot wide buffer (400 feet on each side of West Jayne Avenue) of the proposed northern transmission line alignment between May 28 and July 9, 2008. During the juvenile survey period, a total of five transect surveys were completed within the 800-foot wide buffer of the proposed northern transmission line route between August 9 and August 22, 2008. During the surveys, a team of four or five biologists walked in transects spaced 20 meters apart, searching for BNLL and other lizards. All surveys had one Level II surveyor present for every three Level I surveyors (3:1 ratio), as required by CDFG protocol. Each survey was started on the opposite side of the alignment from the previous survey to avoid introducing temporal or temperature biases to the BNLL surveys. The limits of temperatures and wind specified in the protocol were followed; all surveys were conducted within of the designated time of day (before 2 pm), temperature range (25-35 degrees Celsius (°C)) or wind ranges (maximum 10 mph sustained winds). BNLL surveys are planned for 2009 using the same protocol within a 800 ft wide corridor of the southern transmission line route.

Surveys for San Joaquin antelope squirrel (SJAS) (*Ammospermophilus nelsoni*) were conducted concurrent with BNLL surveys, as approved during coordination with CDFG staff. Since the Project site is comprised of active row crops, orchard, and other agricultural uses that is not suitable habitat, SJAS surveys were not conducted within the Project site; CDFG staff required that the surveys be conducted only within potential habitat. SJAS are known to be most active in temperatures up to 30°C; under the BNLL survey protocol, surveys occur between 25 C and 35°C. Because of this difference in favorable temperatures for optimal activity of the two species, surveys for SJAS were discontinued when temperatures reached the SJAS maximum temperature of 30°C, while the BNLL surveys continued if the BNLL protocol maximum was not met at the time. The location at which the temperature reached 30°C was noted, and the next survey was started near this location to avoid introducing temperature bias to the SJAS survey. Incidental observations of other detected species were recorded during the BNLL and SJAS surveys.

Nocturnal trapping surveys for small mammals were conducted within the disturbed non-native grassland, saltbush scrubland, and fallow agricultural lands along the northern and southern transmission line routes in December, 2008. Four trapping lines were established along the northern route (trap lines 1 through 4), consisting of 20 traps, 100 traps, 80 traps, and 100 traps, respectively (Figure 3 in Appendix H). Four trapping lines were established along the southern transmission line, consisting of 50 traps each. Traps were placed at intervals of approximately 15 meters along the trap lines. Each line was trapped for four consecutive nights; trap lines 1 through 4 were trapped from December 1-4, 2008 and trap lines 5 through 8 were operated from December 7-10, 2008. A combination of standard 9-inch and 13-inch kangaroo rat special Sherman live traps were used. The 9-inch traps were modified to minimize the potential for tail injuries to kangaroo rats. Traps were baited with mixed bird seed and opened prior to dusk each night. One trap check each night was conducted, commencing at approximately 2300 hours and concluding between 0200 and 0430 the following morning. Traps were closed after being checked. A total of 1,200 trap-nights were conducted along the northern transmission line route and 800 trap-nights were conducted along the southern transmission line route. Each animal that was captured was identified to species; weight, age, sex, and sexual condition were noted. Each captured rodent was marked by clipping a patch of fur on its right rump, and released at its point of capture. Notes on previous injuries or other anomalies were recorded. Curtis Uptain from Quad Knopf and Sundeep Amin from URS conducted trapping along

the northern transmission line route and Curtis Uptain and Rick Bailey from URS conducted trapping along the southern transmission line route (see Appendix H for greater detail).

During coordination discussions with staff from the CDFG Fresno Field Office, it was assumed that San Joaquin kit fox (SJKF) (*Vulpes macrotis mutica*) utilize the Project study area, and that protocol surveys for this species would not be necessary because of the SJS 1&2 location within the San Joaquin Valley and recent SJKF sightings documented in the vicinity. Burrowing owl (*Athene cunicularia*) have not been observed in the Project vicinity for several years; however, during the BNLL surveys, biologists searched for kit fox dens and burrowing owl sign or burrows to document usage of the Project study area by these species. Burrows that appeared to be suitable for kit fox or burrowing owl were scoped to confirm use within the Project. Sign of giant kangaroo rat and pocket mouse precincts or tracks, SJAS, and other special-status species with a potential to be present in the Project vicinity were also searched for during each survey on the Project site. Survey dates, personnel, and weather data for each survey are listed in Appendix C. BNLL survey data sheets, including weather data for each survey date, are provided in Appendix F. Resumes of the biologists that conducted the surveys are provided in Appendix G.

2.2.1 Jurisdictional Waters Delineation

A formal jurisdictional waters delineation per Army Corps of Engineers (ACOE) protocol was conducted as part of this assessment. Waters of the United States (U.S.), including vegetated wetlands, subject to jurisdiction pursuant to Section 404 of the Clean Water Act (CWA) were identified using methods describe by the ACOE (1987). Non-wetland waters of the U.S. were delineated based on the presence of an ordinary high water mark (OHWM) as defined at 33 CFR 328.3(e). The OHWM is defined as:

“The term ‘ordinary high water mark’ means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.”

Jurisdictional waters delineations were conducted to determine if areas subject to jurisdiction, pursuant to Section 1600 of the California Fish and Game Code, occur within the subject property. Section 1601(a) describes areas subject to its jurisdiction as:

“Except as provided in this section, general plans sufficient to indicate the nature of a project for earth moving by, or on behalf of, any state or local governmental agency or any public utility shall be submitted to the department if the project will (1) divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake designated by the department in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit, (2) use material from the streambeds designated by the department, or (3) result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake designated by the department.”

Section 1601(a) is based on Title 14 California Code of Regulations (CCR) 720, which designates waters of the state to be:

“For the purpose of implementing Sections 1601 and 1603 of the Fish and Game Code which requires submission to the department of general plans sufficient to indicate the nature of a project for construction by or on behalf of any person, governmental agency, state or local, and any public utility, of any project which will divert, obstruct, or change the natural flow or bed of any river, stream, or lake designated by the department, or will use material from the streambeds designated by the department, all rivers, streams, lakes, and streambeds in the State of California, including all rivers, streams and streambeds which may have intermittent flows of water, are hereby designated for such purpose.”

Streams, including creeks and rivers, are defined at Title 14 CCR 1.72 as:

“A stream is a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation.”

A jurisdictional waters delineation for the Project was conducted by URS senior biologist Ms. Theresa Miller within the northern transmission line alignment in June 2008, and Quad Knopf biologists Curtis Uptain and Woody Moise delineated the channel where it intersects with the southern transmission line alignment in January, 2009. The delineations were performed to document the extent of jurisdictional waters within the SJS 1&2 Project area. Hydrological and vegetation conditions were evaluated along the length of an identified drainage channel (indicated as a “blue-line stream” on the USGS Topo map), and soil samples were taken in the channel where it intersects with the Project study area. The delineation identified whether hydrophytic vegetation, hydric soils, and hydrology were present within the channel. Soil data and CDFG channel width measurements were recorded, and the limits of the OHWM and the banks of the channel were measured and recorded using a Trimble submeter GPS unit and drawn onto an aerial map.

SECTION 3 FIELD SURVEY RESULTS

3.1 VEGETATION

The observed habitat in the Project study area is disturbed in nature and includes disturbed and agricultural vegetation communities, as defined by Holland (1995). The Project site is bare due to recent plowing, except in small areas of the Project site that appear to be access areas. In these areas, primarily non-native annual plant species are present. Plant species observed on the Project site include non-native species such as mustards, Russian thistle (*Salsola tragus*) and fiddleneck (*Amsinckia* spp.). Higher vegetation density occurs along each of the the transmission line routes, where dominant plant species include soft chess, Russian thistle, mustards, fiddleneck, red-stem filaree, California goldfields, and saltbush species until they reach the orchards and other cultivated agricultural approximately 2 miles east of the Project site. These agricultural land uses then continue to the point where the transmission line routes turn north and head to the substation through agricultural land uses. Figure 2 displays the vegetation communities in the Project study area, and Appendix D lists the plant species identified in the SJS 1&2 Project study area (including the Project site, transmission line alignments, and 1 mile assessment buffer surrounding the Project area) during the 2008 biological surveys. The existing plant communities within the Project study area are described below. Plant nomenclature follows Hickman (1993), and vegetation community identification follows Holland (1986).

Table 1
Vegetation Communities Observed within SJS 1&2 Project Site
and Proposed Transmission Line Routes

Community Name	Holland Code	Northern Transmission Route (acres)	Southern Transmission Route (acres)
Developed	12000	36.6	15.8
Agriculture	18300	446.6	930.5
Disturbed Valley Saltbush Scrub/Non-native Grassland Mosaic	36221/42200	165.1	32.2
Open Flood Channel	N/A	2.4	20.1
Total within Transmission Line Routes	N/A	650.6	998.6
Total including 640 acres of Agriculture on Project site	N/A	1,290.6	1,638.6

Developed

Developed lands (Holland Code 12000) include roads, built structures, and associated infrastructure and bare ground. Developed areas on the Project site include several unpaved service roads that separate fields, a groundwater well with associated irrigation pump equipment and aboveground storage tanks located near the southwestern corner of the site, and an abandoned concrete pad in the northwestern corner of the site. A total of 36.6 acres of developed lands are present within the 800-foot buffer the SJS 1&2 northern transmission line route and 15.8 acres are present within 800 feet of the southern transmission line route.

Agricultural Lands

Agricultural areas (Holland Code 18000) include actively cultivated lands, or lands that support nursery operations. The level of soil disturbance is such that only the species under cultivation and the most ruderal plant species would be expected to occur in this vegetative community. No grazing occurs on the Project site or in the immediate vicinity of the Project study area. The majority of the Project site is actively cultivated at this time, with pistachio and wheat cultivation in progress. In addition to the cultivated lands on the Project site, the majority of the proposed transmission line alignment is comprised of orchards and row crops. A total of 640 acres of agricultural lands are present on the SJS 1&2 site, 446.6 acres are present within the 800-foot buffer of the northern transmission line route, and 930.5 acres of agricultural lands are within 800 feet of the southern transmission line route.

Disturbed Valley Saltbush Scrub/Non-native Grassland Mosaic

Disturbed Valley saltbush scrub (Holland Code 36221) is intermixed with disturbed non-native grassland habitat within the proposed transmission line corridor to the north and east of the Project site. Because these two habitats were not mutually exclusive of one another, they are described together and calculation of the area covered by the two habitats was combined. A total of 165.1 acres of disturbed valley saltbush scrub/non-native grassland mosaic are present within the 800-foot buffer of the northern transmission line route, and 32.2 acres are found within 800 feet of the southern transmission line route.

Valley saltbush scrub is typically on sandy to loamy soils without surface alkalinity, characterized by open, gray- or blue-green chenopod scrubs (10-40% cover), usually over a low herbaceous annual understory. Cover types are dominated by common saltbrush (*Atriplex polycarpa*) or spinescale (*Atriplex spinifera*) (Holland 1986). Other species common within this habitat include larkspur, tarplant, and other annuals. Because the Valley saltbush scrub habitat that is present in the proposed transmission line alignment is sparsely distributed within the non-native grassland community, it is considered disturbed. This community is found to the north, south, and east of the Project site.

Non-native grassland habitat (Holland Code 42200) is characterized by a dense to sparse cover of annual grasses with native and non-native flowering forbs (Holland 1986). With a few exceptions, the plants in this association are dead through the summer and fall dry season, but persist as seeds. This habitat is a disturbance-related community most often found in old fields or openings in native scrub habitats. Common grasses include wild oat (*Avena* spp.), soft chess (*Bromus mollis*), ripgut grass (*Bromus diandrus*), and foxtail fescue (*Vulpia megalura*). Characteristic forbs include red-stem filaree (*Erodium cicutarium*), mustard (*Brassica* spp.), tarweed (*Hemizonia* spp.), California goldfields (*Lasthenia chrysostoma*), and owl's clover (*Orthocarpus purpurascens*). Species found within the Project area along the transmission line alignment include soft chess, Russian thistle, mustards, fiddleneck, red-stem filaree and California goldfields.

Non-Vegetated Channel or Floodway

Non-vegetated channels or floodways (Holland Code 64200) are unvegetated or sparsely vegetated drainages outside of the area of tidal influence. The lack of significant vegetative cover in such areas can be attributed to either natural processes, such as flooding, or to human activities, such as vegetation

clearing, sand mining, or stream channelization. Areas are designated as disturbed flood channels if the channel has been artificially cleared or disturbed, or if the channel is dominated by nonnative trees and lacks any native riparian component.

Tamarisk dominates the banks of the open channel in the Project area where Zapato Chino Creek crosses the transmission line alignment south of West Jayne Avenue. Individual cottonwood trees are present along the banks, as well as non-native grasses such as mustards and bromus. The channel is the apparent result of natural processes during heavy rain events in the valley. Approximately 2.4 acres of open channel is located within the 800-foot buffer of the northern transmission line route, and 20.1 acres is within 800 feet of the southern transmission line route.

3.2 WILDLIFE

The SJS 1&2 site provides limited habitat to support wildlife species as a result of the chronic disturbance caused by the current extensive irrigated agricultural activities. No surveys were conducted on the existing active agricultural field within the Project site or within existing orchards and farmlands found along the transmission line routes. However, surveys were conducted along approximately 2 miles of the proposed northern transmission line route where native habitat is present on the north and south sides of the proposed alignment along West Jayne Avenue. Surveys of the southern transmission line route will be conducted in 2009; however, the habitat is likely to support the same species that were observed on the northern transmission line in 2008. Therefore, this discussion encompasses both proposed routes with the potential detection of additional species associated with the southern transmission line route in 2009.

Within the 800-foot buffer of the northern transmission line route of the SJS 1&2 transmission line study area, 18 bird species, six reptile species and 10 mammal species were observed, or their sign was detected during the various surveys in 2008 and 2009. Typical bird species observed included house finch (*Carpodacus mexicanus*), western kingbird (*Tyrannus verticalis*), western meadowlark (*Stunella neglecta*), common raven (*Corvus corax*), red-tailed hawk (*Buteo jamaicensis*), turkey vulture (*Cathartes aura*), mourning dove (*Zenaida macroura*), horned lark (*Eremophila alpestris*), loggerhead shrike (CA Species of Special Concern [SSC]), golden eagle (SSC), barn owl (*Tyto alba*), great-horned owl (*Bubo virginianus*), and red-wing blackbird (*Agelaius phoeniceus*).

Coyote (*Canis latrans*), California ground squirrel (*Spermophilous beecheyi*), black-tailed jackrabbit (*Lepus californicus richardsonii*), cottontail rabbit (*Sylvilagus audubonii*), and Heerman's kangaroo rat (*Dipodomys heermanni*) were common mammals observed or detected within the SJS 1&2 transmission line alignment survey area. Two bobcat (*Lynx rufus*) were observed on or near the northern transmission line survey area. One bobcat was observed as road kill on Sutter Avenue south of the Project site, and an American badger (SSC) was observed as road kill on West Jayne Avenue along the northern transmission line alignment. Kangaroo rat tracks and scattered burrow complexes were observed in various locations along the northern transmission line survey area. Reptile species observed include western whiptail (*Cnemidophorus tigris*), San Joaquin fence lizard (*Sceloporus occidentalis biseriatus*), side-blotched lizard (*Uta stansburiani*), and Pacific gopher snake (*Pituophis catenifer catenifer*). Wildlife species identified in the Project survey area and the vicinity are shown on Figure 3 and in Appendix E.

During the nocturnal small mammal trapping program, only heerman's kangaroo rats and deer mice (*Peromyscus maniculatus*) were captured along both the northern and southern transmission line routes (Table 1). *D. heermanni* were captured more frequently than *P. maniculatus*, with 313 individual kangaroo rats captured a total of 552 times versus 80 deer mice being captured a total of 126 times. The majority of captures of both species (93% of *D. heermanni* and 75% of *P. maniculatus*) were captured along the northern transmission line (plots 1 through 4). This is not unexpected because there was more habitat available, the habitat was less disturbed, and there was a greater sampling effort (1,200 trap nights in the northern trapping areas versus 800 trap nights in the southern trapping areas). After adjusting for different sampling effort, the northern trapping areas remained superior to the southern trapping areas on a per-acre basis. The majority of all animals captured were adults (100% of *D. heermanni* and 85% of *P. maniculatus*). Further details on the results of the trapping program are provided in Appendix H.

Other species of small mammals known from the trapping sites include the pocket gopher (*Thomomys bottae*), cottontail (*Sylvilagus auduboni*), and black-tailed jackrabbit (*Lepus californicus*). Other small mammal species known from the vicinity of the project sites include the California pocket mouse (*Cheatomys californicus*), San Joaquin pocket mouse (*Perognathus inornatus*), Tulare grasshopper mouse (*Onychomys torridus*), Tipton kangaroo rat (*Dipodomys nitratoide nitratoide*), and San Joaquin antelope ground squirrel (*Ammospermophilus nelsoni*). There was no evidence collected during the trapping efforts that confirms the presence of these species on the project site. However, the San Joaquin antelope ground squirrel is a crepuscular species that was not targeted by this trapping effort. Although no sign of this species was observed either during these trapping efforts or during other biological surveys of the project sites, it is recommended that focused trapping for the San Joaquin antelope ground squirrel be conducted prior to ground clearing activities for the transmission line.

3.3 SPECIAL STATUS PLANT SPECIES

Plant species of special management concern are considered rare, threatened, or endangered by the USFWS, CDFG, and/or CNPS. No rare, threatened, or endangered plants were detected onsite. A CNDDDB query listed six special-status plant species that historically occur or have potential to occur within ten miles of the Project study site and transmission line alignment. Suitable habitat is not present for many of the special-status plants in the Project survey area, as the majority of the plant species have been recorded to the north or southeast in alkali soils, chenopod scrub, chaparral, saltbush scrub, or vernal pools/salt marshes, and are not found in disturbed habitat such as agricultural land. Special-status plant species that have been previously recorded within 10 miles of the Project are discussed in Appendix C. No plant species of special management concern were detected during the 2008 survey effort. Rare plant surveys of the transmission line routes will be conducted in spring 2009.

3.4 SPECIAL STATUS WILDLIFE SPECIES

Special-status wildlife species are those considered rare, threatened, or endangered by the USFWS or CDFG. The CNDDDB query lists 22 special-status wildlife species as historically present and potentially occurring in the Project vicinity. Most of these special-status species records are located outside of the Project study area, within the undisturbed areas of the Central Valley, and are not expected to occur in the Project study area due to lack of suitable habitat. Only a few special-status wildlife species such as San Joaquin kit fox (*Vulpes macrotis mutica*, SE, FE) (SJKF), San Joaquin antelope squirrel, short-nosed

kangaroo rat, San Joaquin pocket mouse, California horned lark (recently downgraded from SSC to the CDFG watch list), and BNLL have been recorded within the Project vicinity. Five special-status wildlife species were observed within the Project survey area during the 2008 and 2009 surveys: loggerhead shrike (SSC), golden eagle (SSC), Blunt-nosed Leopard Lizard (Federal Threatened and CDFG Endangered and Fully Protected), northern harrier (SSC), and American badger (SSC). CNDDDB data sheets for several of these species are included in Appendix F. Potential SJFK dens were observed along the northern transmission line route but they were not active at the time of surveys and therefore not confirmed. However, because an urban population of SJFK is known to be present in Coalinga and because the Project area provides suitable habitat, it is assumed that SJFK utilize habitat within the Project site and transmission line routes.

American Badger

Regulatory Status: State Status: Species of Special Concern; Federal Status: None

This moderately-sized terrestrial mammal has a flattish body, more width than height, with short bowed legs, a shaggy coat from grizzled gray to brown, and a short, bushy, yellowish tail. In California, badgers occupy a diversity of habitats. Their principal requirements seem to be sufficient food, friable soils, and relatively open, uncultivated ground. Grasslands, savannas, and mountain meadows near timberline are preferred. Badgers prey primarily on burrowing rodents such as gophers (*Thomomys* spp.), ground squirrels (*Spermophilus* spp., *Ammospermophilus* spp.), marmots (*Marmota* spp.), and kangaroo rats (*Dipodomys* spp.). They are predatory specialists on these rodents, although they will eat a variety of other animals including mice, woodrats, reptiles, birds and their eggs, bees, and other insects. The male is larger than the female. Mating usually occurs between July to August with implantation delayed until February. A litter of one to five young is born typically between March to April. Dens have one entrance, with a pile of dirt just outside that may serve as a latrine area. This powerful burrower is basically nocturnal but is often active by day.

Its home range varies from about 590 to 4,200 acres (240 to 1,700 hectares). The home range of the male is larger and encompasses the ranges of several females. American badgers occur from northern Alberta southward to central Mexico, and range from the Pacific Coast eastward through Ohio. They are absent from the humid coastal forests and from other regions with dense forests. In California, badgers once ranged throughout the state except for the humid coastal forests of northwestern California in Del Norte County and the northwestern portion of Humboldt County. Badger populations have declined drastically in California within the last century, and many populations have been extirpated from urbanizing areas of the state (e.g., coastal areas). Localized populations are reduced or declining, but most of original range is still occupied. Deliberate killing probably has been a major factor in the decline of badger populations. Most people regard badgers as detrimental to their interests and attempt to kill them. Land conversion for agricultural production is adverse to badgers, as they do not survive on intensely cultivated lands. Agricultural and urban developments have been the primary causes of decline of local populations of badgers in California. Rodent and predator poisoning pose double threats through direct and secondary poisoning of badgers and elimination of the food badgers are dependent upon. One roadkilled badger was observed along West Jayne Avenue during juvenile BNLL surveys in 2008. One recent badger burrow was observed on the north side of the northern transmission line corridor survey area; it was found the

same day the dead badger was observed on West Jayne Avenue and is assumed to be the burrow for that badger.

Blunt-Nosed Leopard Lizard

Regulatory Status: State Status: Endangered, Fully Protected; Federal Status: Endangered

The BNLL lives in grassland and scrub habitats in the southern San Joaquin Valley. BNLL eat mostly insects, but opportunistically consume smaller lizards, including young leopard lizards. BNLL are polygamous, with one male mating with several females, and eggs and young are produced during summer and early fall. Predators include snakes, birds, and carnivorous mammals, including the San Joaquin kit fox. Primary threats to the BNLL include habitat fragmentation, disturbance, and destruction. The BNLL is listed as endangered by both the federal government and the state of California (USFWS 1998), and is a CDFG fully protected species. The nearest CNDDDB record of BNLL is located in the valley scrub/grassland mosaic habitat adjacent to the Project site. One adult BNLL was observed at the CDFG Pleasant Valley Ecological Reserve (PVER) satellite site located adjacent to the Project site and within the southern transmission line alternative during protocol surveys of the PVER in June 2008 (Figure 3). No BNLL were observed on the SJS 1&2 site. Protocol surveys of the southern transmission line route will be conducted beginning in April 2009.

Western Burrowing Owl

Regulatory Status: State Status: Species of Special Concern; Fully Protected Federal Status: USFWS Bird of Conservation Concern and Bureau of Land Management (BLM) sensitive designations

Burrowing owl is a small ground-dwelling bird with a round head and no ear tufts. They have white eyebrows, yellow eyes, and long legs. The owl is sandy colored on the head, back, and upperparts of the wings, and white-to-cream with barring on the breast and belly, and a prominent white chin stripe. Burrowing owls are typically found in open, dry grasslands, agricultural and range lands, and desert habitats often associated with burrowing animals, particularly prairie dogs, ground squirrels, and badgers. Burrowing owls are comparatively easy to see because they are often active in daylight, and are surprisingly bold, approachable, and generally active at dusk and dawn, but sometimes also at night. They are highly terrestrial, and are often seen perched on a mound of dirt, telegraph or fence post, frequently on one foot. They bob up and down when excited. Burrowing owls feed on a wide variety of prey, changing food habits as location and time of year determine availability. Large arthropods, mainly beetles, crickets and grasshoppers, comprise a large portion of their diet. Small mammals, especially mice, rats, gophers, and ground squirrels, are also important food items. Other prey animals include reptiles and amphibians, scorpions, young cottontail rabbits, bats, and birds, such as sparrows and horned larks. During the nesting season, adult males forage over a home range of 2 to 3 square kilometers. Burrowing owls are able to live for at least 9 years in the wild and over 10 years in captivity.

The nesting season begins in late March or April. Burrowing owls are usually monogamous, but occasionally, a male will have two mates. Burrowing owls nest underground in abandoned burrows dug by mammals or, if soil conditions allow, they will dig their own burrows. Adults usually return to the same burrow or a nearby area each year. One or more “satellite” burrows can usually be found near the nest burrow, and are used by adult males during the nesting period and by juvenile owls for a few weeks

after they emerge from the nest. It is this ground nesting that makes the owl vulnerable to injury and mortality by human-caused activities such as vehicle and equipment operation, farming practices, road building, etc. They are often killed by vehicles when crossing roads, and have many natural enemies, including larger owls, hawks, falcons, badgers, skunks, snakes, cats, and dogs. This species was formerly a common, even locally abundant, permanent resident throughout much of California, but a decline noticeable by the 1940s has continued through to the present time. The reasons for the decline include conversion of grasslands and pasturelands to agriculture and destruction of ground squirrel colonies. Assimilation of poisons applied to ground squirrel colonies has probably also taken a toll. Burrowing owl have not been detected during general and protocol surveys conducted in the Project area in 2008; furthermore, they were not detected during surveys for the habitat conservation planning process in 2005 and 2006 (CDFG 2008).

Golden Eagle

Regulatory Status: State Status: Species of Special Concern, Fully Protected; Federal Status: Protected under Bald Eagle Protection Act

Golden eagles are distributed throughout North America, Eurasia, and north Africa (Johnsgard 1990). Golden eagles occur as breeding residents in the western half of the United States and formerly nested in the northeast (Johnsgard 1990). Golden eagles forage in grassy and open shrubby habitats and nest primarily on cliffs, with secondary use of large trees (*e.g.*, oaks and sycamore). Breeding pairs may occupy territories of several square miles, within which they may often use several nest sites, shifting nests sites from year to year. This species has declined because of loss of foraging and nesting habitat to urban and agricultural development, human persecution (illegal shooting), incidental poisoning of prey species (*e.g.*, ground squirrels and prairie dogs), egg collecting, power line electrocution, and human disturbance at the nest (Snow 1973, Johnsgard 1990, Scott 1985). One golden eagle was observed during the 2008 biological surveys flying over the riparian habitat where Zapato Chino Creek crosses the proposed northern transmission line route.

Hoppings Blister Beetle (Lytta hoppingi)

Regulatory Status: State Status None; Federal Status: Threatened

The Hoppings Blister Beetle is found in the foothills in the southern end of the Central Valley. This beetle is black with brown wings and orange markings on the head and thorax. Adults are often found on flowers. Very little is known about the life history or behavior of this species, but they have been collected from late March through June. Females excavate shallow burrows in which to oviposit, then the female brings soil down into the burrow and covers the egg mass. Some species in the genus are known to produce 80 to 250 eggs. This species has been recorded approximately 7 miles northwest of the Project site, and is not expected to occur within the Project area.

Le Conte's Thrasher (Toxostoma lecontei)

Regulatory Status: State Status: Species of Special Concern; Federal Status: Bird Species of Conservation Concern

The Le Conte's Thrasher is pale gray-brown on the upperparts and pale buff on the underparts. The long tail is dark brown to blackish, and contrasts with the pale body. Le Conte's Thrasher is a widespread, but uncommon permanent resident in the western and southern San Joaquin Valley, upper Kern River Basin, Owens Valley, Mojave Desert, and Colorado Desert in southwestern United States. California serves as a main population center for this species. Though the extent of its known range has not changed since the late 19th Century, much of its U.S. habitat within that range has been lost to development, resulting in great reductions locally in its numbers. Earliest nesting for this non-migratory species begins in February in California, peaking in mid-March through April. It prefers breeding in saltbush/shadscale vegetation or cholla cacti in sandy substrate. It is sensitive to disturbance, including off-road vehicle use, livestock grazing, oil drilling and development. Its typical habitat is sparsely vegetated desert flats, dunes, or gently rolling topography with a high proportion of species of saltbush or shadscale and cholla cactus. Most of the shrubs are below 2.5 m in height. It digs small pits in the ground with its long bill, searching for seeds, insects, and small vertebrates in the litter; it will also take small bird eggs. Portions of the habitat within the SJS 1&2 transmission line routes are marginally suitable for this species; however no individuals of this species were detected during the 2008 surveys.

Loggerhead Shrike

Regulatory Status: State Status: Species of Special Concern; Federal Status: Bird Species of Conservation Concern

Loggerhead shrike is a robin-sized gray bird with black wings, white wing-patches, a black mask, and a black tail. Both sexes look alike. Found year-round in most of Mexico and the southern half of the United States. Throughout most of the southern part of its range, the loggerhead shrike is resident; northern populations are migratory. Where resident, this species usually lives in pairs on permanent territories. Loggerhead shrike breeding habitat is generally characterized as open areas dominated by grasses and/or forbs, interspersed with shrubs or trees and bare ground. Available cover is the most important criterion for nest site selection, and trees with thorns are preferred. The prey typically consists of small birds, mice, or large insects. Loggerhead shrikes will stun or kill prey with their powerful, hooked beak before impaling it on a plant thorn or barbed-wire fence, then the prey will then be picked apart over time. Threats to the loggerhead shrike include changes in human land-use practices, the spraying of biocides, and competition with species that are more tolerant of human-induced changes. This species was observed during the 2008 surveys (Figure 3).

Long-Eared Owl (Otus wilsonianus)

Regulatory Status: State Status: Species of Special Concern; Fully Protected Federal Status: None

The Long-eared owl breeds from western Canada to the Maritime Provinces, southward to Baja California, southern Arizona and New Mexico, and the Great Lakes region. This bird is partially migratory, moving south in winter from the northern parts of its temperate range. Though widespread and

relatively common in its range, it is rarely seen. The Long-eared owl's breeding season is from February to July and it nests in trees, often coniferous, using the old stick nests of other birds such as crows, ravens, magpies and various hawks. It inhabits dense vegetation adjacent to grasslands or shrublands, as well as open forests. The species diet consists of mostly small mammals and birds. Long-eared owl populations appear to be stable in most of North America, but in some portions of its range this species has declined due to the loss of riparian vegetation, conversion of hunting areas to intensive agricultural land uses, and reforestation of open areas. This species is not likely to be present within the Project site; however, it may use the riparian habitat located to the south and west of the Project, and may forage where the SJS 1&2 area support potentially suitable habitat.

Merlin (Falco columbarius)

Regulatory Status: State Status: Species of Special Concern, Fully Protected; Federal Status: None

The Merlin is a small hawk with long and pointed wings, a long banded tail, a faint mustache mark, brown streaking on chest and belly, and its back is unmarked gray or brown. American subspecies range from pale (Great Plains) to nearly black (Pacific Northwest). The sexes differ in adult plumage, with females noticeably larger than males. It breeds in open country from open coniferous woodland to prairie, occasionally in adjacent suburbs, and winters in open woodland, grasslands, open cultivated fields, marshes, estuaries, and seacoasts. It is a rare winter visitor in southern California. Primarily monogamous, the Merlin raises one brood each breeding season. Most Merlins will use abandoned corvid or hawk nests in conifer or mixed tree stands. They will also build nests on cliff faces and on the ground. Most prey are smaller birds (10-40 g), with local preferences for larks, pipits, sandpipers and house sparrows. Almost any bird that is locally abundant will be taken, up to the size of rock pigeons. Breeding pairs will frequently hunt cooperatively, with one bird flushing the victims towards their mate. Other prey includes insects (dragonflies and moths), small mammals (bats and voles) and reptiles. One record of this species is located approximately 9 miles northeast of the Project site and 4 miles east of Gates substation along the California Aqueduct. Merlins are likely to forage over the SJS 1&2 area and surrounding habitats.

Molestan Blister Beetle (Lytta molesta)

Regulatory Status: State: None; Federal: Threatened

The Molestan blister beetle is black with orange markings on the thorax, and ranges from 11-22 mm in length. They can be found throughout Central California. Adults are often found on flowers. Very little is known about the life history or behavior of this species, but they have been collected from early April to early July. *Lytta* larvae are nest parasites of solitary bees; the beetle larvae feed on the pollen stores that the female bee has provided for her own larvae. One record of this species is located approximately 9 miles northeast of the Project site; this species has not been observed in the Project study area.

Northern Harrier

Regulatory Status: State Status: Species of Special Concern; Federal: None

Northern harriers are a medium sized, long-winged, long-tailed hawk, with a flat face with an owl-like facial disk, dark bars on the tail, and a white rump. Habitats include grasslands, steppes, wetlands,

meadows, cultivated areas, and tundra. Northern harriers prey on small mammals, birds, reptiles, insects, and carrion, and hunt using a low, slow flight over the ground, then plunge onto their prey. Harriers roost and nest on the ground, often in groups in a traditional location. Northern harriers nest on the ground in thick grass, shrubbery, or other vegetation. The nest is a pile of sticks and grass. The female lays 3 - 6 eggs depending on the abundance of small rodents. This species used to be a common resident in the southern coastal area. At present, nesting localities are still scattered throughout the state, but numbers are much reduced, particularly in the southern coastal area, around San Francisco Bay, and in the Mono Lake area. The bulk of the breeding population is concentrated in ungrazed portions of state and federal wildlife refuges (CDFG, 2007). Northern harrier were observed in the within the vicinity of the northern and southern transmission line alignments of the Project study area in 2009 and potentially use the disturbed grassland habitat within the transmission line alignments for foraging. The Project site would provide marginal foraging habitat for harriers, and ground-nesting habitat may be present within the Project survey area in the disturbed grassland areas at a distance greater than 500 feet from Jayne Avenue.

San Joaquin (Nelson's) Antelope Squirrel

Regulatory Status: State: Threatened; Federal: None

The San Joaquin antelope squirrel (SJAS) is one of five species of antelope squirrels. The species is omnivorous, with a diet consisting primarily of grass, seeds, and insects. Antelope squirrels are fossorial animals that occur in grasslands with moderate shrub cover where they use burrows that they or other animals have dug. They require widely scattered shrubs, forbs, and grasses in broken terrain with gullies and washes and loam soils (CNDDB 2007). This species is most active during spring and summer months when air temperatures are between 68 to 86 °F. Historically, SJAS ranged from western Merced County to the southern end of western San Joaquin Valley, and occupied the valley floor in Kern County and along the eastern edge northward to Tipton, Tulare County. The current species range is restricted to marginal habitats of the low foothills of the western edge of the San Joaquin Valley, and populations of significant size only exist in western Kern County at Elk Hills and on portions of the Carrizo and Elkhorn plains. Conversion of native habitat to intensive forms of agricultural development is the greatest threat to this species (CDFG 2007). SJAS have been recorded near the Project site; however, this species was not detected during the 2008 daylight surveys or during the nocturnal small mammal trapping surveys in 2008.

San Joaquin Dune Beetle (Coelus gracilis)

Regulatory Status: State: None; Federal: Threatened

The San Joaquin Dune Beetle is fairly robust, dorsally inflated, and ranges in color from pale yellowish-brown to dark brownish-black. The female is slightly larger than the male. Historically, the range of the San Joaquin dune beetle extended from Contra Costa County in the north, to the Kettleman Hills in Kings County in the south. They inhabited inland sand dunes within this range. Currently, this beetle is restricted to small isolated sand dunes (250 - 10,000 m²) along the western edge of the San Joaquin Valley. Little information exists on the feeding habits of San Joaquin dune beetles, though they probably feed on decomposing vegetation buried in the sand. Certain related beetles feed mostly on dung. Nothing is known about the mating system or breeding season of San Joaquin dune beetles. In general, female

beetles lay eggs singly or in masses, with hatching occurring after several days. The presence of immature dune beetles and larvae is evident throughout the year, which suggests that egg-laying occurs over a long period. The larvae develop and pupate exclusively in the sand. This species was recorded approximately 4.5 miles southwest of the Project site. The habitat on the SJS 1&2 site is not suitable for this species.

San Joaquin Kit Fox

Regulatory Status: State: Endangered; Federal: Endangered

The SJKF historically ranged throughout the San Joaquin Valley from Contra Costa County in the north to northern Santa Barbara County in the south. Currently, SJKF still has a wide distribution; however, kit fox numbers are greatly reduced and populations are isolated from one another. Kit foxes primarily live in grassland and to a lesser extent, shrub, and agricultural habitats. Kit foxes predominantly eat rodents, ground squirrels, rabbits and hares, and ground-nesting birds. Kit fox pups are born in late winter and early spring, and the male provides most of the food for the female while she is nursing. Kit foxes change dens frequently, and often enlarge existing ground squirrel burrows in order to make new dens. Predation or competitive exclusion of kit foxes may occur in the presence of coyotes, introduced red foxes, domestic dogs, bobcats, and large raptors. Human threats to kit fox include destruction of habitat, habitat degradation, predators, pest control programs, and accidents caused by proximity to humans such as electrocution, roadkill, and suffocation from accidental burial in dens. Finally, natural factors such as drought, flooding, and rabies cause a significant percent of kit fox deaths. The SJKF is currently listed as an endangered species by both the federal government and the state of California (USFWS 1998). CNDDDB records of San Joaquin kit fox are located within 1 mile of the Project area. Several CNDDDB records of kit fox are located within 1 and 2 miles of the Project site. Kit fox apparently move through the Project vicinity, and potential kit fox dens were observed on the north side of the northern transmission line alignment during the 2008 surveys. California ground squirrels are present on the Project site and likely comprise an potential forage base for SJKF in the project vicinity.

Short-Nosed Kangaroo Rat (Dipodomys nitratoides brevinasus)

Regulatory Status: State: Species of Special Concern; Federal: None

The short-nosed kangaroo rat is nocturnal and active year-round. They can be distinguished from other kangaroo rats within its geographic range by the presence of four toes on its hind foot; the other species in the area have five toes. They inhabit grasslands with scattered shrubs and desert-shrub associations on powdery soils. They also inhabit highly saline soils around Soda Lake on the Carrizo Plain, and less saline soils elsewhere. Over most of their range, they are generally more numerous in lighter, powdery soils such as the sandy bottoms and banks of arroyos and other sandy areas. At higher elevations in the western portion of its geographic range, the reproductive season of the short-nosed kangaroo rat is about two to three months shorter than on the Valley floor, with breeding beginning in late February or March and typically ending by May. In years with a prolonged wet spring, individuals may continue breeding through August. The extensive agricultural development of the 1960s and 1970s within its historical range is the main cause of short-nosed kangaroo rat decline. The extent of its current distribution is unknown. This species was not detected on either of the proposed transmission line routes during the small mammal trapping program that was conducted in early December 2008.

Silvery Legless Lizard (Anniella pulchra pulchra)

Regulatory Status: State Status: Species of Special Concern; Federal Status: None

This species ranges from the San Francisco Bay Area of California south into northwestern Baja California; it also occurs on several offshore islands. It is known from sea level to 5,085 feet. The species is found in areas with loose, moist soil (sand or loam) in chaparral, oak woodlands, and, in particular, coastal dunes with sparse vegetation. The shiny legless lizard is with eyelids but without external ear openings. Usually silvery or tan with dark stripe down middle of back, dark striping on sides. Their back is sometimes completely dark and their belly yellow. The species is primarily fossorial by day, but emerges to forage at night. Its small smooth scales and blunt tail make burrowing easy for this lizard. Most of their time is spent under the surface of the soil or beneath leaf litter, where it eats small insects and their larvae. The species is not threatened at present, but agriculture has eliminated many California populations. It is not expected to occur in the Project study area.

Swainson's Hawk (Buteo swainsoni)

Regulatory Status: State Status: Threatened, Fully Protected; Federal Status: None

The Swainson's is a slender hawk with a long tail and pointed wings compared to other buteos. The tail is grayish with narrow, dark bands. This species forages in open stands of grass-dominated vegetation, sparse shrublands, and small, open woodlands; however, it has adapted well to foraging in agricultural areas in many parts of its range. This hawk cannot forage in most perennial crops or in annual crops that grow much higher than native grasses, as prey is more difficult to find. In the Central Valley, the Swainson's hawk forages in row, grain, and hay crop agriculture, particularly during and after harvest when prey are both numerous and conspicuous. Breeding occurs in west to central Washington and Oregon, extreme northeastern California (Bloom 1980), western and southern Nevada, northern and southeastern Arizona (Monson and Phillips 1981), and disjunctly in California in the Sacramento and San Joaquin valleys, valleys of the Sierra Nevada in Inyo and Mono counties, and occasionally elsewhere. Swainson's hawks mainly hunt mice, ground squirrels, rabbits, birds, and reptiles during the breeding season, and live off of insects like grasshoppers, locusts, and beetles during the non-breeding season. They're a highly gregarious species that can be seen foraging and migrating in flocks up to thousands of birds. This species was not observed in the Project area during the 2008 surveys, and there are no historical sightings recorded on the CNDDB nearby. Therefore, Swainson's hawk is not expected to utilize potentially suitable habitat in the vicinity of the SJS 1&2 site.

Tricolored Blackbird (Agelaius tricolor)

Regulatory Status: State Status: Species of Special Concern; Federal Status: None

This species closely resembles red-winged blackbirds, with differences in coloration, bill shape, and overall morphology. Tricolored blackbirds are opportunistic foragers and will consume any locally abundant insect resource, including grasshoppers (Collier 1968), grains (maturing and ripe seeds), snails (Martin *et al.*, 1951), and small clams (Skorupa *et al.*, 1980). Suitable habitat is found in freshwater marshes dominated by cattails (*Typha* spp.) or bulrushes, and foraging habitat includes perennial grasslands and riparian woodlands in the Central Valley. Most of Central Valley has been converted to

agriculture and urbanization; however, agricultural fields may provide forage habitat and abundant insect prey. Tricolored blackbirds have recently been observed forming “mega-colonies” in grain fields that can reach over 100,000 birds. The majority of the mega-colonies are associated with dairy farms in the San Joaquin Valley, where the birds utilize the habitat for building nests and foraging in the open water and irrigated pastures (Kelsey 2008). During a statewide survey for tricolored blackbirds by Audubon California in 2008, only 1,000 birds were counted in Fresno County, and only one of the three known breeding colonies in the county was occupied (Kelsey 2008). Therefore, it is unlikely that this species would utilize the habitat in the Project vicinity.

Tulare Grasshopper Mouse (*Onychomys torridus tularensis*)

Regulatory Status: State: Species of Special Concern; Federal: None

The Tulare grasshopper mouse lives in arid grasslands, shrub lands, and alkali sink habitats in the San Joaquin Valley. This species is carnivorous, feeding on scorpions, beetles, grasshoppers, pocket mice, western harvest mice, lizards, and frogs with some seeds taken when no other food sources are available. Young are born in the late spring to early summer and both parents care for them. Grasshopper mice are territorial and males will produce a sharp call to mark their territory. Predators of this species include badgers, SJKE, coyote, and barn owls. Primary threats include habitat destruction and fragmentation and the use of pesticides. This species was not detected on either of the proposed transmission line routes during the small mammal trapping program that was conducted in early December 2008.

Western Mastiff Bat (*Eumops perotis californicus*)

Regulatory Status: State: Species of Special Concern; Federal: None

The Western mastiff bat has a body length of 5½ to 7½ inches and a wingspan of over 22 inches. It has chocolate brown fur. In California, the *E. perotis* is most frequently encountered in broad open areas. Generally, this bat is found in a variety of habitats, from dry desert washes, flood plains, chaparral, oak woodland, open ponderosa pine forest, grassland, montane meadows, and agricultural areas. During the day western mastiff bats form colonies of less than 100. At least 3 meters of open space is needed under its roosting site for takeoff. It feeds mostly on moths, and will often drop down and forage on the ground with its tail sticking up. Threats to this species include loss of large open-water drinking sites, disturbance or destruction of cliff habitats and urban/suburban expansion. Western mastiff bats may forage in the Project vicinity; however, this species is not expected to roost within the Project site.

Western Spadefoot Toad (*Spea [Scaphiopus] hammondi*)

Regulatory Status: State: Species of Special Concern; Federal: None

The western spadefoot toad is a small pelobatid toad that occurs in the Central Valley of California and west of the coastal ranges from Point Conception to northern Baja California (CDFG 1988). This species spends much of the year in burrows, emerging at night during the early spring rains to breed in temporary ponds, vernal pools, and backwaters of slow-flowing creeks. The remainder of the year is spent in upland habitats such as grasslands and coastal sage scrub, where burrows are constructed. Tadpoles grow at an accelerated rate and transform in as little as three weeks in short-lasting pools; longer in deeper pools. The

western spadefoot is best surveyed at night, preferably after a warm rain, and tadpoles are readily identifiable at later developmental stages. Because no temporary ponds or slow-flowing creeks are present on the Project site or within the transmission corridor, and upland habitat that is present is not suitable for burrowing, this species is not expected in the Project survey area and was not detected during the 2008 biological surveys.

3.5 WILDLIFE MOVEMENT

A wildlife corridor is defined as a linear landscape feature that allows animal movement between two patches of habitat or between occupied habitat and geographically discrete resources (*e.g.*, water). To function effectively, a corridor must accomplish two basic functions. First, it must effectively link two or more large patches of habitat. The corridor must conduct animals through the landscape to areas of suitable habitat without excessive risk of directing them to unsuitable areas where risk of mortality may be very high. Second, the corridor must be suitable to the focal target species so that they will use the corridor frequently enough to achieve the desired demographic and genetic exchange between populations.

Corridors are often defined by their use by focal species. Focal species are those that naturally occur in low densities and that may be unwilling or unable to cross extensive areas of development or otherwise unfavorable habitat. Animals have a natural aversion to situations or physical settings they perceive to be dangerous and will often shy away from situations in which they are exposed without cover or escape routes. The presence of disturbance outside of the animal's normal experience is also a situation that is often avoided by animals. In the California Central Valley, potential focal species for wildlife movement assessment in the San Joaquin Valley could include mountain lion (*Felis concolor*), coyote, deer, bobcat, SJKF, and American badger.

The SJS 1&2 Project site is located entirely within existing active agricultural use, and the site is surrounded on the west, south, and east by agricultural, disturbed, or developed land uses. The majority of the area within the proposed transmission line corridor is agriculture, including orchards. The Project vicinity provides an open and unconstrained environment for wildlife movement. In addition, Zapato Chino Creek is a widely-cut, usually dry channel that is recognized by CDFG as a likely southwest-northeast wildlife travel corridor through the agricultural land uses that are dominant in the vicinity. This wildlife movement route provides foraging and potential breeding habitat for focal mammal species and raptors in the Coalinga area. Zapato Chino Creek connects to Los Gatos Creek approximately 1.7 miles north of West Jayne Avenue. The PVER is located approximately 2 miles northwest of the Project site, and is managed by CDFG. The PVER has historically supported SJKF, BNLL and western spadefoot toad, and is a continuation of the wildlife movement route near the Project area. Three of the key mammalian predators in central California were found near or are assumed to use the SJS 1&2 study area. Zapato Chino Creek is a likely functional wildlife movement route that supports wildlife and raptor foraging, roosting, and nesting habitats in the Project vicinity. The Project vicinity also functions as foraging habitat for raptors. Based on the large amount of land available for wildlife movement, implementation of the proposed Project is not anticipated to reduce the quality of existing wildlife movement routes adjacent to the project site.

3.6 POTENTIAL WATERS OF THE UNITED STATES/STATE JURISDICTIONAL WATERS

Zapato Chino Creek is a large natural drainage that meanders in a southwest to northeast direction in the San Joaquin Valley. It crosses the southern transmission line alternative in two locations and the northern transmission line alignment at West Jayne Avenue (Figure 2). A large bridge overpass is located approximately 1.5 miles east of the Project site on West Jayne Avenue that allows the creek to flow north under West Jayne Avenue until it eventually meets up with Los Gatos Creek. It becomes channelized near I-5, then becomes a distributional flow into a topographically flat agricultural area and the OHWM disappears before it reaches the California Aqueduct. The average width of the Zapato Chino Creek channel where it crosses the northern transmission line alternative is approximately 18 feet, and the average bank-to-bank width is approximately 121 feet (Figure 4A). The average width of the OHWM of the Creek within upper portion of the southern transmission line alternative is approximately 66 feet, and the banks average 203 feet (Figure 4B). Along the lower portion of the southern transmission alternative, the width of the OHWM averages 23 feet and the bank widths average 56 feet (Figure 4C).

The banks of the Creek in the northern transmission line alternative are dominated by upland vegetation such as scale broom (*Lepidospartum squamatum*) with cottonwood (*Populus fremontii*), mulefat (*Baccharis salicifolia*), and tamarisk (*Tamarix ramosissima*) becoming more prevalent near the bridge at Jayne Avenue. The creek channel becomes deeply cut, and riparian species are more dominant along the banks in the southern transmission line alternative. The channel bottom is non-vegetated for the majority of the creek and the soils are not hydrophytic. The channel was dry during the surveys in May through August 2008, as well as in January 2009; however, it is apparent that the channel supports heavy flow during large storm events. The Zapato Chino Creek has a well-defined bed and bank, but does not connect to a USACE-jurisdictional tributary or other waters of U.S. downstream after it confluences with Los Gatos Creek. Therefore, it is identified as a non-wetland waters of the State under the jurisdiction of CDFG and RWQCB. No wetlands or USACE-jurisdictional waters are present within the Project area.

SECTION 4 IMPACTS**4.1 IMPACTS**

Potential and expected direct and indirect impacts to biological resources are discussed below. Significant impacts are those that would involve the loss of a special-status plant or wildlife species, or degradation of their habitat. The Project would have significant impacts to vegetation and wildlife if it would:

- Cause a fish or wildlife population to drop below self-sustaining levels, California Environmental Quality Act (“CEQA”) Guidelines, Section 15065 (a).
- Threaten to eliminate a plant or animal community, CEQA Guidelines, Section 15065 (a).
- Substantially affect, reduce the number, or restrict the range of unique, rare, or endangered species of animal, plant, or the habitat of the species, CEQA Guidelines, Section 15065 (a), Appendix G (c), Appendix I (II.4.b) and (II.5.b).
- Substantially diminish or reduce habitat for fish, wildlife, or plants CEQA Guidelines, Section 15065 (a), Appendix G (t).
- Interfere substantially with the movement of resident or migratory fish or wildlife species, CEQA Guidelines, Appendix G (d).
- Change the diversity of species, or number of any species of plants (including trees, shrubs, grass crops, and aquatic plants) or animals (birds, land animals including reptiles, fish and shellfish, benthic organisms, or insects), CEQA Guidelines, Appendix I (II.4.1) and (II.5.a).
- Introduce new species of plants or animals into an area, or act as a barrier to the normal replenishment of existing species, CEQA Guidelines, Appendix I (II.4.c) and (II.5.c).
- Deteriorate existing fish or wildlife habitat, CEQA Guidelines, Appendix I (II.5.d).
- Conflict with any regional Habitat Conservation Plans (HCP).

The above criteria are used to evaluate the proposed Project's impacts to plant communities and wildlife. The potential impacts associated with the construction and operations of the SJS 1&2 facility are discussed below.

4.1.1 Project Site

Loss of 640 acres of active intensive agricultural field will occur as a result of the proposed Project. The Project site has been actively cultivated for crops for several decades, as has the majority of surrounding area. The Project site was recently tilled and new crops were planted in the spring of this year; thus, it was observed that although the Project site is within the known range of BNLL, the site does not provide suitable habitat for BNLL. The Project site is suitable to provide pass-through and marginal foraging habitat for SJKF, American badger, and selected raptor species including golden eagle, barn owl, and loggerhead shrike. Loss of the 640 acres of actively cultivated land on the Project site that supports potential foraging for special-status species would be considered significant, but would be mitigated to less than significant with implementation of the recommended mitigation measures.

4.1.2 Transmission Line

The proposed transmission line routes would not result in significant impacts to biological resources because it would not cause impacts as listed above in Section 4.1.

Five special-status species were observed during the 2008 and 2009 surveys, or are known to occur along the transmission line routes. Four of the species are birds that are likely to use this area for foraging, and one species is a ground-dwelling mammal that was observed as roadkill on West Jayne Avenue. The proposed transmission line routes are also likely to support SJKF as foraging and pass-through habitat. One BNLL was detected near the southern route in 2008 during surveys of the CDFG-owned Pleasant Valley Preserve that is located adjacent the site and immediately north of the southern transmission line route; focused surveys of this route will be conducted in 2009 to determine if this one individual is still present within the transmission line route. If BNLL are detected, the pole locations near the CDFG reserve will be sited to avoid native vegetation, and monitoring would be conducted during construction of the project to preclude BNLL mortality.

The dry creek bed of Zapato-Chino Creek that crosses both routes is a wildlife movement route that likely supports foraging and nesting habitat for birds and several special-status wildlife species. Because the transmission line is expected to span the creek, no impacts to waters of the State are anticipated.

Impacts to the habitat located within the proposed transmission line routes are anticipated to be less than significant, as limited ground disturbance is associated with installation of the poles that support transmission lines. At this time it is not possible to determine the habitats that will be impacted by the installation of the transmission line poles because pole locations have not yet been determined. However, permanent disturbance areas would include a square approximately 50 feet by 50 feet (0.057 acre per pole) where transmission line pole pads will be located. Temporary impact area would be approximately 20 feet by 100 feet (0.046 acre per pole) for construction and erection of each pole, as well as for cable pulling. For the purposes of this estimate, it is assumed that there will be approximately 5 transmission line poles per linear mile, totaling approximately 25-30 poles (1.72 acres permanent impacts, 1.38 acres of temporary impacts). The poles will be situated so they span any sensitive habitats and the Zapato Chino Creek channel to preclude significant impacts to the creek and associated habitat.

Bird Collisions

Potential impacts to raptors and migratory birds from collisions with the proposed transmission lines are anticipated to be less than significant, as the SJS 1&2 Project site is not within an area that would concentrate migratory birds. Common, abundant local resident bird species would be most at risk of collision with the proposed structures. Because the SJS 1&2 Project site is not located near a large perennial waterbody, large numbers of susceptible waterfowl species are absent from the project vicinity. Based on previous studies (e.g., McCrary et al 1986, Koops 1987), a conservative estimate of between 10 and 430 birds (all bird species) per year could be killed from collisions with the proposed transmission line associated with the Project, or with buildings or other structures greater than 90 feet high. Use of FireFly bird flight diverters (Birdbusters website 2008), or similar devices placed on the transmission lines will make the structures more visible and minimize the risk of bird collisions.

Several studies on bird mortality from collisions with high-tension lines, buildings and windows, wind turbines, and vehicles are available. A brief summary of several studies that may be related to this project is provided below. Fatalities associated with buildings are usually the result of collisions with tall multi-story buildings that are lighted at night and collisions with reflecting windows at residential houses. USFWS estimates that 97.6 to 976 million bird deaths per year in the U.S. are due to collisions with building windows.

In the Netherlands, where approximately 2,875 miles (4,600 km) of high-tension lines are present, Koops (1987) estimated that approximately 750,000 to 1 million birds are killed annually by collisions based on an extrapolation made from three other Netherlands studies. Estimates in all three studies were in the same order of magnitude. The latter study estimated (unadjusted for scavenging and searcher efficiency) 113 fatalities per km of high tension line in grasslands, 58 fatalities per km of high tension line in agricultural lands, and 489 fatalities per km of high tension line near river crossings. The study used the mean estimate (adjusted for scavenging and searcher efficiency bias) of $750,000/2,875 = 261$ bird deaths/mile of high tension line. Extrapolating the mid-range of this estimate to the 500,000 miles (800,000 km) of bulk transmission lines in the United States would lead to a fatality estimate of approximately 130 million birds per year. Given the large, but unknown number of miles of power and other high tension lines in the U.S., and the lack of standardized data in the U.S., this estimate may be off by an order of magnitude or more in either direction (Erickson et al. 2005, Manville 2005).

Table 4.1-1
Comparison of Sources of Avian Mortality

Mortality Sources Compared—Erickson et al.

Table 2—Summary of predicted annual avian mortality.

Mortality source	Annual mortality estimate	Percent composition
Buildings ¹	550 million	58.2 percent
Power lines ²	130 million	13.7 percent
Cats ³	100 million	10.6 percent
Automobiles ⁴	80 million	8.5 percent
Pesticides ⁵	67 million	7.1 percent
Communications towers ⁶	4.5 million	0.5 percent
Wind turbines ⁷	28.5 thousand	<0.01 percent
Airplanes	25 thousand	<0.01 percent
Other sources (oil spills, oil seeps, fishing by-catch, etc.)	not calculated	not calculated

¹Mid-range of fatality estimates reported from Klem (1990), 1 – 10 bird fatalities per house, extrapolated to 100 million residences

²Based primarily on a study in the Netherlands (Koops 1987), extrapolated to 500,000 miles of bulk transmission line in U.S.

³One study in Wisconsin estimated 40 million (Coleman and Temple 1996), there are 60 million cats claimed as pets in the U.S.

⁴Based primarily on one study in England (Hudson 1965, Banks 1979) that estimated 15.1 fatalities/mile of road each year, no searcher efficiency or bias adjustments in that study, updated based on increase in vehicle registrations

⁵Conservative estimate using low range of empirical fatality rate (0.1 to 3.6 birds/acre), studies typically adjusted from searcher efficiency and scavenging

⁶Estimates from models derived by Manville and Evans (M. Manville, pers. comm.).

⁷Mid-range of per turbine and per MW estimates derived from empirical data collected at several wind projects (table 1).

4.1.2.1 Temporary Impacts

Temporary impacts to the habitat along the either transmission line route associated with construction will be returned back to the existing state once construction is finished. Transmission lines have a minimal impact on habitat and wildlife movement because there is limited ground disturbance, and transmission line poles also tend to create nesting habitat for raptors such as red-tailed hawk, golden eagle, raven and others. Because the total amount of habitat that will be impacted is approximately 3.2 acres, the permanent and temporary impacts are not considered significant. The transmission line and the poles that support the line are anticipated to span the creek and associated habitat; therefore, no significant impacts to the creek are anticipated.

4.1.3 Cumulative Effects

The cumulative impacts discussion for the proposed Project has several purposes:

- Identify past, present, and reasonably foreseeable actions within the Project vicinity that could affect the same resource(s) as SJS 1&2 site.
- Determine whether impacts of SJS 1&2 and the other actions would overlap in time or geographic extent.
- Determine whether the impacts of the proposed Project would interact with, or intensify the impacts of other actions.
- Determine whether this AFC overlaps another existing or planned AFC.
- Identify any potentially significant cumulative impacts.

The proposed Project and other projects in the vicinity are not expected to result in significant cumulative impacts to environmental resource areas, including, but not limited to, air quality, land use, cultural resources, water resources, or traffic during the construction or operation phases. All existing and proposed projects considered in this analysis can be characterized primarily as commercial development. Of the 19 projects with permit applications submitted, 7 are exploratory oil and gas well facilities and one natural gas pipeline. Of the remaining 11 projects, 4 include minor infrastructure projects related to the I-5/West Jayne Avenue interchange, and one is a cell tower. The remaining six projects include a tomato processing plant, a sand and gravel operation, and an electrical generation facility.

The closest permitted projects are located approximately 0.5-mile to the south of the Project site and includes exploratory oil and gas well and production facility sites. In addition, no permitted projects within 2.0-miles of the SJS 1&2 site include features that are likely to contribute to any direct and or indirect impacts caused by SJS 1&2. The tomato processing facilities projects, gravel and sand operation, and electrical generation facility are located at least 5 miles from the Project site. Thus, as mentioned above, no significant cumulative impacts have been identified as a result of the construction, operation, maintenance, or long-term presence of the Project and other projects in the area.

Potential cumulative impacts to biological resources caused by the construction of two solar hybrid power plants on the Project site will include loss of 640 acres of marginal habitat. Because the surrounding area is either disturbed grassland, disturbed Valley saltbush scrub habitat, or existing agricultural land uses, no

disruptions to wildlife movement are expected to occur. The primary wildlife movement route (Zapato-Chino Creek) will not be affected. In addition, because the proposed SJS 1&2 site is within a large area of disturbed habitat and is near a drainage with riparian habitat that acts as a functional wildlife movement corridor, cumulative impacts to special-status species including SJKF, American badger, and golden eagle would not be considered significant after implementation of recommended mitigation measures.

SECTION 5 MITIGATION AND MONITORING

This section identifies and describes recommended mitigation measures for the species-specific impacts previously identified in this section. In addition, several general mitigation measures and BMPs are also provided to potentially minimize potential indirect impacts that could affect site biological resources.

5.1 CONSTRUCTION MONITORING AND VEGETATION CLEARING

The following general mitigation measures and BMPs are proposed to minimize direct and indirect impacts caused by installation of the Project and the proposed transmission line.

Provide mitigation construction monitoring by a qualified biologist. The biologist will be given authority to execute the following functions:

- Conduct pre-construction surveys for sensitive species in impact areas.
- Establish construction exclusion zones and make recommendations for implementing erosion control measures in temporary impact areas.
- Provide worker environmental awareness training for all construction personnel that identifies sensitive biological resources and measures required to minimize Project impacts during construction.
- Prepare construction monitoring and compliance reports that analyze mitigation measure effectiveness.
- Vegetation clearing shall occur during the non-breeding bird season (September 1 to January 15).

5.2 FOCUSED MITIGATION*San Joaquin Kit Fox*

Mitigation for impacts to SJKF should be consistent with USFWS Recovery Plan for San Joaquin Valley Upland Species.

Impacts to 640 acres of marginal (SJKF) habitat (active agricultural field and approximately 3 acres of habitat associated with transmission line) are considered significant. SJKF use of the Project site appears to be limited to pass-through habitat and marginal foraging habitat. Proposed SJKF mitigation measures follow:

- Mitigate impacts to 643 acres of marginal SJKF foraging/pass-through habitat at a 1.1:1 ratio (708 acres of aglands or naturalized habitats supporting SJKF). This mitigation ratio is consistent with other CEC-permitted projects located on active agricultural lands within a landscape also dominated by agricultural lands. Mitigation can be accomplished through purchase of mitigation credits from a FWS/CDFG- approved mitigation bank for loss of SJKF habitat.
- Construction BMPs required by USFWS to avoid incidental take (harassment) of SJKF shall be implemented. These conditions are outlined below and must be printed on grading and building

plans. When implemented the measures will minimize take and reduce impacts to kit fox habitat to an insignificant level.

- Mitigate for loss of kit fox habitat either by:
 - Establishing a conservation easement on-site or off-site in a suitable Fresno County location and provide a non-wasting endowment for management and monitoring of the property in perpetuity;
 - Deposit funds into an approved in-lieu fee program;
 - Purchase credits in an approved conservation bank in Fresno County; or
 - Enter into a mitigation agreement with CDFG and provide a non-wasting endowment for management and monitoring of the terms of the agreement for perpetuity.
- Retain a qualified biologist to conduct a pre-construction survey of the Project site and conduct a pre-construction briefing for construction workers on kit fox biology and protection measures to be implemented.
- Include kit fox protection measures on project plans.
- Require a maximum 25 mph speed limit at the Project site during construction.
- Stop all construction activities at dusk.
- Cover excavations deeper than 2 feet at the end of each working day or provide escape ramps for kit fox.
- Inspect pipes, culverts or similar structures for kit fox before burying, capping, or moving.
- Remove food-related trash from Project site.
- If pesticides or herbicides are used, they must be used according to local, state, and federal regulations to prevent secondary poisoning of kit foxes.
- If a kit fox is discovered at any time in the Project area, all construction must stop and the CDFG and USFWS must be contacted.

Raptor Nest Sites and Migratory Bird Treaty Act

Impacts to large raptor species observed in the Project survey area (golden eagle, red tailed hawk, barn owl) are anticipated to be significant due to the permanent loss of 640 acres of raptor foraging habitat. Larger raptors will be less able to forage on site after project build-out; however, smaller raptors (e.g., American kestrel) will still be able to use the site. A total of 1.3 acres of temporary loss of raptor foraging habitat as a result of installation of the transmission line would be considered less than significant because of the minimal amount of impacts and because the habitat will be returned to its original land use that currently supports foraging for raptors. In addition, transmission line towers often provide habitat in the form of perching and nesting sites for raptors.

The potential for avian mortality as a result of collisions with buildings on the Project site and the proposed transmission line would be mitigated to less than significant by the use of FireFly bird flight

diverters, or similar devices, placed on the transmission lines to make the transmission lines more visible and minimize the risk of bird collisions.

Mitigation for loss of raptor foraging habitat will be provided through the compensatory mitigation acreage provided for SJKF mitigation. Additional BMP measures are also proposed:

- Pre-construction nest surveys of trees within the Project area during the non-breeding season.
- **If nests are detected, removal of nest trees must occur during the non-breeding season.**

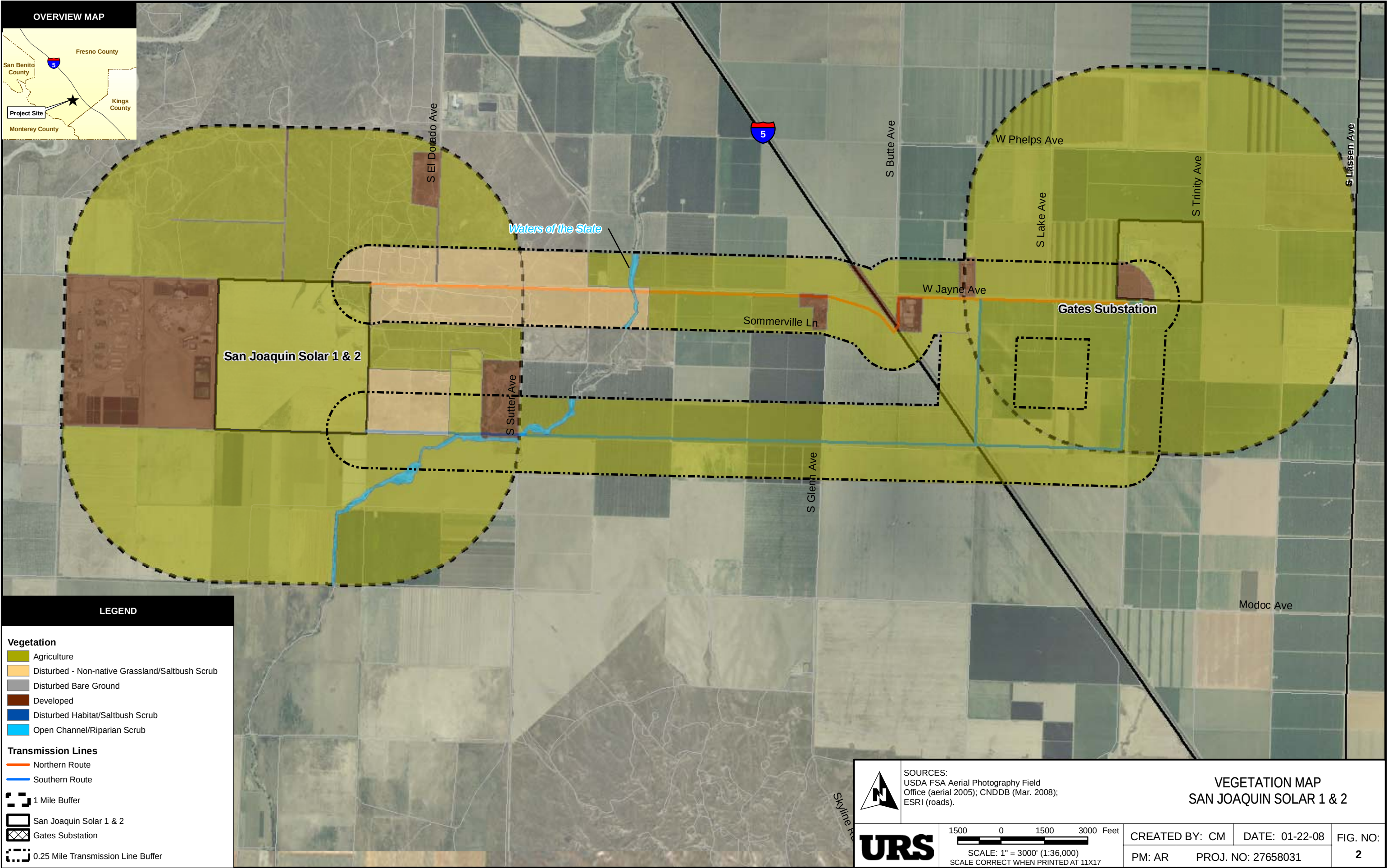
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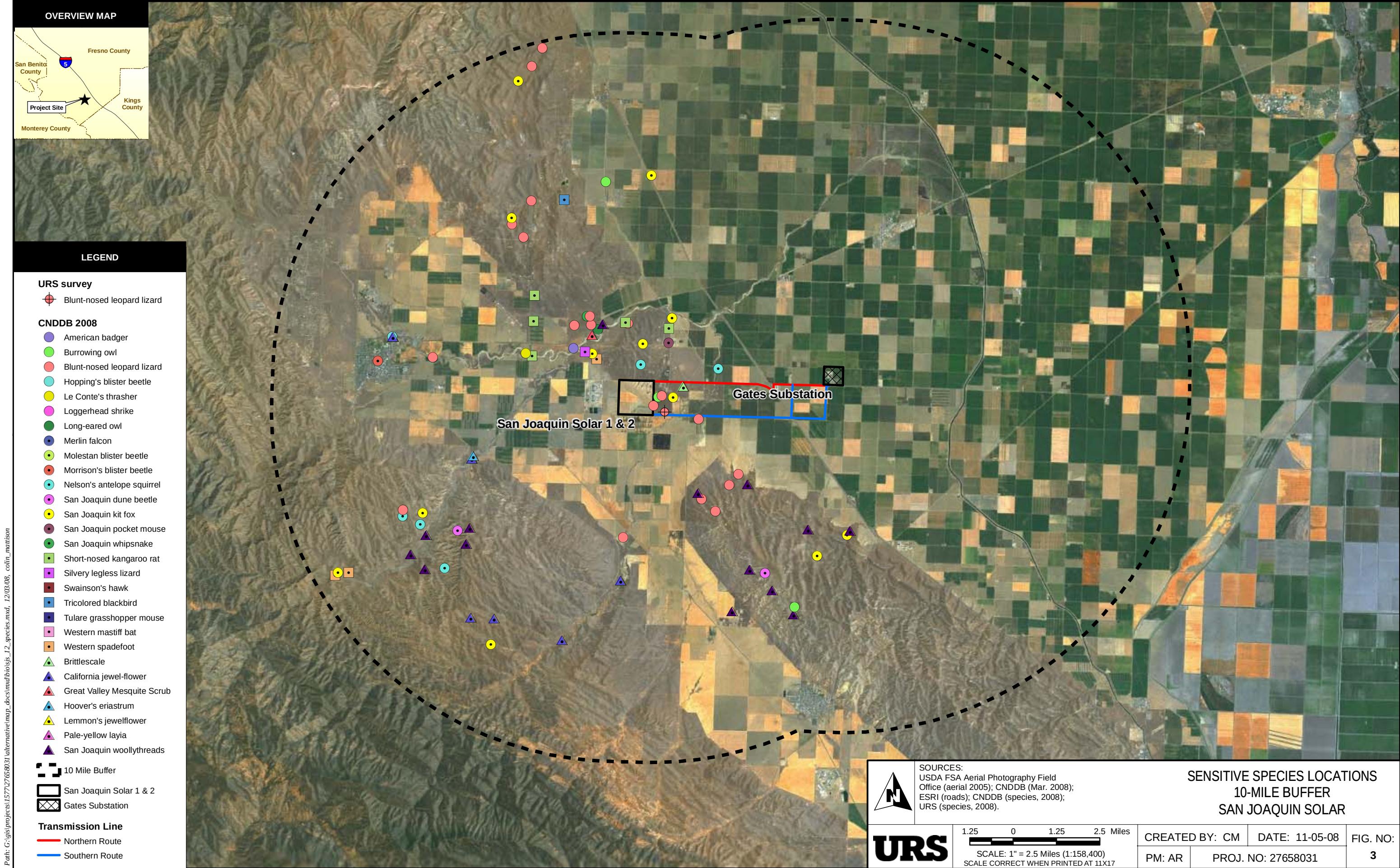
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	SOURCES: ESRI (background).		REGIONAL MAP SAN JOAQUIN SOLAR 1 & 2	
		12.5 0 12.5 25 Miles SCALE: 1" = 25 Miles (1:1,584,000) SCALE CORRECT WHEN PRINTED AT 8.5X11		



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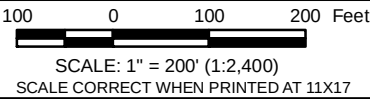
LEGEND

- Soil Sample location
- Waters of the State**
 - Bank
 - OHWM
 - 0.25 Mile Transmission Line Buffer
- Transmission Lines**
 - Southern Route
 - Northern Route



SOURCES:
USDA FAS Aerial Photography Field Office (aerial 2005); CNDDDB (Mar. 2008); ESRI (roads); URS (Waters of the State 2008).

JURISDICTIONAL WATERS
SAN JOAQUIN SOLAR 1 & 2



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CNDDDB and USFWS data points shown here are derived from a polygonal dataset, and are intended only as a guide to depict general presence of the identified species within the specified area. Contact CNDDDB and USFWS for further information.

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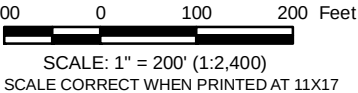
LEGEND

- Soil Sample location
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 - 0.25 Mile Transmission Line Buffer
- Transmission Lines**
 - Southern Route
 - Northern Route



SOURCES:
USDA FAS Aerial Photography Field
Office (aerial 2005); CNDDDB (Mar. 2008);
ESRI (roads); URS (Vegetation 2008).

JURISDICTIONAL WATERS
SAN JOAQUIN SOLAR 1 & 2



CREATED BY CM		DATE: 01-20-09	FIG. NO: 4B
PM: AR	PROJ. NO: 27658031		

CNDDDB and USFWS data points shown here are derived from a polygonal dataset, and are intended only as a guide to depict general presence of the identified species within the specified area. Contact CNDDDB and USFWS for further information.

Path: C:\gis\projects\1577\27658031\alternative\map_docs\mxd\bio\sj_12_bio_veg_2400_w\US_2.mxd, 01/22/09, colin_mattison



LEGEND

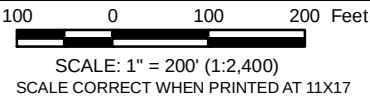
- Soil Sample location
- Waters of the State**
 - Bank
 - OHWM
 - 0.25 Mile Transmission Line Buffer
- Transmission Lines**
 - Southern Route
 - Northern Route



SOURCES:
USDA FAS Aerial Photography Field
Office (aerial 2005); CNDDDB (Mar. 2008);
ESRI (roads); URS (Vegetation 2008).

JURISDICTIONAL WATERS
SAN JOAQUIN SOLAR 1 & 2

URS



CREATED BY CM

DATE: 01-20-09

FIG. NO:

PM: AR

PROJ. NO: 27658031

4C

SITE PHOTOGRAPHS

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APPENDIX A



Photograph #1

View of the SJS 1&2 Project Site from northwest corner south along western edge. Coalinga State Hospital and Prison are located adjacent to the SJS Site.



Photograph #2

View of the SJS 1&2 Project site from Jayne Avenue. View is from north to southwest.



Photograph #3

View of the SJS 1&2 Project site from west end of the site. The west side of the site is entirely cleared of vegetation and prepared for seeding at the time of this photograph (May, 2008). Site does not support suitable habitat for BNLL.



Photograph #4

View of the SJS 1&2 Project site from the southwest corner, looking to the northeast. Note existing crops across the southern portion of the site and water pump in the foreground.

APPENDIX A



Photograph #5

View of the SJS 1&2 Project site from the northeast corner to the east at the disturbed non-native grassland and saltbush scrub habitat along the transmission line corridor on the south side of Jayne Avenue.



Photograph #6

View of the SJS 1&2 Project site from west toward the east at row crops. Shows lack of suitable habitat for BNLL.

APPENDIX A



Photograph #7

View of the SJS 1&2 Project site from west toward the east of soils prepared for row crops.



Photograph #8

View of Zapato Chino Creek where it crosses the SJS 1&2 transmission line corridor. This view is to the south of Jayne Avenue. The banks are dominated by tamarisk, with individual cottonwood trees and non-native grasses.

**POTENTIALLY OCCURRING AND OBSERVED SPECIES ON THE
PROJECT SITE AND TRANSMISSION LINE ROUTES**

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APPENDIX B

COMMON NAME	SCIENTIFIC NAME	STATUS ¹	PREFERRED HABITAT	POTENTIAL FOR OCCURRENCE WITHIN SITE OR TRANSMISSION LINE CORRIDOR
ANIMALS				
AMERICAN BADGER	<i>TAXIDEA TAXUS BERLANDIERI</i>	CSC	FOUND IN RELATIVELY OPEN, UNCULTIVATED GROUND WITH FRIABLE SOILS. GRASSLANDS, SAVANNAS, AND MOUNTAIN MEADOWS NEAR TIMBERLINE ARE PREFERRED.	LIKELY WITHIN PROJECT AREA WHERE SUITABLE HABITAT IS PRESENT. ONE DEAD BADGER WAS OBSERVED IN THE PROJECT AREA DURING SURVEYS.
BLUNT-NOSED LEOPARD LIZARD	<i>GAMBELIA SILA</i>	FE, SE, CDFG FULLY PROTECTED	FOUND IN ARID AREAS WITH SCATTERED VEGETATION, NON-NATIVE GRASSLAND AND ALKALI SINK SCRUB COMMUNITIES OF THE SAN JOAQUIN VALLEY FLOOR.	THIS SPECIES WAS OBSERVED ON THE CDFG PLEASANT VALLEY ECOLOGICAL RESERVE IMMEDIATELY ADJACENT TO THE PROJECT SITE. SUITABLE HABITAT IS PRESENT WITHIN TRANSMISSION LINE ALIGNMENT; HOWEVER, BNLL WAS NOT OBSERVED WITHIN THE PROJECT SITE DURING PROTOCOL SURVEYS IN 2008.
BURROWING OWL	<i>ATHENE CUNICULARIA</i>	CSC	PRIMARILY FOUND IN GRASSLANDS, CAN THRIVE IN AGRICULTURAL LANDSCAPES. PREFERS TO PLACE BURROWS IN SHORT VEGETATION WITH SPARSE SHRUBS.	REPORTED WITHIN 1 MILE OF PROJECT AREA IN 1920. ASSUMED EXTIRPATED FROM PLEASANT VALLEY/COALINGA IN 1936. NO RECENT OBSERVATIONS OF THIS SPECIES HAVE BEEN DOCUMENTED. NOT OBSERVED IN PROJECT AREA.
GOLDEN EAGLE	<i>AQUILA CHRYSAETOS</i>	CSC	FORAGE IN GRASSY AND OPEN SHRUBBY HABITATS AND NEST PRIMARILY ON CLIFFS, WITH SECONDARY USE OF LARGE TREES (E.G., OAKS AND SYCAMORE). BREEDING PAIRS MAY OCCUPY TERRITORIES OF SEVERAL SQUARE MILES.	OBSERVED NEAR THE CREEK ALONG THE NORTHERN TRANSMISSION LINE ALIGNMENT.
HOPPING'S BLISTER BEETLE	<i>LYTTA HOPPINGI</i>	FT	FOUND IN THE FOOTHILLS IN THE SOUTHERN END OF THE CENTRAL VALLEY. REPORTED IN TAFT, KERN, FRESNO AND TULARE COUNTIES. THERE IS NO PUBLISHED INFORMATION ON HABITAT OR FLORAL VISITATION.	REPORTED APPROXIMATELY 8 MILES WEST OF PROJECT AREA IN NATURAL HABITATS. MAY OCCUR WITHIN TRANSMISSION LINE ALIGNMENT OUTSIDE OF AGRICULTURAL AREAS.

APPENDIX B

COMMON NAME	SCIENTIFIC NAME	STATUS ¹	PREFERRED HABITAT	POTENTIAL FOR OCCURRENCE WITHIN SITE OR TRANSMISSION LINE CORRIDOR
LECONTE'S THRASHER	<i>TOXOSTOMA LECONTEI</i>	CSC	LE CONTE'S THRASHER IS AN UNCOMMON RESIDENT OF DESERT SCRUB, DESERT WASH AND ALKALI DESERT SCRUB HABITATS FROM INYO COUNTY TO THE MEXICAN BORDER.	LIKELY WITHIN PROJECT TRANSMISSION LINE ALIGNMENT WHERE SUITABLE HABITAT IS PRESENT.
LOGGERHEAD SHRIKE	<i>LANIUS LUDOVICIANUS</i>	CSC	UNCOMMON YEAR-ROUND RESIDENT OF GRASSLAND AND DESERT SCRUB.	LIKELY TO FORAGE WITHIN PROJECT AREA WHERE SUITABLE HABITAT IS PRESENT. OBSERVED ALONG THE TRANSMISSION LINE ALIGNMENT.
LONG-EARED OWL	<i>OTUS WILSONIANUS</i>	CSC	OCCURS PRIMARILY IN DENSE OAK AND RIPARIAN WOODLAND; NESTS IN TREES, OFTEN IN THE ABANDONED NESTS OF CORVIDS OR OTHER RAPTORS.	MAY USE RIPARIAN HABITAT THAT CROSSES THE TRANSMISSION LINE ALIGNMENT. ALSO LIKELY TO FORAGE WITHIN PROJECT AREA WHERE SUITABLE HABITAT IS PRESENT.
MERLIN FALCON	<i>FALCO COLUMBARIUS</i>	CSC	GRASSLANDS AND AGRICULTURAL FIELDS. WINTERING POPULATIONS IN CALIFORNIA HAVE DECLINED POSSIBLY DUE TO PESTICIDE USE IN BREEDING AREAS.	LIKELY TO FORAGE IN PROJECT AREA WHERE SUITABLE HABITAT IS PRESENT.
MOLESTAN BLISTER BEETLE	<i>LYTTA MOLESTA</i>	FT	BLACK BEETLE WITH ORANGE ON THORAX. FEEDS ON LUPINES AND VERNAL POOL SPECIES IN THE CENTRAL VALLEY.	REPORTED APPROXIMATELY 8 MILES NORTH OF PROJECT AREA IN NATURAL HABITATS. MAY OCCUR WITHIN TRANSMISSION LINE ALIGNMENT OUTSIDE OF AGRICULTURAL AREAS.
MORRISON'S BLISTER BEETLE	<i>LYTTA MORRISONI</i>	FT	FOUND IN THE SOUTHERN CENTRAL VALLEY; FEEDS ON GLIA TRICOLOR AND LINANTHUS LINIFLORUS.	REPORTED APPROXIMATELY 8 MILES WEST OF PROJECT AREA IN NATURAL HABITATS. MAY OCCUR WITHIN TRANSMISSION LINE ALIGNMENT OUTSIDE OF AGRICULTURAL AREAS.
SAN JOAQUIN ANTELOPE SQUIRREL	<i>AMMOSPERMOP HILIUS NELSONI</i>	ST, FSC	GRASSLANDS WITH MODERATE SHRUB COVER; WIDELY SCATTERED SHRUBS, FORBS, AND GRASSES IN BROKEN TERRAIN WITH GULLIES AND WASHES AND LOAM SOILS. USE BURROWS THAT THEY OR OTHER ANIMALS HAVE DUG.	REPORTED WITHIN 1 MILE OF PROJECT AREA. LIKELY WITHIN PROJECT AREA WHERE SUITABLE HABITAT IS PRESENT.

APPENDIX B

COMMON NAME	SCIENTIFIC NAME	STATUS ¹	PREFERRED HABITAT	POTENTIAL FOR OCCURRENCE WITHIN SITE OR TRANSMISSION LINE CORRIDOR
SAN JOAQUIN DUNE BEETLE	<i>COELIS GRACILIS</i>	FC	SMALLEST SPECIES OF DUNE BEETLE; IS FOUND ONLY IN SAND DUNES IN CALIFORNIA	NOT LIKELY IN PROJECT AREA; SUITABLE HABITAT IS NOT PRESENT.
SAN JOAQUIN KIT FOX	<i>VULPES MACROTIS MUTICA</i>	FE, ST	GRASSLANDS AND SCRUBLANDS; OFTEN IN AREAS OF OIL EXPLORATION AND EXTRACTION, WIND TURBINES, AGRICULTURAL LAND USES, AND URBAN AREAS.	ASSUMED WITHIN PROJECT AREA WHERE SUITABLE HABITAT IS PRESENT.
SAN JOAQUIN POCKET MOUSE	<i>PEROGNATHUS INORNATUS INORNATUS</i>	FSC	REQUIRES FRIABLE SOILS IN GRASSLANDS AND BLUE OAK SAVANNAS FROM NEAR SEA LEVEL TO 1500 FEET ELEVATION ALONG THE EASTERN SIDE OF THE SAN JOAQUIN VALLEY.	LIKELY WITHIN PROJECT AREA WHERE SUITABLE HABITAT IS PRESENT. TRAPPING PROGRAM PLANNED FOR DECEMBER 2008 WILL IDENTIFY SPECIES USING AREA.
SAN JOAQUIN WHIPSNAKE	<i>MASTICOPHIS FLAGELLUM RUDDOCKI</i>	CSC	GRASSLAND, SAVANNA, CHAPARRAL, AND WOODLAND HABITATS FROM SAN JOAQUIN VALLEY TO KERN AND SANTA BARBARA COUNTIES.	MAY OCCUR WITHIN PROJECT AREA WHERE SUITABLE HABITAT IS PRESENT.
SHORT-NOSED KANGAROO RAT	<i>DIPDOMYS NITRATOIDES BREVINASUS</i>	CSC	GRASSLAND AND DESERT-SHRUB ASSOCIATIONS ON FRIABLE SOILS. ALSO ON UNCULTIVATED SITES IN THE KETTLEMAN HILLS, AND IN AND AROUND OIL FIELDS NEAR COALINGA, FRESNO COUNTY.	LIKELY WITHIN PROJECT AREA WHERE SUITABLE HABITAT IS PRESENT. TRAPPING PROGRAM PLANNED FOR DECEMBER 2008 WILL IDENTIFY SPECIES USING AREA.
SILVERY LEGLESS LIZARD	<i>ANNIELLA PULCHRA PULCHRA</i>	CSC	COMMON IN SEVERAL HABITATS SUPPORTING FRIABLE SOILS, ESPECIALLY IN COASTAL DUNE, VALLEY-FOOTHILL, CHAPARRAL, AND COASTAL SAGE SCRUB. IT MAY OCCASIONALLY ENTER DESERT SCRUB HABITATS.	FOUND HISTORICALLY NORTHWEST AND SOUTHEAST OF PROJECT SITE, IN STREAM HABITATS.
SWAINSON'S HAWK	<i>BUTEO SWAINSONI</i>	ST	FOUND IN DESERTS, GRASSLANDS AND PRAIRIES; FORAGES OVER PASTURES AND AGRICULTURAL FIELDS. NESTS IN TREES IN RIPARIAN, GROVES AND FARMLANDS.	LIKELY TO FORAGE IN PROJECT AREA WHERE SUITABLE HABITAT IS PRESENT. MAY NEST IN RIPARIAN AREA ASSOCIATED WITH ZAPATO CHINO CREEK TO EAST AND SOUTH OF PROJECT AREA.

APPENDIX B

COMMON NAME	SCIENTIFIC NAME	STATUS ¹	PREFERRED HABITAT	POTENTIAL FOR OCCURRENCE WITHIN SITE OR TRANSMISSION LINE CORRIDOR
TRICOLORED BLACKBIRD	<i>AGELAIUS TRICOLOR</i>	CSC (BREEDING POPULATIONS)	FRESH WATER MARSH HABITAT, USUALLY IN CATTAILS OR REEDS; FORAGES IN AGRICULTURAL FIELDS, GRASSLANDS, LAKESHORES AND SCRUB HABITATS.	LIKELY TO FORAGE IN PROJECT AREA WHERE SUITABLE HABITAT IS PRESENT.
TULARE GRASSHOPPER MOUSE	<i>ONYCHOMYS TORRIDUS TULARENSIS</i>	CSC	ARID SHRUBLAND COMMUNITIES IN HOT, ARID GRASSLAND AND SHRUBLAND ASSOCIATIONS.	LIKELY WITHIN PROJECT AREA WHERE SUITABLE HABITAT IS PRESENT. TRAPPING PROGRAM PLANNED FOR DECEMBER 2008 WILL IDENTIFY SPECIES USING AREA.
WESTERN MASTIFF BAT	<i>EUMOPS PEROTIS CALIFORNICUS</i>	CSC	ROOST IN RUGGED, ROCKY AREAS WHERE SUITABLE CREVICES ARE AVAILABLE FOR DAY-ROOSTS. FORAGE IN OPEN AREAS UP TO 2000 FEET AND UP TO 15 MILES FROM ROOST SITES.	MAY FORAGE IN PROJECT AREA WHERE SUITABLE HABITAT IS PRESENT.
WESTERN SPADEFOOT	<i>SCAPHIOPUS HAMMONDII</i>	CSC	EMERGES AT NIGHT DURING THE EARLY SPRING RAINS TO BREED IN TEMPORARY PONDS, VERNAL POOLS, AND BACKWATERS OF SLOW FLOWING CREEKS; BURROWS ARE CONSTRUCTED IN UPLAND HABITATS INCLUDING GRASSLANDS AND COASTAL SAGE SCRUB.	NOT EXPECTED WITHIN PROJECT AREA; NO STANDING WATER PRESENT WITHIN OR NEAR PROJECT AREA.
PLANTS				
BRITTLESCALE	<i>ATRIPLEX DEPRESSA</i>	CNPS LIST 1B	BROAD FLOOD BASINS AND ALLUVIAL FANS, BARREN AREAS WITHIN ALKALI GRASSLAND, ALKALI MEADOW, AND ALKALI SCRUB. LOW ELEVATIONS TO 1,055 FEET.	NOT EXPECTED WITHIN PROJECT AREA; HABITAT IS NOT SUITABLE.

APPENDIX B

COMMON NAME	SCIENTIFIC NAME	STATUS ¹	PREFERRED HABITAT	POTENTIAL FOR OCCURRENCE WITHIN SITE OR TRANSMISSION LINE CORRIDOR
CALIFORNIA JEWEL-FLOWER	CAULANTHUS CALIFORNICUS	FE, SE, CNPS LIST 1B, BLM SENSITIVE	NONNATIVE GRASSLAND, UPPER SONORAN SUBSHRUB SCRUB, CISMONTANE JUNIPER WOODLAND AND SCRUB COMMUNITIES; 240 TO 2,950 FEET. THREE CONCENTRATIONS OF NATURALLY-OCCURRING POPULATIONS INCLUDE THE KREYENHAGEN HILLS IN FRESNO COUNTY	KREYENHAGEN HILLS IS NEAR THE PROJECT STUDY AREA. MAY OCCUR IN TRANSMISSION LINE ALIGNMENT. POTENTIAL FOR OCCURRENCE WITHIN PROJECT AREA IS LOW
HOOVER'S ERIASTRUM	<i>ERIASTRUM HOOVERI</i>	CNPS LIST 4.2, (FT DELISTED 2003)	DRYING GRASSY AREAS, CHENOPOD SCRUB, PINYON AND JUNIPER WOODLAND, VALLEY AND FOOTHILL GRASSLAND (50-915M).	POTENTIAL FOR OCCURRENCE WITHIN PROJECT AREA IS LIKELY WHERE SUITABLE HABITAT IS PRESENT.
LEMMON'S JEWELFLOWER	<i>CAULANTHUS COULTERI</i> VAR. <i>LEMMONII</i>	CNPS LIST 1B.2	DRY, EXPOSED SLOPES IN PINYON AND JUNIPER WOODLAND; VALLEY AND FOOTHILL GRASSLANDS (80-8000M).	POTENTIAL FOR OCCURRENCE WITHIN PROJECT AREA IS LOW; SUITABLE HABITAT IS NOT PRESENT.
PALE YELLOW LAYIA	<i>ASTRAGALUS DIDYMOCARPUS</i> VAR. <i>MILESIANUS</i>	CNPS LIST 1B.2	GRASSY AREAS NEAR COAST, COASTAL SCRUB (20-90M). SANTA BARBARA, SAN LUIS OBISPO, VENTURA COUNTIES.	POTENTIAL FOR OCCURRENCE WITHIN PROJECT AREA IS LOW. SUITABLE HABITAT IS NOT PRESENT.
SAN JOAQUIN WOOLLYTHREADS	MONOLOPIA CONGDONII	FE, CNPS LIST 1B	NONNATIVE GRASSLAND, VALLEY SALTBUCH SCRUB, INTERIOR COAST RANGE SALTBUCH SCRUB AND UPPER SONORAN SUBSHRUB COMMUNITIES AT ELEVATIONS FROM 200 TO 850 FEET ON THE SAN JOAQUIN VALLEY FLOOR	MAY OCCUR IN TRANSMISSION LINE ALIGNMENT, HOWEVER, POTENTIAL FOR OCCURRENCE WITHIN PROJECT AREA IS LOW.

NOTES:

¹ U.S. FISH AND WILDLIFE SERVICE (FEDERAL).

FE = ENDANGERED (IN DANGER OF BECOMING EXTINCT THROUGHOUT ALL OR A SIGNIFICANT PORTION OF ITS RANGE).

FT = THREATENED (LIKELY TO BECOME ENDANGERED IN THE FORESEEABLE FUTURE IN THE ABSENCE OF SPECIAL PROTECTION).

FC = FEDERAL CANDIDATE (CANDIDATE FOR FT OR FE LISTING).

FSC = SPECIES OF CONCERN (SUFFICIENT INFORMATION EXISTS WHICH WARRANTS CONCERN OVER THAT SPECIES' STATUS AND WARRANTS STUDY).

CDFG = CALIFORNIA DEPARTMENT OF FISH AND GAME (STATE).

SE = STATE ENDANGERED (IN DANGER OF BECOMING EXTINCT THROUGHOUT ALL OR A SIGNIFICANT PORTION OF ITS RANGE).

SC = STATE CANDIDATE (CANDIDATE FOR SE OR STATE THREATENED [LIKELY TO BECOME ENDANGERED IN THE FORESEEABLE FUTURE IN THE ABSENCE OF SPECIAL PROTECTION]).

CSC = SPECIES OF CONCERN (INFORMATION EXISTS WHICH WARRANTS CONCERN OVER THAT SPECIES' STATUS AND WARRANTS STUDY).

CNPS LIST 1B = CALIFORNIA NATIVE PLANT SOCIETY: RARE OR ENDANGERED THROUGHOUT ITS RANGE.

REFERENCES: CNDDB 2008; USFWS 2008.

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**BIOLOGICAL SURVEY DATES, WEATHER CONDITIONS, AND
SURVEY STAFF**

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APPENDIX C

San Joaquin Solar 1 & 2 Biological Survey Dates, Weather Conditions, and Survey Staff

Survey Date	Survey Type	Start/End Times	Start/End Temp (C)	Start/End Sky Cover (%)	Wind Speed (mph)	Survey Staff
4/11/08	Habitat Assessment	1330-1430	n/a	n/a	n/a	URS – TM, PM
5/15/08	Habitat Assessment	0900-1148	29-37	0/0	0-4	URS – TM
5/28/2008	BNLL Survey #1 - Adult	1115-1320	25-26.6	10/40	0-2	URS – SA, TW, DM QK – LB (Level II), WM (Level II), YB
5/29/2008	BNLL Survey #2 – Adult	1035-1218	25-28.3	25/5	0-6	URS – SA, TW, DM, QK – LB (Level II), WM (Level II) YB
5/30/2008	BNLL Survey #3 – Adult	1007- 1152	25.5-27.7	5/0	0-1	URS – SA, TW, DM QK – LB (Level II), WM (Level II) YB
6/07/2008	Survey Reference Site only (not within protocol)	0805-0835	25-26	0/0	10-18	URS – TM (Level II), TW, SA, JS
6/08/2008	BNLL Survey #4 – Adult	0840-1038	25-28	0/0	0-7	URS TM (Level II), TW, SA, JS
6/21/2008	BNLL Survey #5 - Adult	0620-0752	25-32.2	0/0	0-8	URS – SA, TW QK – LB (Level II) YB
6/22/2008	BNLL Survey #6 - Adult	0718-0902	25-32.2	0/0	0-5	URS – SA, TW QK – LB (Level II) YB
6/23/2008	BNLL Survey #7 – Adult	0804-0932	25-27.7	10/25	0-3	URS – SA, TW QK – WM (Level II) YB
6/30/2008	BNLL Survey #8 – Adult	0815-0952	26-31	0	1-5	URS – RB QK – LB (Level II), WM (Level II) YB
7/01/2008	BNLL Survey #9 – Adult	0845-1025	26-30.5	0	0-4	URS - RB QK – LB (Level II), WM (Level II)

APPENDIX C

San Joaquin Solar 1 & 2 Biological Survey Dates, Weather Conditions, and Survey Staff (Continued)

Survey Date	Survey Type	Start/End Times	Start/End Temp (C)	Start/End Sky Cover (%)	Wind Speed (mph)	Survey Staff
7/02/2008	BNLL Survey #10 – Adult	0827-1011	26-30	0	3-5	URS – RB QK – LB (Level II), WM (Level II) YB
7/03/2008	BNLL Survey #11 – Adult	0820-0939	26-28	0/0	0-9	URS – RB QK – LB (Level II), WM (Level II) YB
7/09/2008	BNLL Survey #12 – Adult	0650-0747	26-27	0/0	0-5	QK – LB (Level II), WM (Level II) YB
8/9/2008	BNLL Survey #1 - Juvenile	825-1010	25-33	0/0	0-2/2-4	URS – SA, BB, QK – LB (Level II), YB
8/10/2008	BNLL Survey #2 - Juvenile	840-1011	25-30	0/0	5-7/0-2	URS – SA, BB, QK – LB (Level II), YB
8/19/2008	BNLL Survey #3 - Juvenile	0809-1045	25-27	0/0	2-5/6-8	URS – AB, CE, QK – LB (Level II) YB
8/20/2008	BNLL Survey #4 - Juvenile	0856-1000	25-29	0/0	2-4/2-6	URS – AB, CE, QK – LB (Level II) YB
8/21/2008	BNLL Survey #5 - Juvenile	0825-1020	25.5-30.2	0/0	1-2/2-6	URS – AB, CE, QK – LB (Level II) YB
12/1/08	Nocturnal Small Mammal Trapping	2330-0645	7-5	100/100 (fog)	1-3	URS – SA QK - CU
12/2/08	Nocturnal Small Mammal Trapping	2300-0545	7-5	90/90	0-2	URS – SA QK – CU
12/3/08	Nocturnal Small Mammal Trapping	2230-0430	7-5	80/100	0	URS – SA QK – CU
12/4/08	Nocturnal Small Mammal Trapping	2230-0400	7-5	5/10	0	URS – SA QK – CU

APPENDIX C

Survey Date	Survey Type	Start/End Times	Start/End Temp (C)	Start/End Sky Cover (%)	Wind Speed (mph)	Survey Staff
12/8/08	Nocturnal Small Mammal Trapping	2310-2459	10-6	80/80	0-2	URS – RB QK – CU
12/9/08	Nocturnal Small Mammal Trapping	2303-2417	4-0	0/0	0-1	URS – RB QK – CU
12/10/08	Nocturnal Small Mammal Trapping	2326-2444	4-3	0/0	0-1	URS – RB QK – CU
12/11/08	Nocturnal Small Mammal Trapping	2304-2443	5-4	0/0	0-1	URS – RB QK - CU

Notes:

URS Staff: BB Brittany Benson, DM – Dennis Miller, RB – Rick Bailey, SA – Sundeep Amin, TM – Theresa Miller, TW – Tim Witman, JS – Jill Seed, PM – Patrick Mock, WV – Wayne Vogler, AB – Alyssa Berry, CE – Cletis England

QK Staff: CU – Curtis Uptain, LB – Lori Bono, WM – Woody Moise

YB - Yancey Bissonnette, Alphabiota

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**PLANT SPECIES OBSERVED ON THE SJS 1&2 PROJECT SITE AND
TRANSMISSION LINE ROUTES**

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APPENDIX D

Scientific Name	Common Name
ANGIOSPERMS (DICOTYLEDONS)	
ASTERACEAE	SUNFLOWER FAMILY
<i>Ambrosia acanthicarpa</i>	annual bursage
<i>Baccharis salicifolia</i>	mulefat
<i>Centaurea melitensis</i>	toalote
<i>Centaurea solstitialis</i>	yellow star-thistle
<i>Helianthus annuus</i>	California sunflower
<i>Hemizonia</i> sp.	tarplant, tarweed
<i>Lepidospartum squamatum</i>	scale broom
<i>Xanthium strumarium</i>	common cocklebur
BORAGINACEAE	BORAGE FAMILY
<i>Amsinckia menziesii</i>	common fiddleneck
<i>Cryptantha</i> sp.	cryptantha
<i>Plagiobothrys</i> sp.	popcorn flower
BRASSICACEAE	MUSTARD FAMILY
<i>Brassica nigra</i>	black mustard
<i>Capsella bursa-pastoris</i>	sheperd's-purse
<i>Hirschfeldia incana</i>	short-podded mustard
<i>Lepidium nitidum</i>	shining peppergrass
CHENOPODIACEAE	GOOSEFOOT FAMILY
<i>Atriplex polycarpa</i>	common saltbrush
<i>Salsola tragus</i>	Russian thistle
CUCURBITACEAE	GOURD FAMILY
<i>Cucurbita palmata</i>	coyote melon
EUPHORBIACEAE	SPURGE FAMILY
<i>Eremocarpus setigerus</i>	dove weed
FABACEAE	LEGUME FAMILY
<i>Astragalus</i> sp.	astragalus
<i>Lotus purshianus</i>	Spanish clover
GERANIACEAE	GERANIUM FAMILY
<i>Erodium cicutarium</i>	red-stemmed filaree
MALVACEAE	MALLOW FAMILY
<i>Malvella leprosa</i>	alkali-mallow
PAPAVERACEAE	POPPY FAMILY
<i>Eschscholzia californica</i>	California poppy
POLYGONACEAE	BUCKWHEAT FAMILY
<i>Eriogonum</i> sp.	annual buckwheat
SOLANACEAE	NIGHTSHADE FAMILY
<i>Datura wrightii</i>	jimson weed
<i>Nicotiana glauca</i>	tree tobacco
TAMARICACEAE	TAMARISK FAMILY
<i>Tamarix</i> sp.	tamarisk

APPENDIX D

Scientific Name	Common Name
ANGIOSPERMS (MONOCOTYLEDONS)	
POACEAE	GRASS FAMILY
<i>Avena</i> sp.	wild oat
<i>Bromus diandrus</i>	ripgut grass
<i>Bromus hordeaceus</i>	soft chess
<i>Bromus madritensis</i> ssp. <i>rubens</i>	red brome
<i>Horedum marinum</i> ssp. <i>gussoneanum</i>	Mediterranean barley
<i>Lolium perenne</i> *	perennial ryegrass
<i>Schismus barbatus</i> *	Mediterranean schismus
<i>Vulpia myuros</i> var. <i>myuros</i> *	Zorro annual fescue

**WILDLIFE SPECIES OBSERVED ON THE SJS 1&2 PROJECT SITE AND
TRANSMISSION LINE ROUTES**

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APPENDIX E

Scientific Name	Common Name
Birds	
<i>Agelaius phoeniceus</i>	red-winged blackbird
<i>Aquila chrysaetos</i> (CSSC)	golden eagle
<i>Bubo virginianus</i>	great-horned owl
<i>Buteo jamaicensis</i>	red-tailed hawk
<i>Calypte anna</i>	Anna's hummingbird
<i>Carpodacus mexicanus</i>	house finch
<i>Cathartes aura</i>	turkey vulture
<i>Circus cyaneus</i> (CSSC)	northern harrier
<i>Colaptes auratus</i>	northern flicker
<i>Corvus corax</i>	common raven
<i>Eremophila alpestris</i>	horned lark
<i>Lanius ludovicianus</i> (CSSC)	loggerhead shrike
<i>Mimus polyglottos</i>	northern mockingbird
<i>Stelgidopteryx serripennis</i>	northern rough-winged swallow
<i>Sturnella neglecta</i>	western meadowlark
<i>Tyrannus verticalis</i>	western kingbird
<i>Tyto alba</i>	barn owl
<i>Zenaida macroura</i>	mourning dove
Mammals	
<i>Canis latrans</i>	coyote
<i>Dipodomys heermanni</i>	Heermann's kangaroo rat
<i>Lepus californicus</i> (CSSC)	black tailed jackrabbit
<i>Lynx rufus</i>	bobcat
<i>Mustela frenata</i>	long-tailed weasel
<i>Peromyscus maniculatus</i>	Deer mouse
<i>Spermophilus beecheyi</i>	California ground squirrel
<i>Sylvilagus audubonii</i>	cottontail rabbit
<i>Taxidea taxus</i> (CSSC)	American badger
Reptiles	
<i>Cnemidophorus tigris</i>	western whiptail lizard
<i>Crotalus viridis</i>	western rattlesnake
<i>Masticophis flagellum</i>	coachwhip snake
<i>Pituophis catenifer catenifer</i>	Pacific gopher snake
<i>Sceloporus occidentalis biserialis</i>	San Joaquin fence lizard
<i>Uta stansburiana</i>	common side-blotched lizard

CSSC = California Species of Special Concern

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**BNLL SURVEY DATA SHEETS, WEATHER DATA,
AND CNDDB RECORDS**

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2003 Blunt-nosed Leopard Lizard

Adult # 1-3

(*Gambelia sila*)

Survey Reporting Form

SURVEY DATE(S) (up to 5 days of surveys from a single site can be reported on this form): 5/28/08 - 5/30/08

SURVEYORS: Sundeep Amin, Tim Witman, Dennis Miller
Yancy Bissonette, Laurie Bono (2), Woody Moise (2)

SITE NAME AND LOCATION [Please also attach or sketch a map on back]:

County: Fresno Landowner/Mgr: Private

Quad Name: Guajarral Hills Elevation: 570 - 640 feet

T 21 S R 16 E Entire Sections 1 & 2

UTM Zone (10,11): 11 Datum: NAD83 (NAD83, NAD27, WGS84, other)

Source (GPS, map & type, other): Maps, GPS Point Accuracy ± 3 meters

UTM COORDINATES: See Map

SURVEY RESULTS:

DATE	START TIME	END TIME	START AIR TEMP	END AIR TEMP	# BNLL OBSERVED Adults/Hatchlings	APPROXIMATE DISTANCE COVERED (IN TENTHS OF A MILE)
5/28/08	11:15	2:30	77°F	80°F	0 / 0	3.5 miles
5/29/08	11:30	1:49	77°F	86°F	0 / 0	3.5 miles
5/30/08	10:07	11:52	78°F	82°F	0 / 0	3.5 miles
					1	
					1	

TOTAL NUMBER OF OBSERVATIONS FOR THE THREE MOST COMMON LIZARDS (combined numbers for all survey days):

Species common side blotch Number observed: 46

Species California whiptail Number observed: 1

Species western fence lizard Number observed: 1

BNLL Survey Site Name: San Joaquin Solar 1 & 2Adult #1
#2
#3**HABITAT DESCRIPTION:** Estimation of average vegetative cover on the site
[circle the correct value]:% Shrub: 0-10%, 10-25%, 25-50%, 50-75%, >75%% Forb: 0-10%, 10-25%, 25-50%, 50-75%, >75%% Grass: 0-10%, 10-25%, 25-50%, 50-75%, >75%% Bare Ground: 0-10%, 10-25%, 25-50%, 50-75%, >75%**HABITAT DESCRIPTION:** General description of vegetation community, overall habitat quality, surrounding land use, threats, etc: Disturbed saltbushscrub w/ non-native grassland interspersed throughout the transmission line alignment. No habitat present on Project site. Surrounding land use is high density of agriculture.**OTHER NOTES ABOUT THE SURVEY/HABITAT/ SPECIES/ETC:**Reference site visited on 5/28/08 & 5/29/08.
BNLL observed on 5/29 at 1:09 PM. GPS point taken. Reference site not visited on 5/30/08.**PLEASE RETURN THIS SURVEY REPORTING FORM TO THE CALIFORNIA DEPARTMENT OF FISH AND GAME – SAN JOAQUIN VALLEY SOUTHERN SIERRA REGION AT THE FOLLOWING ADDRESS:**California Department of Fish and Game
ATTN: Steve Juarez, Conservation Planning Supervisor
1234 E. Shaw Ave
Fresno, CA 93710**OR EMAIL THE COMPLETED FORM TO: sjuarez@dfg.ca.gov*******ALL OBSERVATIONS OF BLUNT-NOSED LEOPARD LIZARDS AND OTHER SENSITIVE SPECIES SHOULD BE PROMPTLY REPORTED TO THE CALIFORNIA NATURAL DIVERSITY DATABASE. SUBMISSION OF THIS FORM DOES NOT ENTAIL REPORTING TO THE DATABASE, WHICH IS MAINTAINED BY THE WILDLIFE AND HABITAT DATA ANALYSIS BRANCH OF THE DEPARTMENT OF FISH AND GAME.**

Adult #4

2003 Blunt-nosed Leopard Lizard
(*Gambelia sila*)
Survey Reporting Form

SURVEY DATE(S) (up to 5 days of surveys from a single site can be reported on this form): 6/8/2008

SURVEYORS: Sundeep Amin, Theresa Miller⁽²⁾, Tim Witman, Jill Seed

SITE NAME AND LOCATION [Please also attach or sketch a map on back]:

County: Fresno **Landowner/Mgr:** Private

Quad Name: Guajarral Hills **Elevation:** 570 - 640 feet

T 21 S R 16 E Entire **Sections** 1 & 2

UTM Zone (10,11): 11 **Datum:** NAD83 (NAD83, NAD27, WGS84, other)

Source (GPS, map & type, other): Maps, GPS **Point Accuracy** ± 3 meters

UTM COORDINATES: See Map

SURVEY RESULTS:

DATE	START TIME	END TIME	START AIR TEMP	END AIR TEMP	# BNLL OBSERVED Adults/Hatchlings	APPROXIMATE DISTANCE COVERED (IN TENTHS OF A MILE)
6/8/08	8:40	10:38	77° F	90° F	0 / 0	3.5 miles
					/	
					/	
					/	
					/	

TOTAL NUMBER OF OBSERVATIONS FOR THE THREE MOST COMMON LIZARDS (combined numbers for all survey days):

Species Common side blotch Number observed: 15

Species western fence lizard Number observed: 4

Species _____ Number observed: _____

BNLL Survey Site Name: San Joaquin Solar 1 & 2

Adult #4

HABITAT DESCRIPTION: Estimation of average vegetative cover on the site
[circle the correct value]:

% Shrub: 0-10%, 10-25%, 25-50%, 50-75%, >75%% Forb: 0-10%, 10-25%, 25-50%, 50-75%, >75%% Grass: 0-10%, 10-25%, 25-50%, 50-75%, >75%% Bare Ground: 0-10%, 10-25%, 25-50%, 50-75%, >75%

HABITAT DESCRIPTION: General description of vegetation community, overall habitat quality, surrounding land use, threats, etc: Disturbed saltbush

scrub w/ non-native grassland interspersed throughout
the transmission line alignment. No habitat present
on Project site. Surrounding land use is high density
of agriculture.

OTHER NOTES ABOUT THE SURVEY/HABITAT/ SPECIES/ETC:

Reference site visited from 11:30 - 12:23.

No BNLL or other lizard species observed.

**PLEASE RETURN THIS SURVEY REPORTING FORM TO THE CALIFORNIA
DEPARTMENT OF FISH AND GAME - SAN JOAQUIN VALLEY SOUTHERN
SIERRA REGION AT THE FOLLOWING ADDRESS:**

California Department of Fish and Game
ATTN: Steve Juarez, Conservation Planning Supervisor
1234 E. Shaw Ave
Fresno, CA 93710

OR EMAIL THE COMPLETED FORM TO: sjuarez@dfg.ca.gov

*****ALL OBSERVATIONS OF BLUNT-NOSED LEOPARD LIZARDS AND OTHER SENSITIVE
SPECIES SHOULD BE PROMPTLY REPORTED TO THE CALIFORNIA NATURAL
DIVERSITY DATABASE. SUBMISSION OF THIS FORM DOES NOT ENTAIL REPORTING
TO THE DATABASE, WHICH IS MAINTAINED BY THE WILDLIFE AND HABITAT DATA
ANALYSIS BRANCH OF THE DEPARTMENT OF FISH AND GAME.**

Adult #5-7

2003 Blunt-nosed Leopard Lizard
(*Gambelia sila*)
Survey Reporting Form

SURVEY DATE(S) (up to 5 days of surveys from a single site can be reported on this form): 6/21/08 - 6/23/08

SURVEYORS: Sundeep Amin, Tim Witman, Laurie Bono (2)
Tancy Bissonette (Woody Moise (2) replaced Laurie on 6/23)

SITE NAME AND LOCATION [Please also attach or sketch a map on back]:

County: Fresno **Landowner/Mgr:** Private

Quad Name: Guajarral Hills **Elevation:** 570 - 640 feet

T 21 S R 16 E Entire **Sections** 1 & 2

UTM Zone (10,11): 11 **Datum:** NAD83 (NAD83, NAD27, WGS84, other)

Source (GPS, map & type, other): Maps, GPS **Point Accuracy** ± 3 meters

UTM COORDINATES: See Map

SURVEY RESULTS:

DATE	START TIME	END TIME	START AIR TEMP	END AIR TEMP	# BNLL OBSERVED Adults/Hatchlings	APPROXIMATE DISTANCE COVERED (IN TENTHS OF A MILE)
6/21/08	6:20	7:52	77°F	90°F	0 / 0	3.5 miles
6/22/08	7:18	9:02	77°F	90°F	0 / 0	3.5 miles
6/23/08	8:04	9:32	77°F	84°F	0 / 0	3.5 miles
					1	
					1	

TOTAL NUMBER OF OBSERVATIONS FOR THE THREE MOST COMMON LIZARDS (combined numbers for all survey days):

Species common sideblotch Number observed: 57

Species California whiptail Number observed: 33

Species _____ Number observed: _____

BNLL Survey Site Name: San Joaquin Solar 1 & 2

Adult # 5

6

7

HABITAT DESCRIPTION: Estimation of average vegetative cover on the site
[circle the correct value]:

% Shrub: 0-10%, 10-25%, 25-50%, 50-75%, >75%% Forb: 0-10%, 10-25%, 25-50%, 50-75%, >75%% Grass: 0-10%, 10-25%, 25-50%, 50-75%, >75%% Bare Ground: 0-10%, 10-25%, 25-50%, 50-75%, >75%

HABITAT DESCRIPTION: General description of vegetation community, overall habitat quality, surrounding land use, threats, etc: Disturbed saltmarsh

scrub w/ non-native grassland interspersed throughout
the transmission line alignment. No habitat present
on Project site. Surrounding land use is high density
of agriculture.

OTHER NOTES ABOUT THE SURVEY/HABITAT/ SPECIES/ETC:

Larrie Bono visited CDFG - approved reference
site during those 3 days.

PLEASE RETURN THIS SURVEY REPORTING FORM TO THE CALIFORNIA DEPARTMENT OF FISH AND GAME – SAN JOAQUIN VALLEY SOUTHERN SIERRA REGION AT THE FOLLOWING ADDRESS:

California Department of Fish and Game
ATTN: Steve Juarez, Conservation Planning Supervisor
1234 E. Shaw Ave
Fresno, CA 93710

OR EMAIL THE COMPLETED FORM TO: sjuarez@dfg.ca.gov

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2003 Blunt-nosed Leopard Lizard

Adult # 8-11

(*Gambelia sila*)

Survey Reporting Form

SURVEY DATE(S) (up to 5 days of surveys from a single site can be reported on this form): 6/30/08 - 7/03/08

SURVEYORS: Pick Bailey, Yancy Bissonette, Woody Moise (2), & Laurie Bono (2)

SITE NAME AND LOCATION [Please also attach or sketch a map on back]:

County: Fresno Landowner/Mgr: Private

Quad Name: Guajarral Hills Elevation: 570 - 640 feet

T 21 S R 16 E Entire Sections 1 & 2

UTM Zone (10,11): 11 Datum: NAD83 (NAD83, NAD27, WGS84, other)

Source (GPS, map & type, other): Maps, GPS Point Accuracy ± 3 meters

UTM COORDINATES: See Map

SURVEY RESULTS:

DATE	START TIME	END TIME	START AIR TEMP	END AIR TEMP	# BNLL OBSERVED Adults/Hatchlings	APPROXIMATE DISTANCE COVERED (IN TENTHS OF A MILE)
6/30/08	8:15	9:52	77°F	88°F	0 / 0	3.5 miles
7/01/08	8:45	10:25	79°F	87°F	0 / 0	3.5 miles
7/02/08	8:27	10:11	79°F	86°F	0 / 0	3.5 miles
7/03/08	8:20	9:39	79°F	82°F	0 / 0	3.5 miles
					1	

TOTAL NUMBER OF OBSERVATIONS FOR THE THREE MOST COMMON LIZARDS (combined numbers for all survey days):

Species common side blotch Number observed: 207

Species California whiptail Number observed: 49

Species western fence lizard Number observed: 1

BNLL Survey Site Name: San Joaquin Solar 1 & 2

Adult #8

#9

#10

#11

HABITAT DESCRIPTION: Estimation of average vegetative cover on the site
[circle the correct value]:

% Shrub: 0-10%, 10-25%, 25-50%, 50-75%, >75%% Forb: 0-10%, 10-25%, 25-50%, 50-75%, >75%% Grass: 0-10%, 10-25%, 25-50%, 50-75%, >75%% Bare Ground: 0-10%, 10-25%, 25-50%, 50-75%, >75%

HABITAT DESCRIPTION: General description of vegetation community, overall habitat quality, surrounding land use, threats, etc: Disturbed saltmarsh

scrub w/ non-native grassland interspersed throughout
the transmission line alignment. No habitat present
on Project site. Surrounding land use is high density
of agriculture.

OTHER NOTES ABOUT THE SURVEY/HABITAT/ SPECIES/ETC:

Laurie Bono visited a CDFG-approved reference
site during these 4 days.

**PLEASE RETURN THIS SURVEY REPORTING FORM TO THE CALIFORNIA
DEPARTMENT OF FISH AND GAME - SAN JOAQUIN VALLEY SOUTHERN
SIERRA REGION AT THE FOLLOWING ADDRESS:**

California Department of Fish and Game
ATTN: Steve Juarez, Conservation Planning Supervisor
1234 E. Shaw Ave
Fresno, CA 93710

OR EMAIL THE COMPLETED FORM TO: sjuarez@dfg.ca.gov

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ANALYSIS BRANCH OF THE DEPARTMENT OF FISH AND GAME.**

Adult #12

2003 Blunt-nosed Leopard Lizard
(*Gambelia sila*)
Survey Reporting Form

SURVEY DATE(S) (up to 5 days of surveys from a single site can be reported on this form): July 9, 2008

SURVEYORS: Woody Moise (2), Lari Bono (2),
Yancey Bissonnette

SITE NAME AND LOCATION [Please also attach or sketch a map on back]:

County: Fresno **Landowner/Mgr:** Private

Quad Name: Guajarral Hills **Elevation:** 570 - 640 feet

T 21 S **R** 16 E **Entire** **Sections** 1 & 2

UTM Zone (10,11): 11 **Datum:** NAD83 (NAD83, NAD27, WGS84, other)

Source (GPS, map & type, other): Maps, GPS **Point Accuracy** ± 3 meters

UTM COORDINATES: See Map

SURVEY RESULTS:

DATE	START TIME	END TIME	START AIR TEMP	END AIR TEMP	# BNLL OBSERVED Adults/Hatchlings	APPROXIMATE DISTANCE COVERED (IN TENTHS OF A MILE)
7/9/08	0650	0747	26°C	27°C	010	3.5 miles
					1	
					1	
					1	
					1	

TOTAL NUMBER OF OBSERVATIONS FOR THE THREE MOST COMMON LIZARDS (combined numbers for all survey days):

Species Uta stansburiana Number observed: 1

Species Western Whiptail Number observed: 1

Species _____ Number observed: _____

#12

HABITAT DESCRIPTION: Estimation of average vegetative cover on the site
[circle the correct value]:

% Shrub: 0-10%, 10-25%, 25-50%, 50-75%, >75%
% Forb: 0-10%, 10-25%, 25-50%, 50-75%, >75%
% Grass: 0-10%, 10-25%, 25-50%, 50-75%, >75%
% Bare Ground: 0-10%, 10-25%, 25-50%, 50-75%, >75%

HABITAT DESCRIPTION: General description of vegetation community, overall habitat quality, surrounding land use, threats, etc: Disturbed saltbush

scrub w/ non-native grassland interspersed throughout
the transmission line alignment. No habitat present
on Project site. Surrounding land use is high density
of agriculture.

OTHER NOTES ABOUT THE SURVEY/HABITAT/ SPECIES/ETC:

Reference site visited during this survey week.
No BNLL observed.

**PLEASE RETURN THIS SURVEY REPORTING FORM TO THE CALIFORNIA
DEPARTMENT OF FISH AND GAME – SAN JOAQUIN VALLEY SOUTHERN
SIERRA REGION AT THE FOLLOWING ADDRESS:**

California Department of Fish and Game
ATTN: Steve Juarez, Conservation Planning Supervisor
1234 E. Shaw Ave
Fresno, CA 93710

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ANALYSIS BRANCH OF THE DEPARTMENT OF FISH AND GAME.**

Surv. #142

2003 Blunt-nosed Leopard Lizard
(*Gambelia sila*)
Survey Reporting Form

SURVEY DATE(S) (up to 5 days of surveys from a single site can be reported on this form): 8/9/08 - 8/10/08

SURVEYORS: Brittany Benson, Sundeep Amin, Yancy Bissonette, Lauri Bono (2)

SITE NAME AND LOCATION [Please also attach or sketch a map on back]:

County: Fresno **Landowner/Mgr:** Private

Quad Name: Guajarral Hills **Elevation:** 570 - 640 feet

T 21 **S** R 16 **E** Entire **Sections** 1 & 2

UTM Zone (10,11): 11 **Datum:** NAD83 (NAD83, NAD27, WGS84, other)

Source (GPS, map & type, other): Maps, GPS **Point Accuracy** ± 3 meters

UTM COORDINATES: See Map

SURVEY RESULTS:

DATE	START TIME	END TIME	START AIR TEMP	END AIR TEMP	# BNLL OBSERVED Adults/Hatchlings	APPROXIMATE DISTANCE COVERED (IN TENTHS OF A MILE)
8/09/08	8:25	10:10	77°F	91°F	0 / 0	3.5 miles
8/10/08	8:38	10:10	77°F	86°F	0 / 0	3.5 miles
					1	
					1	
					1	

TOTAL NUMBER OF OBSERVATIONS FOR THE THREE MOST COMMON LIZARDS (combined numbers for all survey days):

Species common side blotch Number observed: 28

Species _____ Number observed: _____

Species _____ Number observed: _____

BNLL Survey Site Name: San Joaquin Solar 1 & 2
Juvenile #1HABITAT DESCRIPTION: Estimation of average vegetative cover on the site
[circle the correct value]: #2

% Shrub: 0-10%, 10-25%, 25-50%, 50-75%, >75%
% Forb: 0-10%, 10-25%, 25-50%, 50-75%, >75%
% Grass: 0-10%, 10-25%, 25-50%, 50-75%, >75%
% Bare Ground: 0-10%, 10-25%, 25-50%, 50-75%, >75%

HABITAT DESCRIPTION: General description of vegetation community, overall habitat quality, surrounding land use, threats, etc: Disturbed saltbush scrub w/ non-native grassland interspersed throughout the transmission line alignment. No habitat present on Project site. Surrounding land use is high density of agriculture.

OTHER NOTES ABOUT THE SURVEY/HABITAT/ SPECIES/ETC:

Laurie Bono visited CDFG-approved reference site during these 2 days.

PLEASE RETURN THIS SURVEY REPORTING FORM TO THE CALIFORNIA DEPARTMENT OF FISH AND GAME – SAN JOAQUIN VALLEY SOUTHERN SIERRA REGION AT THE FOLLOWING ADDRESS:

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Fresno, CA 93710

OR EMAIL THE COMPLETED FORM TO: sjuarez@dfg.ca.gov

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2003 Blunt-nosed Leopard Lizard
(*Gambelia sila*)
Survey Reporting Form

SURVEY DATE(S) (up to 5 days of surveys from a single site can be reported on this form): 8/19/08 - 8/21/08

SURVEYORS: Tancy Bissonette, Laurie Bono (2)
Alyssa Berry, Cletis England

SITE NAME AND LOCATION [Please also attach or sketch a map on back]:

County: Fresno **Landowner/Mgr:** Private

Quad Name: Guajarral Hills **Elevation:** 570 - 640 feet

T 21 **S** R 16 **E** Entire **Sections** 1 & 2

UTM Zone (10,11): 11 **Datum:** NAD83 (NAD83, NAD27, WGS84, other)

Source (GPS, map & type, other): Maps, GPS **Point Accuracy** ± 3 meters

UTM COORDINATES: See Map

SURVEY RESULTS:

DATE	START TIME	END TIME	START AIR TEMP	END AIR TEMP	# BNLL OBSERVED Adults/Hatchlings	APPROXIMATE DISTANCE COVERED (IN TENTHS OF A MILE)
8/19/08	7:20	10:45	77°F	81°F	0 1 0	3.5 miles
8/20/08	8:10	10:00	77°F	84°F	0 1 0	3.5 miles
8/21/08	8:25	10:20	77°F	86°F	0 1 0	3.5 miles
					1	
					1	

TOTAL NUMBER OF OBSERVATIONS FOR THE THREE MOST COMMON LIZARDS (combined numbers for all survey days):

Species common side blotch Number observed: 201

Species California whiptail Number observed: 31

Species _____ Number observed: _____

BNLL Survey Site Name: San Joaquin Solar 1 & 2

Juvenile #3

#4

#5

HABITAT DESCRIPTION: Estimation of average vegetative cover on the site
[circle the correct value]:% Shrub: 0-10%, 10-25%, 25-50%, 50-75%, >75%% Forb: 0-10%, 10-25%, 25-50%, 50-75%, >75%% Grass: 0-10%, 10-25%, 25-50%, 50-75%, >75%% Bare Ground: 0-10%, 10-25%, 25-50%, 50-75%, >75%**HABITAT DESCRIPTION:** General description of vegetation community, overall habitat quality, surrounding land use, threats, etc: Disturbed saltbushscrub w/ non-native grassland interspersed throughout
the transmission line alignment. No habitat present
on Project site. Surrounding land use is high density
of agriculture.**OTHER NOTES ABOUT THE SURVEY/HABITAT/ SPECIES/ETC:**Laurie Bono visited a CDFG-approved reference
site during these 3 days.**PLEASE RETURN THIS SURVEY REPORTING FORM TO THE CALIFORNIA
DEPARTMENT OF FISH AND GAME – SAN JOAQUIN VALLEY SOUTHERN
SIERRA REGION AT THE FOLLOWING ADDRESS:**California Department of Fish and Game
ATTN: Steve Juarez, Conservation Planning Supervisor
1234 E. Shaw Ave
Fresno, CA 93710**OR EMAIL THE COMPLETED FORM TO: sjuarez@dfg.ca.gov*******ALL OBSERVATIONS OF BLUNT-NOSED LEOPARD LIZARDS AND OTHER SENSITIVE
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History for KCACALIF2

California Valley, California Valley, CA — [Current Conditions](#)

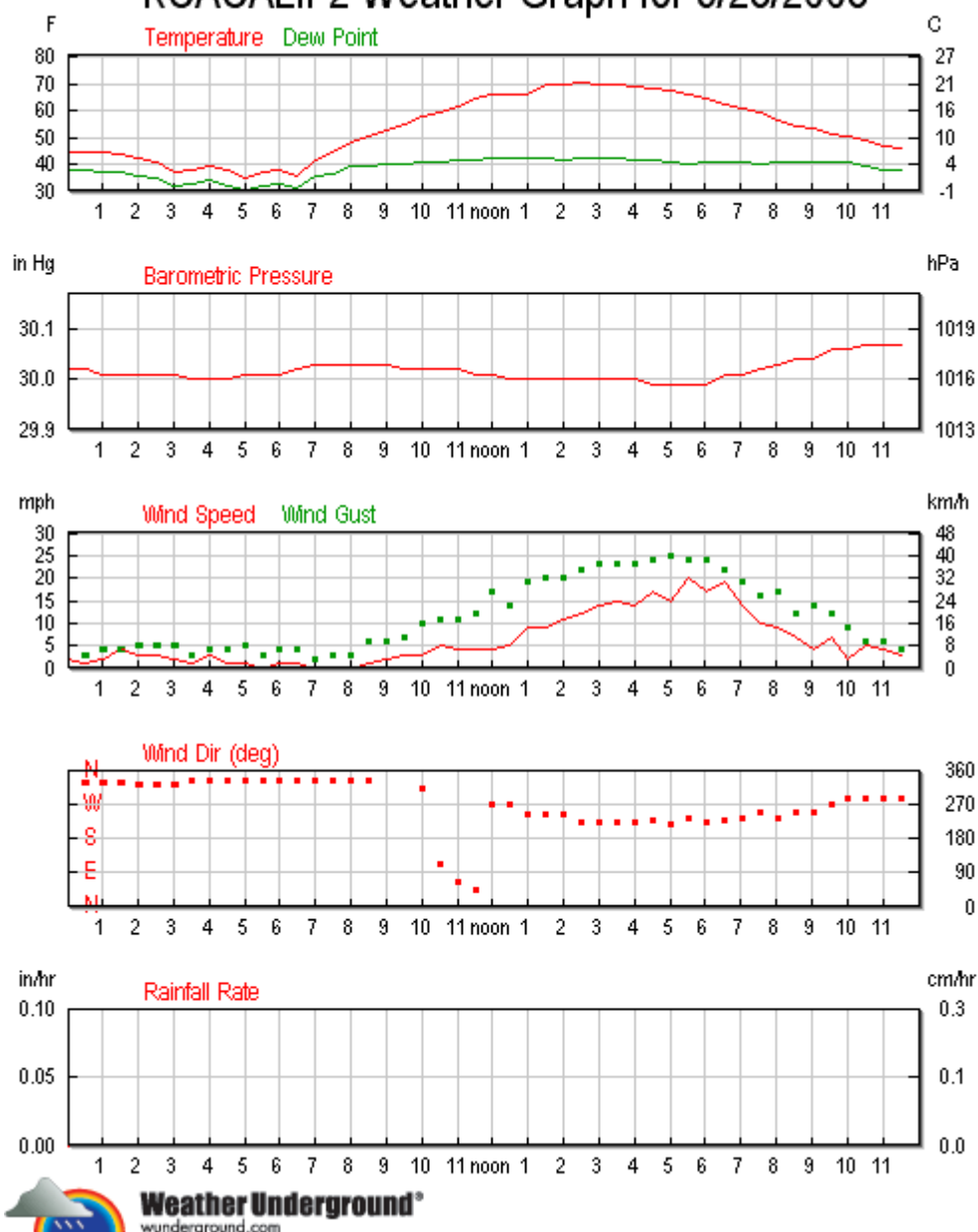
Daily Summary for May 28, 2008

	Current:	High:	Low:	Average:
Temperature:	86.7 °F / 30.4 °C	70.4 °F / 21.3 °C	34.9 °F / 1.6 °C	52.0 °F / 11.1 °C
Dew Point:	56.6 °F / 13.7 °C	42.5 °F / 5.8 °C	30.3 °F / -0.9 °C	38.3 °F / 3.5 °C
Humidity:	36%	83%	36%	62%
Wind Speed:	0.0mph / 0.0km/h /	20.0mph / 32.2km/h	-	5.6mph / 9.1km/h
Wind Gust:	7.0mph / 11.3km/h /	25.0mph / 40.2km/h	-	-
Wind:	WNW	-	-	WSW
Pressure:	29.92in / 1013.1hPa	30.07in / 1018.2hPa	29.99in / 1015.5hPa	-
Precipitation:	0.00in / 0.0mm			

Statistics for the rest of the month:

	High:	Low:	Average:
Temperature:	100.1 °F / 37.8 °C	29.2 °F / -1.6 °C	60.4 °F / 15.8 °C
Dew Point:	51.8 °F / 11.0 °C	19.3 °F / -7.1 °C	37.4 °F / 3.0 °C
Humidity:	94.0%	13.0%	48.0%
Wind Speed:	28.0mph / 45.1km/h from the SW	-	5.8mph / 9.3km/h
Wind Gust:	33.0mph / 53.1km/h from the North	-	-
Wind:	-	-	WSW
Pressure:	30.10in / 1019.2hPa	29.45in / 997.2hPa	-
Precipitation:	0.01in / 0.3mm		

KCACALIF2 Weather Graph for 5/28/2008



Tabular Data for May 28, 2008

Time	Temperature	Dew Point	Pressure	Wind	Wind Speed	Wind Gust	Humidity	Rainfall Rate (Hourly)
00:00	44.7 °F / 7.1 °C	37.6 °F / 3.1 °C	30.02in / 1016.5hPa	NNW	2mph / 3.2km/h	3mph / 4.8km/h	76%	0.00in / 0.0mm
00:02	44.7 °F / 7.1 °C	37.6 °F / 3.1 °C	30.02in / 1016.5hPa	NNW	2mph / 3.2km/h	3mph / 4.8km/h	76%	0.00in / 0.0mm
00:30	44.6 °F / 7.0 °C	37.8 °F / 3.2 °C	30.02in / 1016.5hPa	NNW	1mph / 1.6km/h	3mph / 4.8km/h	77%	0.00in / 0.0mm
00:32	44.6 °F / 7.0 °C	37.8 °F / 3.2 °C	30.02in / 1016.5hPa	NNW	1mph / 1.6km/h	3mph / 4.8km/h	77%	0.00in / 0.0mm
01:00	44.1 °F / 6.7 °C	36.7 °F / 2.6 °C	30.01in / 1016.1hPa	NNW	2mph / 3.2km/h	4mph / 6.4km/h	75%	0.00in / 0.0mm
	44.1 °F /	36.7 °F /	30.01in /		2mph /	4mph /		0.00in /

01:02	6.7 °C	2.6 °C	1016.1 hPa	NNW	3.2 km/h	6.4 km/h	75%	0.0 mm
01:30	44.0 °F / 6.7 °C	37.3 °F / 2.9 °C	30.01 in / 1016.1 hPa	NNW	4 mph / 6.4 km/h	4 mph / 6.4 km/h	77%	0.00 in / 0.0 mm
01:32	44.0 °F / 6.7 °C	37.3 °F / 2.9 °C	30.01 in / 1016.1 hPa	NNW	4 mph / 6.4 km/h	4 mph / 6.4 km/h	77%	0.00 in / 0.0 mm
02:00	42.5 °F / 5.8 °C	35.2 °F / 1.8 °C	30.01 in / 1016.1 hPa	NNW	3 mph / 4.8 km/h	5 mph / 8.0 km/h	75%	0.00 in / 0.0 mm
02:02	42.5 °F / 5.8 °C	35.2 °F / 1.8 °C	30.01 in / 1016.1 hPa	NNW	3 mph / 4.8 km/h	5 mph / 8.0 km/h	75%	0.00 in / 0.0 mm
02:30	41.1 °F / 5.1 °C	34.8 °F / 1.6 °C	30.01 in / 1016.1 hPa	NNW	3 mph / 4.8 km/h	5 mph / 8.0 km/h	78%	0.00 in / 0.0 mm
02:32	41.1 °F / 5.1 °C	34.8 °F / 1.6 °C	30.01 in / 1016.1 hPa	NNW	3 mph / 4.8 km/h	5 mph / 8.0 km/h	78%	0.00 in / 0.0 mm
03:00	37.4 °F / 3.0 °C	32.1 °F / 0.1 °C	30.01 in / 1016.1 hPa	NNW	2 mph / 3.2 km/h	5 mph / 8.0 km/h	81%	0.00 in / 0.0 mm
03:02	37.4 °F / 3.0 °C	32.1 °F / 0.1 °C	30.01 in / 1016.1 hPa	NNW	2 mph / 3.2 km/h	5 mph / 8.0 km/h	81%	0.00 in / 0.0 mm
03:30	37.5 °F / 3.1 °C	32.5 °F / 0.3 °C	30.00 in / 1015.8 hPa	NNW	1 mph / 1.6 km/h	3 mph / 4.8 km/h	82%	0.00 in / 0.0 mm
04:00	38.9 °F / 3.8 °C	34.2 °F / 1.2 °C	30.00 in / 1015.8 hPa	NNW	3 mph / 4.8 km/h	4 mph / 6.4 km/h	83%	0.00 in / 0.0 mm
04:30	38.1 °F / 3.4 °C	32.2 °F / 0.1 °C	30.00 in / 1015.8 hPa	NNW	1 mph / 1.6 km/h	4 mph / 6.4 km/h	79%	0.00 in / 0.0 mm
05:00	34.9 °F / 1.6 °C	30.3 °F / -0.9 °C	30.01 in / 1016.1 hPa	NNW	1 mph / 1.6 km/h	5 mph / 8.0 km/h	83%	0.00 in / 0.0 mm
05:30	37.1 °F / 2.8 °C	32.1 °F / 0.1 °C	30.01 in / 1016.1 hPa	Calm		3 mph / 4.8 km/h	82%	0.00 in / 0.0 mm
06:00	37.5 °F / 3.1 °C	32.5 °F / 0.3 °C	30.01 in / 1016.1 hPa	NNW	1 mph / 1.6 km/h	4 mph / 6.4 km/h	82%	0.00 in / 0.0 mm
06:30	35.4 °F / 1.9 °C	30.8 °F / -0.7 °C	30.02 in / 1016.5 hPa	NNW	1 mph / 1.6 km/h	4 mph / 6.4 km/h	83%	0.00 in / 0.0 mm
07:00	41.6 °F / 5.3 °C	35.6 °F / 2.0 °C	30.03 in / 1016.8 hPa	Calm		2 mph / 3.2 km/h	79%	0.00 in / 0.0 mm
07:30	44.1 °F / 6.7 °C	36.4 °F / 2.4 °C	30.03 in / 1016.8 hPa	Calm		3 mph / 4.8 km/h	74%	0.00 in / 0.0 mm
08:00	48.4 °F / 9.1 °C	39.1 °F / 3.9 °C	30.03 in / 1016.8 hPa	Calm		3 mph / 4.8 km/h	70%	0.00 in / 0.0 mm
08:30	50.2 °F / 10.1 °C	39.3 °F / 4.1 °C	30.03 in / 1016.8 hPa	NNW	1 mph / 1.6 km/h	6 mph / 9.7 km/h	66%	0.00 in / 0.0 mm
09:00	52.6 °F / 11.4 °C	40.0 °F / 4.4 °C	30.03 in / 1016.8 hPa	North	2 mph / 3.2 km/h	6 mph / 9.7 km/h	62%	0.00 in / 0.0 mm
09:30	55.1 °F / 12.8 °C	39.7 °F / 4.3 °C	30.02 in / 1016.5 hPa	North	3 mph / 4.8 km/h	7 mph / 11.3 km/h	56%	0.00 in / 0.0 mm
10:00	58.1 °F / 14.5 °C	41.1 °F / 5.1 °C	30.02 in / 1016.5 hPa	NW	3 mph / 4.8 km/h	10 mph / 16.1 km/h	53%	0.00 in / 0.0 mm
10:30	59.5 °F / 15.3 °C	40.9 °F / 4.9 °C	30.02 in / 1016.5 hPa	ESE	5 mph / 8.0 km/h	11 mph / 17.7 km/h	50%	0.00 in / 0.0 mm
11:00	61.4 °F / 16.3 °C	41.6 °F / 5.3 °C	30.02 in / 1016.5 hPa	ENE	4 mph / 6.4 km/h	11 mph / 17.7 km/h	48%	0.00 in / 0.0 mm
	64.7 °F /	41.7 °F /	30.01 in /		4 mph /	12 mph /		0.00 in /

11:30	18.2 °C	5.4 °C	1016.1 hPa	NE	6.4 km/h	19.3 km/h	43%	0.0 mm
12:00	65.8 °F / 18.8 °C	42.1 °F / 5.6 °C	30.01 in / 1016.1 hPa	West	4 mph / 6.4 km/h	17 mph / 27.4 km/h	42%	0.00 in / 0.0 mm
12:30	65.6 °F / 18.7 °C	42.5 °F / 5.8 °C	30.00 in / 1015.8 hPa	West	5 mph / 8.0 km/h	14 mph / 22.5 km/h	43%	0.00 in / 0.0 mm
13:00	66.3 °F / 19.1 °C	42.5 °F / 5.8 °C	30.00 in / 1015.8 hPa	WSW	9 mph / 14.5 km/h	19 mph / 30.6 km/h	42%	0.00 in / 0.0 mm
13:30	69.4 °F / 20.8 °C	42.0 °F / 5.6 °C	30.00 in / 1015.8 hPa	WSW	9 mph / 14.5 km/h	20 mph / 32.2 km/h	37%	0.00 in / 0.0 mm
14:00	69.9 °F / 21.1 °C	41.8 °F / 5.4 °C	30.00 in / 1015.8 hPa	WSW	11 mph / 17.7 km/h	20 mph / 32.2 km/h	36%	0.00 in / 0.0 mm
14:30	70.4 °F / 21.3 °C	42.2 °F / 5.7 °C	30.00 in / 1015.8 hPa	SW	12 mph / 19.3 km/h	22 mph / 35.4 km/h	36%	0.00 in / 0.0 mm
15:00	69.4 °F / 20.8 °C	42.0 °F / 5.6 °C	30.00 in / 1015.8 hPa	SW	14 mph / 22.5 km/h	23 mph / 37.0 km/h	37%	0.00 in / 0.0 mm
15:30	69.3 °F / 20.7 °C	41.9 °F / 5.5 °C	30.00 in / 1015.8 hPa	SW	15 mph / 24.1 km/h	23 mph / 37.0 km/h	37%	0.00 in / 0.0 mm
16:00	68.8 °F / 20.4 °C	41.5 °F / 5.3 °C	30.00 in / 1015.8 hPa	SW	14 mph / 22.5 km/h	23 mph / 37.0 km/h	37%	0.00 in / 0.0 mm
16:32	67.8 °F / 19.9 °C	41.3 °F / 5.2 °C	29.99 in / 1015.5 hPa	SW	17 mph / 27.4 km/h	24 mph / 38.6 km/h	38%	0.00 in / 0.0 mm
17:02	67.6 °F / 19.8 °C	41.1 °F / 5.1 °C	29.99 in / 1015.5 hPa	SW	15 mph / 24.1 km/h	25 mph / 40.2 km/h	38%	0.00 in / 0.0 mm
17:33	65.9 °F / 18.8 °C	40.3 °F / 4.6 °C	29.99 in / 1015.5 hPa	WSW	20 mph / 32.2 km/h	24 mph / 38.6 km/h	39%	0.00 in / 0.0 mm
18:02	64.2 °F / 17.9 °C	40.7 °F / 4.8 °C	29.99 in / 1015.5 hPa	SW	17 mph / 27.4 km/h	24 mph / 38.6 km/h	42%	0.00 in / 0.0 mm
18:32	62.0 °F / 16.7 °C	40.4 °F / 4.7 °C	30.01 in / 1016.1 hPa	SW	19 mph / 30.6 km/h	22 mph / 35.4 km/h	45%	0.00 in / 0.0 mm
19:03	61.1 °F / 16.2 °C	40.7 °F / 4.8 °C	30.01 in / 1016.1 hPa	SW	14 mph / 22.5 km/h	19 mph / 30.6 km/h	47%	0.00 in / 0.0 mm
19:32	59.0 °F / 15.0 °C	39.9 °F / 4.4 °C	30.02 in / 1016.5 hPa	WSW	10 mph / 16.1 km/h	16 mph / 25.7 km/h	49%	0.00 in / 0.0 mm
20:02	56.3 °F / 13.5 °C	40.8 °F / 4.9 °C	30.03 in / 1016.8 hPa	SW	9 mph / 14.5 km/h	17 mph / 27.4 km/h	56%	0.00 in / 0.0 mm
20:32	54.2 °F / 12.3 °C	40.6 °F / 4.8 °C	30.04 in / 1017.2 hPa	WSW	7 mph / 11.3 km/h	12 mph / 19.3 km/h	60%	0.00 in / 0.0 mm
21:02	53.4 °F / 11.9 °C	40.7 °F / 4.8 °C	30.04 in / 1017.2 hPa	WSW	4 mph / 6.4 km/h	14 mph / 22.5 km/h	62%	0.00 in / 0.0 mm
21:32	50.9 °F / 10.5 °C	40.7 °F / 4.8 °C	30.06 in / 1017.8 hPa	West	7 mph / 11.3 km/h	12 mph / 19.3 km/h	68%	0.00 in / 0.0 mm
22:02	50.7 °F / 10.4 °C	40.9 °F / 4.9 °C	30.06 in / 1017.8 hPa	WNW	2 mph / 3.2 km/h	9 mph / 14.5 km/h	69%	0.00 in / 0.0 mm
22:32	48.7 °F / 9.3 °C	39.4 °F / 4.1 °C	30.07 in / 1018.2 hPa	WNW	5 mph / 8.0 km/h	6 mph / 9.7 km/h	70%	0.00 in / 0.0 mm
23:02	46.9 °F / 8.3 °C	37.6 °F / 3.1 °C	30.07 in / 1018.2 hPa	WNW	4 mph / 6.4 km/h	6 mph / 9.7 km/h	70%	0.00 in / 0.0 mm
23:32	45.9 °F / 7.7 °C	37.8 °F / 3.2 °C	30.07 in / 1018.2 hPa	WNW	3 mph / 4.8 km/h	4 mph / 6.4 km/h	73%	0.00 in / 0.0 mm

History for KCACALIF2

California Valley, California Valley, CA — [Current Conditions](#)

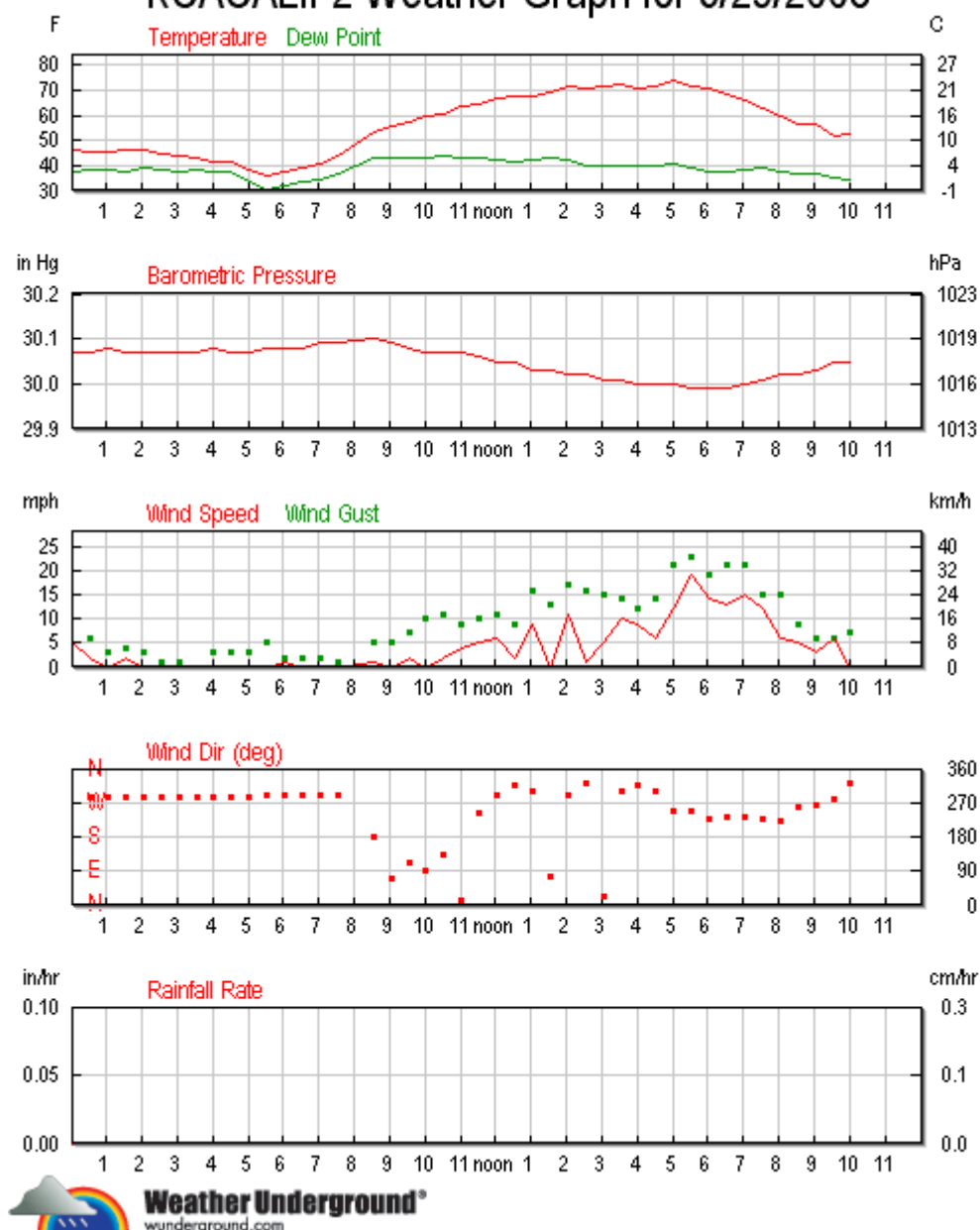
Daily Summary for May 29, 2008

	Current:	High:	Low:	Average:
Temperature:	86.7 °F / 30.4 °C	73.9 °F / 23.3 °C	36.2 °F / 2.3 °C	56.5 °F / 13.6 °C
Dew Point:	56.6 °F / 13.7 °C	43.5 °F / 6.4 °C	30.3 °F / -0.9 °C	38.8 °F / 3.8 °C
Humidity:	36%	87%	30%	55%
Wind Speed:	0.0mph / 0.0km/h /	19.0mph / 30.6km/h	-	4.3mph / 6.9km/h
Wind Gust:	7.0mph / 11.3km/h /	23.0mph / 37.0km/h	-	-
Wind:	WNW	-	-	West
Pressure:	29.92in / 1013.1hPa	30.10in / 1019.2hPa	29.99in / 1015.5hPa	-
Precipitation:	0.00in / 0.0mm			

Statistics for the rest of the month:

	High:	Low:	Average:
Temperature:	100.1 °F / 37.8 °C	29.2 °F / -1.6 °C	60.4 °F / 15.8 °C
Dew Point:	51.8 °F / 11.0 °C	19.3 °F / -7.1 °C	37.4 °F / 3.0 °C
Humidity:	94.0%	13.0%	48.0%
Wind Speed:	28.0mph / 45.1km/h from the SW	-	5.8mph / 9.3km/h
Wind Gust:	33.0mph / 53.1km/h from the North	-	-
Wind:	-	-	WSW
Pressure:	30.10in / 1019.2hPa	29.45in / 997.2hPa	-
Precipitation:	0.01in / 0.3mm		

KCACALIF2 Weather Graph for 5/29/2008



Tabular Data for May 29, 2008

Time	Temperature	Dew Point	Pressure	Wind	Wind Speed	Wind Gust	Humidity	Rainfall Rate (Hourly)
00:02	46.5 °F / 8.1 °C	37.6 °F / 3.1 °C	30.07in / 1018.2hPa	WNW	5mph / 8.0km/h	7mph / 11.3km/h	71%	0.00in / 0.0mm
00:32	45.6 °F / 7.6 °C	38.2 °F / 3.4 °C	30.07in / 1018.2hPa	WNW	2mph / 3.2km/h	6mph / 9.7km/h	75%	0.00in / 0.0mm
01:02	45.4 °F / 7.4 °C	38.6 °F / 3.7 °C	30.08in / 1018.5hPa	Calm		3mph / 4.8km/h	77%	0.00in / 0.0mm
01:32	46.4 °F / 8.0 °C	37.9 °F / 3.3 °C	30.07in / 1018.2hPa	WNW	2mph / 3.2km/h	4mph / 6.4km/h	72%	0.00in / 0.0mm
02:02	46.0 °F / 7.8 °C	38.9 °F / 3.8 °C	30.07in / 1018.2hPa	Calm		3mph / 4.8km/h	76%	0.00in / 0.0mm
	44.7 °F /	38.6 °F /	30.07in /			1mph /		0.00in /

02:32	7.1 °C	3.7 °C	1018.2hPa	Calm		1.6km/h	79%	0.0mm
03:02	43.6 °F / 6.4 °C	37.5 °F / 3.1 °C	30.07in / 1018.2hPa	Calm		1mph / 1.6km/h	79%	0.00in / 0.0mm
03:32	43.0 °F / 6.1 °C	38.2 °F / 3.4 °C	30.07in / 1018.2hPa	Calm		0mph / 0.0km/h	83%	0.00in / 0.0mm
04:02	41.8 °F / 5.4 °C	37.3 °F / 2.9 °C	30.08in / 1018.5hPa	Calm		3mph / 4.8km/h	84%	0.00in / 0.0mm
04:32	41.5 °F / 5.3 °C	37.9 °F / 3.3 °C	30.07in / 1018.2hPa	Calm		3mph / 4.8km/h	87%	0.00in / 0.0mm
05:02	38.5 °F / 3.6 °C	33.2 °F / 0.7 °C	30.07in / 1018.2hPa	Calm		3mph / 4.8km/h	81%	0.00in / 0.0mm
05:32	36.2 °F / 2.3 °C	30.3 °F / -0.9 °C	30.08in / 1018.5hPa	Calm		5mph / 8.0km/h	79%	0.00in / 0.0mm
06:02	37.5 °F / 3.1 °C	32.2 °F / 0.1 °C	30.08in / 1018.5hPa	WNW	1mph / 1.6km/h	2mph / 3.2km/h	81%	0.00in / 0.0mm
06:32	38.8 °F / 3.8 °C	33.2 °F / 0.7 °C	30.08in / 1018.5hPa	Calm		2mph / 3.2km/h	80%	0.00in / 0.0mm
07:02	40.9 °F / 4.9 °C	34.6 °F / 1.4 °C	30.09in / 1018.8hPa	Calm		2mph / 3.2km/h	78%	0.00in / 0.0mm
07:32	44.0 °F / 6.7 °C	36.6 °F / 2.6 °C	30.09in / 1018.8hPa	Calm		1mph / 1.6km/h	75%	0.00in / 0.0mm
08:32	53.6 °F / 12.0 °C	43.3 °F / 6.3 °C	30.10in / 1019.2hPa	South	1mph / 1.6km/h	5mph / 8.0km/h	68%	0.00in / 0.0mm
09:03	55.5 °F / 13.1 °C	43.1 °F / 6.2 °C	30.09in / 1018.8hPa	Calm		5mph / 8.0km/h	63%	0.00in / 0.0mm
09:32	57.6 °F / 14.2 °C	43.4 °F / 6.3 °C	30.08in / 1018.5hPa	ESE	2mph / 3.2km/h	7mph / 11.3km/h	59%	0.00in / 0.0mm
10:02	59.5 °F / 15.3 °C	43.3 °F / 6.3 °C	30.07in / 1018.2hPa	Calm		10mph / 16.1km/h	55%	0.00in / 0.0mm
10:32	60.7 °F / 15.9 °C	43.5 °F / 6.4 °C	30.07in / 1018.2hPa	SE	2mph / 3.2km/h	11mph / 17.7km/h	53%	0.00in / 0.0mm
11:02	64.0 °F / 17.8 °C	43.4 °F / 6.3 °C	30.07in / 1018.2hPa	North	4mph / 6.4km/h	9mph / 14.5km/h	47%	0.00in / 0.0mm
11:32	64.8 °F / 18.2 °C	43.0 °F / 6.1 °C	30.06in / 1017.8hPa	WSW	5mph / 8.0km/h	10mph / 16.1km/h	45%	0.00in / 0.0mm
12:02	67.1 °F / 19.5 °C	42.6 °F / 5.9 °C	30.05in / 1017.5hPa	WNW	6mph / 9.7km/h	11mph / 17.7km/h	41%	0.00in / 0.0mm
12:33	67.4 °F / 19.7 °C	41.6 °F / 5.3 °C	30.05in / 1017.5hPa	NW	2mph / 3.2km/h	9mph / 14.5km/h	39%	0.00in / 0.0mm
13:02	67.8 °F / 19.9 °C	42.6 °F / 5.9 °C	30.03in / 1016.8hPa	WNW	9mph / 14.5km/h	16mph / 25.7km/h	40%	0.00in / 0.0mm
13:32	68.9 °F / 20.5 °C	43.0 °F / 6.1 °C	30.03in / 1016.8hPa	Calm		13mph / 20.9km/h	39%	0.00in / 0.0mm
14:02	71.9 °F / 22.2 °C	42.0 °F / 5.6 °C	30.02in / 1016.5hPa	WNW	11mph / 17.7km/h	17mph / 27.4km/h	34%	0.00in / 0.0mm
14:32	70.8 °F / 21.6 °C	40.3 °F / 4.6 °C	30.02in / 1016.5hPa	NW	1mph / 1.6km/h	16mph / 25.7km/h	33%	0.00in / 0.0mm
15:02	71.5 °F / 21.9 °C	40.1 °F / 4.5 °C	30.01in / 1016.1hPa	NNE	5mph / 8.0km/h	15mph / 24.1km/h	32%	0.00in / 0.0mm
	72.5 °F /	40.2 °F /	30.01in /		10mph /	14mph /		0.00in /

15:32	22.5 °C	4.6 °C	1016.1 hPa	NW	16.1 km/h	22.5 km/h	31%	0.0 mm
16:02	70.6 °F / 21.4 °C	40.1 °F / 4.5 °C	30.00 in / 1015.8 hPa	NW	9 mph / 14.5 km/h	12 mph / 19.3 km/h	33%	0.00 in / 0.0 mm
16:32	71.3 °F / 21.8 °C	40.0 °F / 4.4 °C	30.00 in / 1015.8 hPa	WNW	6 mph / 9.7 km/h	14 mph / 22.5 km/h	32%	0.00 in / 0.0 mm
17:02	73.9 °F / 23.3 °C	40.5 °F / 4.7 °C	30.00 in / 1015.8 hPa	WSW	12 mph / 19.3 km/h	21 mph / 33.8 km/h	30%	0.00 in / 0.0 mm
17:32	72.0 °F / 22.2 °C	38.9 °F / 3.8 °C	29.99 in / 1015.5 hPa	WSW	19 mph / 30.6 km/h	23 mph / 37.0 km/h	30%	0.00 in / 0.0 mm
18:02	70.8 °F / 21.6 °C	37.9 °F / 3.3 °C	29.99 in / 1015.5 hPa	SW	14 mph / 22.5 km/h	19 mph / 30.6 km/h	30%	0.00 in / 0.0 mm
18:32	68.5 °F / 20.3 °C	37.5 °F / 3.1 °C	29.99 in / 1015.5 hPa	WSW	13 mph / 20.9 km/h	21 mph / 33.8 km/h	32%	0.00 in / 0.0 mm
19:02	66.4 °F / 19.1 °C	38.7 °F / 3.7 °C	30.00 in / 1015.8 hPa	SW	15 mph / 24.1 km/h	21 mph / 33.8 km/h	36%	0.00 in / 0.0 mm
19:32	63.0 °F / 17.2 °C	39.0 °F / 3.9 °C	30.01 in / 1016.1 hPa	SW	12 mph / 19.3 km/h	15 mph / 24.1 km/h	41%	0.00 in / 0.0 mm
20:02	59.6 °F / 15.3 °C	37.7 °F / 3.2 °C	30.02 in / 1016.5 hPa	SW	6 mph / 9.7 km/h	15 mph / 24.1 km/h	44%	0.00 in / 0.0 mm
20:33	56.5 °F / 13.6 °C	36.5 °F / 2.5 °C	30.02 in / 1016.5 hPa	West	5 mph / 8.0 km/h	9 mph / 14.5 km/h	47%	0.00 in / 0.0 mm
21:02	56.4 °F / 13.6 °C	36.4 °F / 2.4 °C	30.03 in / 1016.8 hPa	West	3 mph / 4.8 km/h	6 mph / 9.7 km/h	47%	0.00 in / 0.0 mm
21:33	52.0 °F / 11.1 °C	35.4 °F / 1.9 °C	30.05 in / 1017.5 hPa	West	6 mph / 9.7 km/h	6 mph / 9.7 km/h	53%	0.00 in / 0.0 mm
22:02	52.7 °F / 11.5 °C	34.1 °F / 1.2 °C	30.05 in / 1017.5 hPa	Calm		7 mph / 11.3 km/h	49%	0.00 in / 0.0 mm

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History for KCACALIF2

California Valley, California Valley, CA — [Current Conditions](#)

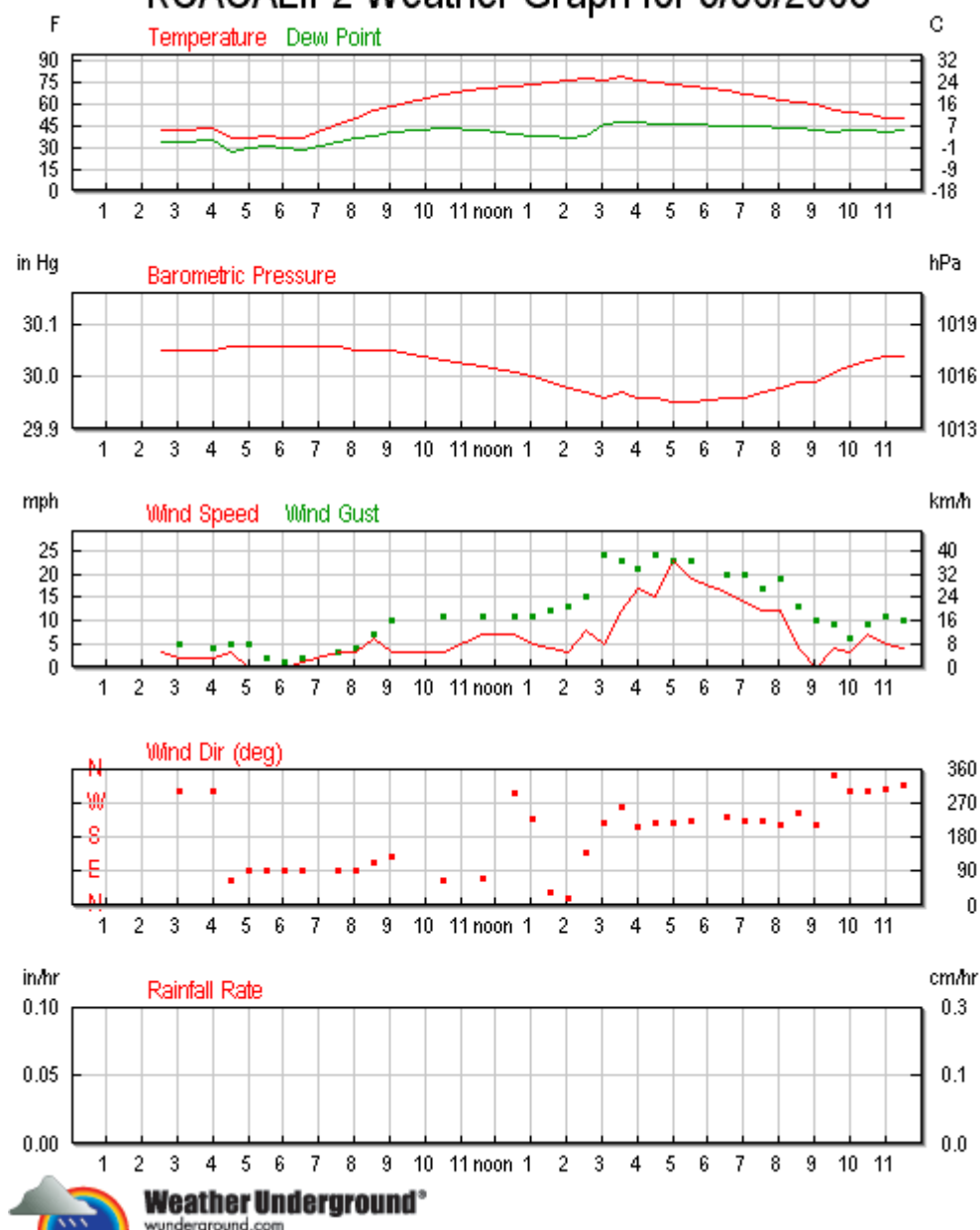
Daily Summary for May 30, 2008

	Current:	High:	Low:	Average:
Temperature:	86.7 °F / 30.4 °C	78.2 °F / 25.7 °C	36.5 °F / 2.5 °C	59.2 °F / 15.1 °C
Dew Point:	56.6 °F / 13.7 °C	46.8 °F / 8.2 °C	27.4 °F / -2.6 °C	39.6 °F / 4.2 °C
Humidity:	36%	76%	24%	52%
Wind Speed:	0.0mph / 0.0km/h /	23.0mph / 37.0km/h	-	6.5mph / 10.5km/h
Wind Gust:	7.0mph / 11.3km/h /	24.0mph / 38.6km/h	-	-
Wind:	WNW	-	-	SW
Pressure:	29.92in / 1013.1hPa	30.06in / 1017.8hPa	29.95in / 1014.1hPa	-
Precipitation:	0.00in / 0.0mm			

Statistics for the rest of the month:

	High:	Low:	Average:
Temperature:	100.1 °F / 37.8 °C	29.2 °F / -1.6 °C	60.4 °F / 15.8 °C
Dew Point:	51.8 °F / 11.0 °C	19.3 °F / -7.1 °C	37.4 °F / 3.0 °C
Humidity:	94.0%	13.0%	48.0%
Wind Speed:	28.0mph / 45.1km/h from the SW	-	5.8mph / 9.3km/h
Wind Gust:	33.0mph / 53.1km/h from the North	-	-
Wind:	-	-	WSW
Pressure:	30.10in / 1019.2hPa	29.45in / 997.2hPa	-
Precipitation:	0.01in / 0.3mm		

KCACALIF2 Weather Graph for 5/30/2008



Tabular Data for May 30, 2008

Time	Temperature	Dew Point	Pressure	Wind	Wind Speed	Wind Gust	Humidity	Rainfall Rate (Hourly)
02:32	42.4 °F / 5.8 °C	33.3 °F / 0.7 °C	30.05in / 1017.5hPa	NW	3mph / 4.8km/h	6mph / 9.7km/h	70%	0.00in / 0.0mm
03:02	42.7 °F / 5.9 °C	34.0 °F / 1.1 °C	30.05in / 1017.5hPa	NW	2mph / 3.2km/h	5mph / 8.0km/h	71%	0.00in / 0.0mm
04:02	43.2 °F / 6.2 °C	35.8 °F / 2.1 °C	30.05in / 1017.5hPa	NW	2mph / 3.2km/h	4mph / 6.4km/h	75%	0.00in / 0.0mm
04:32	36.6 °F / 2.6 °C	27.4 °F / -2.6 °C	30.06in / 1017.8hPa	ENE	3mph / 4.8km/h	5mph / 8.0km/h	69%	0.00in / 0.0mm
05:02	36.6 °F / 2.6 °C	29.4 °F / -1.4 °C	30.06in / 1017.8hPa	Cal m		5mph / 8.0km/h	75%	0.00in / 0.0mm
	38.3 °F /	30.8 °F /	30.06in /			2mph /		0.00in /

05:32	3.5 °C	-0.7 °C	1017.8hPa	Calm		3.2km/h	74%	0.0mm
06:02	36.5 °F / 2.5 °C	29.7 °F / -1.3 °C	30.06in / 1017.8hPa	Calm		1mph / 1.6km/h	76%	0.00in / 0.0mm
06:32	36.9 °F / 2.7 °C	28.7 °F / -1.8 °C	30.06in / 1017.8hPa	East	1mph / 1.6km/h	2mph / 3.2km/h	72%	0.00in / 0.0mm
07:32	46.0 °F / 7.8 °C	34.1 °F / 1.2 °C	30.06in / 1017.8hPa	East	3mph / 4.8km/h	3mph / 4.8km/h	63%	0.00in / 0.0mm
08:02	50.4 °F / 10.2 °C	37.0 °F / 2.8 °C	30.05in / 1017.5hPa	East	3mph / 4.8km/h	4mph / 6.4km/h	60%	0.00in / 0.0mm
08:32	55.5 °F / 13.1 °C	38.2 °F / 3.4 °C	30.05in / 1017.5hPa	ESE	6mph / 9.7km/h	7mph / 11.3km/h	52%	0.00in / 0.0mm
09:02	59.0 °F / 15.0 °C	40.9 °F / 4.9 °C	30.05in / 1017.5hPa	SE	3mph / 4.8km/h	10mph / 16.1km/h	51%	0.00in / 0.0mm
10:32	66.7 °F / 19.3 °C	42.9 °F / 6.1 °C	30.03in / 1016.8hPa	ENE	3mph / 4.8km/h	11mph / 17.7km/h	42%	0.00in / 0.0mm
11:39	70.4 °F / 21.3 °C	42.2 °F / 5.7 °C	30.02in / 1016.5hPa	ENE	7mph / 11.3km/h	11mph / 17.7km/h	36%	0.00in / 0.0mm
12:32	72.6 °F / 22.6 °C	39.4 °F / 4.1 °C	30.01in / 1016.1hPa	WNW	7mph / 11.3km/h	11mph / 17.7km/h	30%	0.00in / 0.0mm
13:02	73.8 °F / 23.2 °C	37.8 °F / 3.2 °C	30.00in / 1015.8hPa	SW	5mph / 8.0km/h	11mph / 17.7km/h	27%	0.00in / 0.0mm
13:32	75.2 °F / 24.0 °C	38.0 °F / 3.3 °C	29.99in / 1015.5hPa	NE	4mph / 6.4km/h	12mph / 19.3km/h	26%	0.00in / 0.0mm
14:02	76.1 °F / 24.5 °C	36.7 °F / 2.6 °C	29.98in / 1015.1hPa	NNE	3mph / 4.8km/h	13mph / 20.9km/h	24%	0.00in / 0.0mm
14:32	77.8 °F / 25.4 °C	38.2 °F / 3.4 °C	29.97in / 1014.8hPa	SE	8mph / 12.9km/h	15mph / 24.1km/h	24%	0.00in / 0.0mm
15:02	76.8 °F / 24.9 °C	46.3 °F / 7.9 °C	29.96in / 1014.4hPa	SW	5mph / 8.0km/h	24mph / 38.6km/h	34%	0.00in / 0.0mm
15:32	78.2 °F / 25.7 °C	46.8 °F / 8.2 °C	29.97in / 1014.8hPa	West	12mph / 19.3km/h	23mph / 37.0km/h	33%	0.00in / 0.0mm
16:02	76.4 °F / 24.7 °C	46.8 °F / 8.2 °C	29.96in / 1014.4hPa	SSW	17mph / 27.4km/h	21mph / 33.8km/h	35%	0.00in / 0.0mm
16:32	74.8 °F / 23.8 °C	46.1 °F / 7.8 °C	29.96in / 1014.4hPa	SW	15mph / 24.1km/h	24mph / 38.6km/h	36%	0.00in / 0.0mm
17:02	73.0 °F / 22.8 °C	46.6 °F / 8.1 °C	29.95in / 1014.1hPa	SW	23mph / 37.0km/h	23mph / 37.0km/h	39%	0.00in / 0.0mm
17:33	71.5 °F / 21.9 °C	45.9 °F / 7.7 °C	29.95in / 1014.1hPa	SW	19mph / 30.6km/h	23mph / 37.0km/h	40%	0.00in / 0.0mm
18:32	68.8 °F / 20.4 °C	45.4 °F / 7.4 °C	29.96in / 1014.4hPa	WSW	16mph / 25.7km/h	20mph / 32.2km/h	43%	0.00in / 0.0mm
19:02	66.3 °F / 19.1 °C	44.9 °F / 7.2 °C	29.96in / 1014.4hPa	SW	14mph / 22.5km/h	20mph / 32.2km/h	46%	0.00in / 0.0mm
19:32	64.7 °F / 18.2 °C	44.6 °F / 7.0 °C	29.97in / 1014.8hPa	SW	12mph / 19.3km/h	17mph / 27.4km/h	48%	0.00in / 0.0mm
20:02	62.0 °F / 16.7 °C	43.2 °F / 6.2 °C	29.98in / 1015.1hPa	SW	12mph / 19.3km/h	19mph / 30.6km/h	50%	0.00in / 0.0mm
20:32	60.7 °F / 15.9 °C	43.0 °F / 6.1 °C	29.99in / 1015.5hPa	WSW	4mph / 6.4km/h	13mph / 20.9km/h	52%	0.00in / 0.0mm
	59.2 °F /	42.1 °F /	29.99in /			10mph /		0.00in /

21:02	15.1 °C	5.6 °C	1015.5 hPa	Calm		16.1 km/h	53%	0.0 mm
21:32	55.9 °F / 13.3 °C	41.3 °F / 5.2 °C	30.01 in / 1016.1 hPa	NNW	4 mph / 6.4 km/h	9 mph / 14.5 km/h	58%	0.00 in / 0.0 mm
22:02	54.2 °F / 12.3 °C	42.3 °F / 5.7 °C	30.02 in / 1016.5 hPa	NW	3 mph / 4.8 km/h	6 mph / 9.7 km/h	64%	0.00 in / 0.0 mm
22:32	53.0 °F / 11.7 °C	42.0 °F / 5.6 °C	30.03 in / 1016.8 hPa	NW	7 mph / 11.3 km/h	9 mph / 14.5 km/h	66%	0.00 in / 0.0 mm
23:02	50.1 °F / 10.1 °C	40.7 °F / 4.8 °C	30.04 in / 1017.2 hPa	NW	5 mph / 8.0 km/h	11 mph / 17.7 km/h	70%	0.00 in / 0.0 mm
23:32	49.7 °F / 9.8 °C	41.4 °F / 5.2 °C	30.04 in / 1017.2 hPa	NW	4 mph / 6.4 km/h	10 mph / 16.1 km/h	73%	0.00 in / 0.0 mm

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History for KCACALIF2

California Valley, California Valley, CA — [Current Conditions](#)

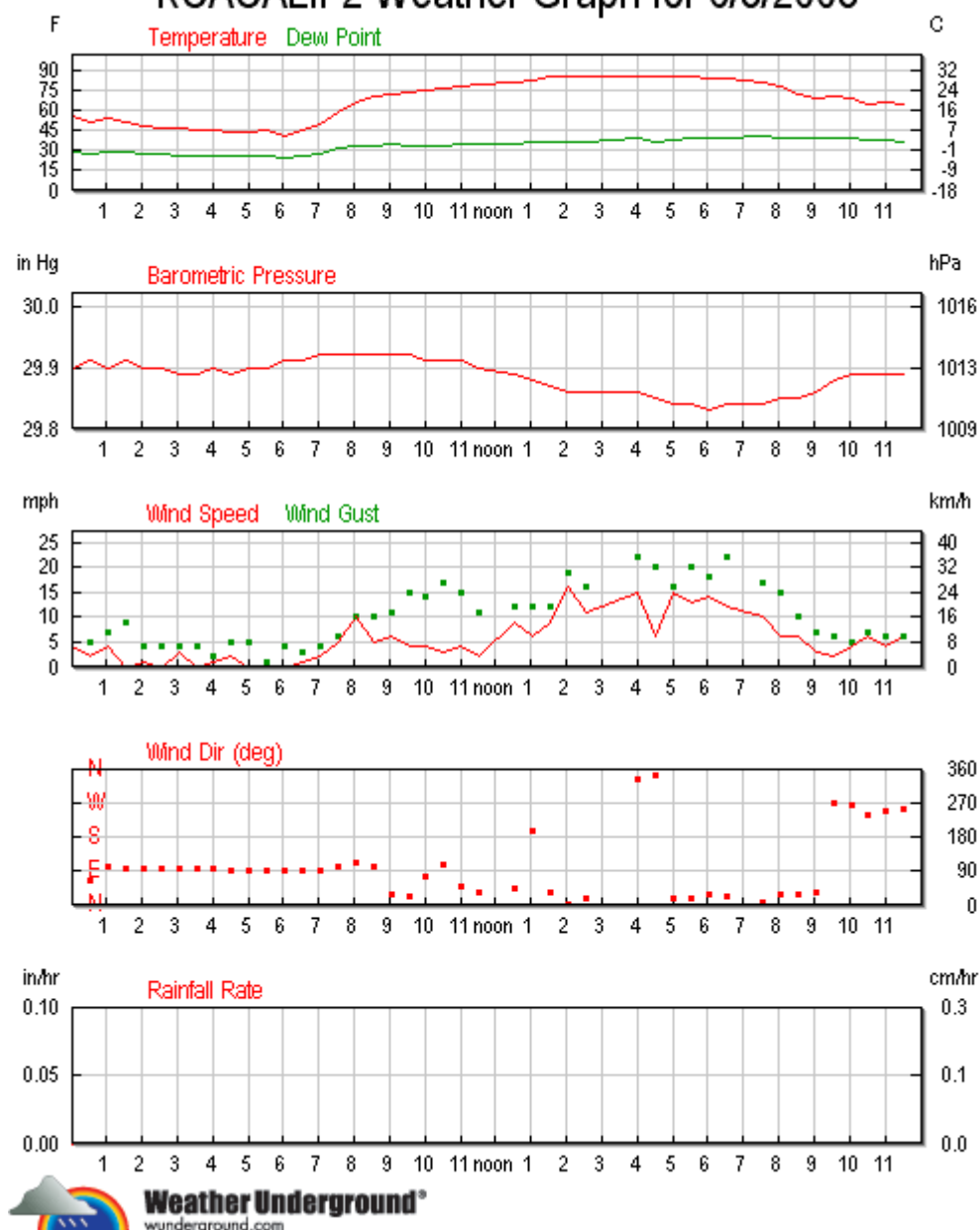
Daily Summary for June 8, 2008

	Current:	High:	Low:	Average:
Temperature:	86.7 °F / 30.4 °C	87.0 °F / 30.6 °C	41.6 °F / 5.3 °C	67.3 °F / 19.6 °C
Dew Point:	56.6 °F / 13.7 °C	40.9 °F / 4.9 °C	24.4 °F / -4.2 °C	34.1 °F / 1.1 °C
Humidity:	36%	50%	17%	31%
Wind Speed:	0.0mph / 0.0km/h /	16.0mph / 25.7km/h	-	5.4mph / 8.6km/h
Wind Gust:	7.0mph / 11.3km/h /	22.0mph / 35.4km/h	-	-
Wind:	WNW	-	-	NNE
Pressure:	29.92in / 1013.1hPa	29.92in / 1013.1hPa	29.83in / 1010.0hPa	-
Precipitation:	0.00in / 0.0mm			

Statistics for the rest of the month:

	High:	Low:	Average:
Temperature:	104.8 °F / 40.4 °C	35.6 °F / 2.0 °C	70.9 °F / 21.6 °C
Dew Point:	51.0 °F / 10.6 °C	15.6 °F / -9.1 °C	35.8 °F / 2.1 °C
Humidity:	91.0%	9.0%	32.2%
Wind Speed:	24.0mph / 38.6km/h from the NNE	-	5.6mph / 9.0km/h
Wind Gust:	34.0mph / 54.7km/h from the NNE	-	-
Wind:	-	-	SW
Pressure:	30.05in / 1017.5hPa	29.71in / 1006.0hPa	-
Precipitation:	0.00in / 0.0mm		

KCACALIF2 Weather Graph for 6/8/2008



Tabular Data for June 8, 2008

Time	Temperature	Dew Point	Pressure	Wind	Wind Speed	Wind Gust	Humidity	Rainfall Rate (Hourly)
00:02	56.6 °F / 13.7 °C	30.0 °F / -1.1 °C	29.90in / 1012.4hPa	NW	4mph / 6.4km/h	8mph / 12.9km/h	36%	0.00in / 0.0mm
00:32	52.0 °F / 11.1 °C	28.5 °F / -1.9 °C	29.91in / 1012.8hPa	ENE	2mph / 3.2km/h	5mph / 8.0km/h	40%	0.00in / 0.0mm
01:02	54.6 °F / 12.6 °C	28.9 °F / -1.7 °C	29.90in / 1012.4hPa	ESE	4mph / 6.4km/h	7mph / 11.3km/h	37%	0.00in / 0.0mm
01:32	51.5 °F / 10.8 °C	29.2 °F / -1.6 °C	29.91in / 1012.8hPa	Calm		9mph / 14.5km/h	42%	0.00in / 0.0mm
02:02	48.3 °F / 9.1 °C	27.4 °F / -2.6 °C	29.90in / 1012.4hPa	East	1mph / 1.6km/h	4mph / 6.4km/h	44%	0.00in / 0.0mm
	48.0 °F /	27.7 °F /	29.90in /			4mph /		0.00in /

02:32	8.9 °C	-2.4 °C	1012.4hPa	Calm		6.4km/h	45%	0.0mm
03:02	47.0 °F / 8.3 °C	26.8 °F / -2.9 °C	29.89in / 1012.1hPa	East	3mph / 4.8km/h	4mph / 6.4km/h	45%	0.00in / 0.0mm
03:32	45.3 °F / 7.4 °C	26.8 °F / -2.9 °C	29.89in / 1012.1hPa	Calm		4mph / 6.4km/h	48%	0.00in / 0.0mm
04:02	45.5 °F / 7.5 °C	27.0 °F / -2.8 °C	29.90in / 1012.4hPa	East	1mph / 1.6km/h	2mph / 3.2km/h	48%	0.00in / 0.0mm
04:32	44.3 °F / 6.8 °C	26.9 °F / -2.8 °C	29.89in / 1012.1hPa	East	2mph / 3.2km/h	5mph / 8.0km/h	50%	0.00in / 0.0mm
05:02	44.7 °F / 7.1 °C	26.2 °F / -3.2 °C	29.90in / 1012.4hPa	Calm		5mph / 8.0km/h	48%	0.00in / 0.0mm
05:32	45.7 °F / 7.6 °C	27.1 °F / -2.7 °C	29.90in / 1012.4hPa	Calm		1mph / 1.6km/h	48%	0.00in / 0.0mm
06:02	41.6 °F / 5.3 °C	24.4 °F / -4.2 °C	29.91in / 1012.8hPa	Calm		4mph / 6.4km/h	50%	0.00in / 0.0mm
06:32	46.6 °F / 8.1 °C	26.9 °F / -2.8 °C	29.91in / 1012.8hPa	East	1mph / 1.6km/h	3mph / 4.8km/h	46%	0.00in / 0.0mm
07:02	50.9 °F / 10.5 °C	28.6 °F / -1.9 °C	29.92in / 1013.1hPa	East	2mph / 3.2km/h	4mph / 6.4km/h	42%	0.00in / 0.0mm
07:32	60.0 °F / 15.6 °C	32.3 °F / 0.2 °C	29.92in / 1013.1hPa	ESE	5mph / 8.0km/h	6mph / 9.7km/h	35%	0.00in / 0.0mm
08:02	67.5 °F / 19.7 °C	34.2 °F / 1.2 °C	29.92in / 1013.1hPa	ESE	10mph / 16.1km/h	10mph / 16.1km/h	29%	0.00in / 0.0mm
08:33	70.7 °F / 21.5 °C	34.2 °F / 1.2 °C	29.92in / 1013.1hPa	East	5mph / 8.0km/h	10mph / 16.1km/h	26%	0.00in / 0.0mm
09:02	72.9 °F / 22.7 °C	35.0 °F / 1.7 °C	29.92in / 1013.1hPa	NNE	6mph / 9.7km/h	11mph / 17.7km/h	25%	0.00in / 0.0mm
09:32	74.8 °F / 23.8 °C	34.6 °F / 1.4 °C	29.92in / 1013.1hPa	NNE	4mph / 6.4km/h	15mph / 24.1km/h	23%	0.00in / 0.0mm
10:02	76.1 °F / 24.5 °C	34.5 °F / 1.4 °C	29.91in / 1012.8hPa	ENE	4mph / 6.4km/h	14mph / 22.5km/h	22%	0.00in / 0.0mm
10:32	76.9 °F / 24.9 °C	34.0 °F / 1.1 °C	29.91in / 1012.8hPa	ESE	3mph / 4.8km/h	17mph / 27.4km/h	21%	0.00in / 0.0mm
11:02	78.1 °F / 25.6 °C	35.0 °F / 1.7 °C	29.91in / 1012.8hPa	NE	4mph / 6.4km/h	15mph / 24.1km/h	21%	0.00in / 0.0mm
11:32	80.1 °F / 26.7 °C	35.5 °F / 1.9 °C	29.90in / 1012.4hPa	NE	2mph / 3.2km/h	11mph / 17.7km/h	20%	0.00in / 0.0mm
12:32	82.4 °F / 28.0 °C	36.0 °F / 2.2 °C	29.89in / 1012.1hPa	NE	9mph / 14.5km/h	12mph / 19.3km/h	19%	0.00in / 0.0mm
13:02	83.1 °F / 28.4 °C	36.6 °F / 2.6 °C	29.88in / 1011.7hPa	SSW	6mph / 9.7km/h	12mph / 19.3km/h	19%	0.00in / 0.0mm
13:32	85.9 °F / 29.9 °C	37.5 °F / 3.1 °C	29.87in / 1011.4hPa	NE	9mph / 14.5km/h	12mph / 19.3km/h	18%	0.00in / 0.0mm
14:02	85.7 °F / 29.8 °C	37.4 °F / 3.0 °C	29.86in / 1011.1hPa	North	16mph / 25.7km/h	19mph / 30.6km/h	18%	0.00in / 0.0mm
14:32	86.5 °F / 30.3 °C	36.6 °F / 2.6 °C	29.86in / 1011.1hPa	NNE	11mph / 17.7km/h	16mph / 25.7km/h	17%	0.00in / 0.0mm
16:02	87.0 °F / 30.6 °C	39.8 °F / 4.3 °C	29.86in / 1011.1hPa	NNW	15mph / 24.1km/h	22mph / 35.4km/h	19%	0.00in / 0.0mm
	86.0 °F /	37.6 °F /	29.85in /		6mph /	20mph /		0.00in /

16:32	30.0 °C	3.1 °C	1010.7 hPa	NNW	9.7 km/h	32.2 km/h	18%	0.0 mm
17:02	87.0 °F / 30.6 °C	38.4 °F / 3.6 °C	29.84 in / 1010.4 hPa	NNE	15 mph / 24.1 km/h	16 mph / 25.7 km/h	18%	0.00 in / 0.0 mm
17:32	86.0 °F / 30.0 °C	40.3 °F / 4.6 °C	29.84 in / 1010.4 hPa	NNE	13 mph / 20.9 km/h	20 mph / 32.2 km/h	20%	0.00 in / 0.0 mm
18:02	85.2 °F / 29.6 °C	39.7 °F / 4.3 °C	29.83 in / 1010.0 hPa	NNE	14 mph / 22.5 km/h	18 mph / 29.0 km/h	20%	0.00 in / 0.0 mm
18:32	84.4 °F / 29.1 °C	40.2 °F / 4.6 °C	29.84 in / 1010.4 hPa	NNE	12 mph / 19.3 km/h	22 mph / 35.4 km/h	21%	0.00 in / 0.0 mm
19:32	81.1 °F / 27.3 °C	40.9 °F / 4.9 °C	29.84 in / 1010.4 hPa	North	10 mph / 16.1 km/h	17 mph / 27.4 km/h	24%	0.00 in / 0.0 mm
20:02	78.2 °F / 25.7 °C	40.5 °F / 4.7 °C	29.85 in / 1010.7 hPa	NNE	6 mph / 9.7 km/h	15 mph / 24.1 km/h	26%	0.00 in / 0.0 mm
20:32	73.0 °F / 22.8 °C	39.8 °F / 4.3 °C	29.85 in / 1010.7 hPa	NNE	6 mph / 9.7 km/h	10 mph / 16.1 km/h	30%	0.00 in / 0.0 mm
21:02	70.3 °F / 21.3 °C	39.9 °F / 4.4 °C	29.86 in / 1011.1 hPa	NE	3 mph / 4.8 km/h	7 mph / 11.3 km/h	33%	0.00 in / 0.0 mm
21:32	71.8 °F / 22.1 °C	40.4 °F / 4.7 °C	29.88 in / 1011.7 hPa	West	2 mph / 3.2 km/h	6 mph / 9.7 km/h	32%	0.00 in / 0.0 mm
22:03	69.5 °F / 20.8 °C	39.9 °F / 4.4 °C	29.89 in / 1012.1 hPa	West	4 mph / 6.4 km/h	5 mph / 8.0 km/h	34%	0.00 in / 0.0 mm
22:32	66.1 °F / 18.9 °C	39.1 °F / 3.9 °C	29.89 in / 1012.1 hPa	WSW	6 mph / 9.7 km/h	7 mph / 11.3 km/h	37%	0.00 in / 0.0 mm
23:02	67.4 °F / 19.7 °C	38.8 °F / 3.8 °C	29.89 in / 1012.1 hPa	WSW	4 mph / 6.4 km/h	6 mph / 9.7 km/h	35%	0.00 in / 0.0 mm
23:32	64.8 °F / 18.2 °C	37.2 °F / 2.9 °C	29.89 in / 1012.1 hPa	WSW	6 mph / 9.7 km/h	6 mph / 9.7 km/h	36%	0.00 in / 0.0 mm

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History for KCACALIF2

California Valley, California Valley, CA — [Current Conditions](#)

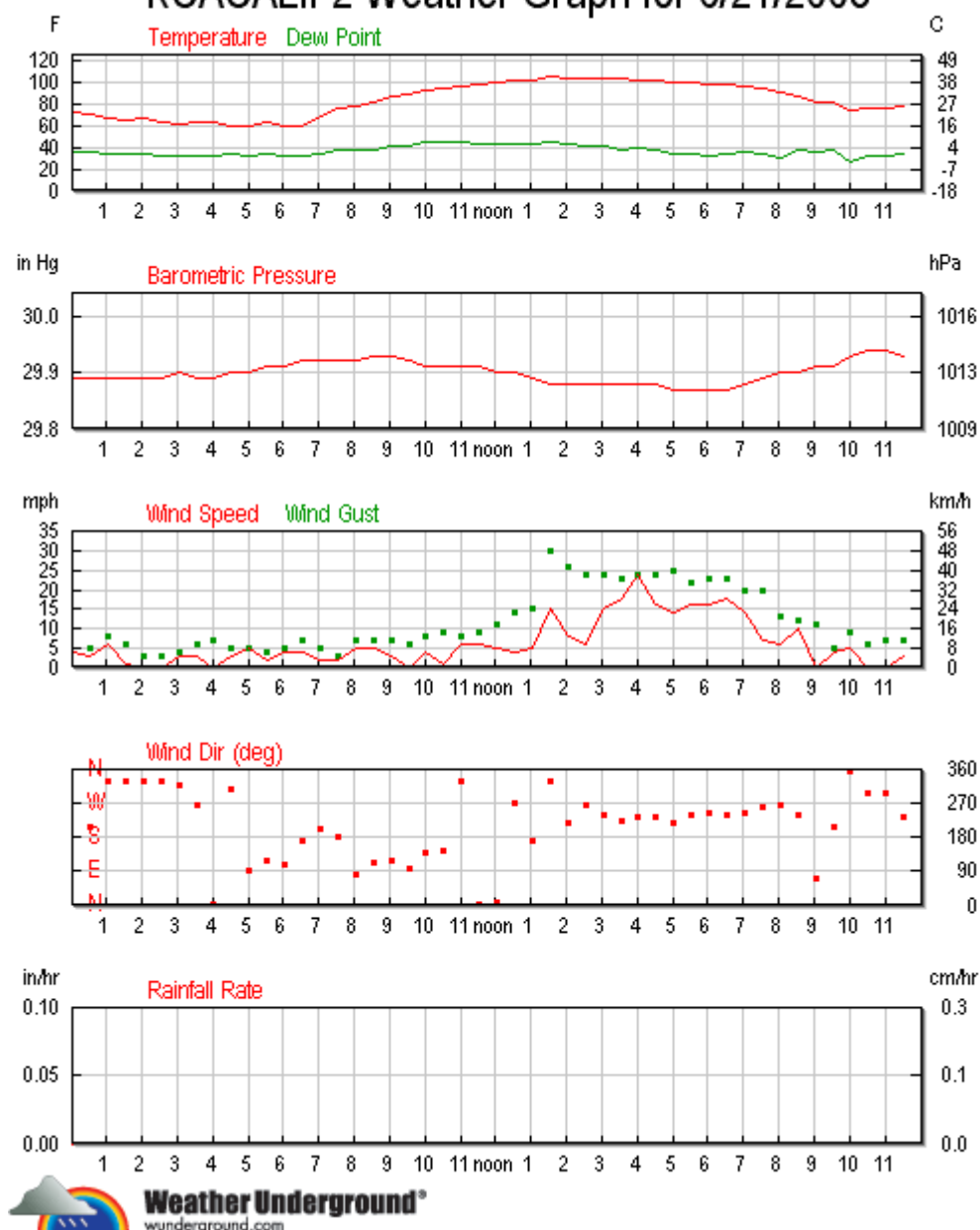
Daily Summary for June 21, 2008

	Current:	High:	Low:	Average:
Temperature:	86.7 °F / 30.4 °C	104.8 °F / 40.4 °C	60.1 °F / 15.6 °C	84.0 °F / 28.9 °C
Dew Point:	56.6 °F / 13.7 °C	46.1 °F / 7.8 °C	27.7 °F / -2.4 °C	37.2 °F / 2.9 °C
Humidity:	36%	36%	10%	21%
Wind Speed:	0.0mph / 0.0km/h /	24.0mph / 38.6km/h	-	6.3mph / 10.1km/h
Wind Gust:	7.0mph / 11.3km/h /	30.0mph / 48.3km/h	-	-
Wind:	WNW	-	-	WSW
Pressure:	29.92in / 1013.1hPa	29.94in / 1013.8hPa	29.87in / 1011.4hPa	-
Precipitation:	0.00in / 0.0mm			

Statistics for the rest of the month:

	High:	Low:	Average:
Temperature:	104.8 °F / 40.4 °C	35.6 °F / 2.0 °C	70.9 °F / 21.6 °C
Dew Point:	51.0 °F / 10.6 °C	15.6 °F / -9.1 °C	35.8 °F / 2.1 °C
Humidity:	91.0%	9.0%	32.2%
Wind Speed:	24.0mph / 38.6km/h from the NNE	-	5.6mph / 9.0km/h
Wind Gust:	34.0mph / 54.7km/h from the NNE	-	-
Wind:	-	-	SW
Pressure:	30.05in / 1017.5hPa	29.71in / 1006.0hPa	-
Precipitation:	0.00in / 0.0mm		

KCACALIF2 Weather Graph for 6/21/2008



Tabular Data for June 21, 2008

Time	Temperature	Dew Point	Pressure	Wind	Wind Speed	Wind Gust	Humidity	Rainfall Rate (Hourly)
00:02	72.0 °F / 22.2 °C	36.2 °F / 2.3 °C	29.89in / 1012.1hPa	SSW	4mph / 6.4km/h	4mph / 6.4km/h	27%	0.00in / 0.0mm
00:32	71.6 °F / 22.0 °C	35.9 °F / 2.2 °C	29.89in / 1012.1hPa	SSW	3mph / 4.8km/h	5mph / 8.0km/h	27%	0.00in / 0.0mm
01:02	66.5 °F / 19.2 °C	35.0 °F / 1.7 °C	29.89in / 1012.1hPa	NNW	6mph / 9.7km/h	8mph / 12.9km/h	31%	0.00in / 0.0mm
01:32	66.0 °F / 18.9 °C	34.5 °F / 1.4 °C	29.89in / 1012.1hPa	NNW	1mph / 1.6km/h	6mph / 9.7km/h	31%	0.00in / 0.0mm
02:02	67.7 °F / 19.8 °C	35.2 °F / 1.8 °C	29.89in / 1012.1hPa	Calm		3mph / 4.8km/h	30%	0.00in / 0.0mm
	64.2 °F /	33.0 °F /	29.89in /			3mph /		0.00in /

02:32	17.9 °C	0.6 °C	1012.1hPa	Calm		4.8km/h	31%	0.0mm
03:02	62.4 °F / 16.9 °C	32.9 °F / 0.5 °C	29.90in / 1012.4hPa	NW	3mph / 4.8km/h	4mph / 6.4km/h	33%	0.00in / 0.0mm
03:32	62.9 °F / 17.2 °C	32.6 °F / 0.3 °C	29.89in / 1012.1hPa	West	3mph / 4.8km/h	6mph / 9.7km/h	32%	0.00in / 0.0mm
04:02	63.9 °F / 17.7 °C	33.5 °F / 0.8 °C	29.89in / 1012.1hPa	Calm		7mph / 11.3km/h	32%	0.00in / 0.0mm
04:32	60.8 °F / 16.0 °C	33.7 °F / 0.9 °C	29.90in / 1012.4hPa	NW	3mph / 4.8km/h	5mph / 8.0km/h	36%	0.00in / 0.0mm
05:02	60.1 °F / 15.6 °C	33.1 °F / 0.6 °C	29.90in / 1012.4hPa	East	5mph / 8.0km/h	5mph / 8.0km/h	36%	0.00in / 0.0mm
05:32	62.9 °F / 17.2 °C	34.8 °F / 1.6 °C	29.91in / 1012.8hPa	ESE	2mph / 3.2km/h	4mph / 6.4km/h	35%	0.00in / 0.0mm
06:02	60.4 °F / 15.8 °C	31.9 °F / -0.1 °C	29.91in / 1012.8hPa	ESE	4mph / 6.4km/h	5mph / 8.0km/h	34%	0.00in / 0.0mm
06:32	60.7 °F / 15.9 °C	32.2 °F / 0.1 °C	29.92in / 1013.1hPa	South	4mph / 6.4km/h	7mph / 11.3km/h	34%	0.00in / 0.0mm
07:02	69.8 °F / 21.0 °C	35.3 °F / 1.8 °C	29.92in / 1013.1hPa	SSW	2mph / 3.2km/h	5mph / 8.0km/h	28%	0.00in / 0.0mm
07:32	76.0 °F / 24.4 °C	37.7 °F / 3.2 °C	29.92in / 1013.1hPa	South	2mph / 3.2km/h	3mph / 4.8km/h	25%	0.00in / 0.0mm
08:02	78.9 °F / 26.1 °C	38.0 °F / 3.3 °C	29.92in / 1013.1hPa	East	5mph / 8.0km/h	7mph / 11.3km/h	23%	0.00in / 0.0mm
08:32	81.6 °F / 27.6 °C	37.9 °F / 3.3 °C	29.93in / 1013.4hPa	ESE	5mph / 8.0km/h	7mph / 11.3km/h	21%	0.00in / 0.0mm
09:02	86.7 °F / 30.4 °C	40.9 °F / 4.9 °C	29.93in / 1013.4hPa	ESE	3mph / 4.8km/h	7mph / 11.3km/h	20%	0.00in / 0.0mm
09:32	89.9 °F / 32.2 °C	42.2 °F / 5.7 °C	29.92in / 1013.1hPa	Calm		6mph / 9.7km/h	19%	0.00in / 0.0mm
10:02	93.4 °F / 34.1 °C	45.0 °F / 7.2 °C	29.91in / 1012.8hPa	SE	4mph / 6.4km/h	8mph / 12.9km/h	19%	0.00in / 0.0mm
10:32	95.1 °F / 35.1 °C	45.0 °F / 7.2 °C	29.91in / 1012.8hPa	SE	1mph / 1.6km/h	9mph / 14.5km/h	18%	0.00in / 0.0mm
11:02	96.6 °F / 35.9 °C	44.7 °F / 7.1 °C	29.91in / 1012.8hPa	NNW	6mph / 9.7km/h	8mph / 12.9km/h	17%	0.00in / 0.0mm
11:32	98.3 °F / 36.8 °C	44.5 °F / 6.9 °C	29.91in / 1012.8hPa	North	6mph / 9.7km/h	9mph / 14.5km/h	16%	0.00in / 0.0mm
12:02	99.8 °F / 37.7 °C	44.0 °F / 6.7 °C	29.90in / 1012.4hPa	North	5mph / 8.0km/h	11mph / 17.7km/h	15%	0.00in / 0.0mm
12:32	101.8 °F / 38.8 °C	43.7 °F / 6.5 °C	29.90in / 1012.4hPa	West	4mph / 6.4km/h	14mph / 22.5km/h	14%	0.00in / 0.0mm
13:02	102.4 °F / 39.1 °C	44.2 °F / 6.8 °C	29.89in / 1012.1hPa	South	5mph / 8.0km/h	15mph / 24.1km/h	14%	0.00in / 0.0mm
13:32	104.8 °F / 40.4 °C	46.1 °F / 7.8 °C	29.88in / 1011.7hPa	NNW	15mph / 24.1km/h	30mph / 48.3km/h	14%	0.00in / 0.0mm
14:02	103.4 °F / 39.7 °C	43.0 °F / 6.1 °C	29.88in / 1011.7hPa	SW	8mph / 12.9km/h	26mph / 41.8km/h	13%	0.00in / 0.0mm
14:32	103.4 °F / 39.7 °C	41.0 °F / 5.0 °C	29.88in / 1011.7hPa	West	6mph / 9.7km/h	24mph / 38.6km/h	12%	0.00in / 0.0mm
	104.2 °F /	41.6 °F /	29.88in /		15mph /	24mph /		0.00in /

15:02	40.1 °C	5.3 °C	1011.7 hPa	WSW	24.1 km/h	38.6 km/h	12%	0.0 mm
15:32	103.2 °F / 39.6 °C	38.6 °F / 3.7 °C	29.88 in / 1011.7 hPa	SW	18 mph / 29.0 km/h	23 mph / 37.0 km/h	11%	0.00 in / 0.0 mm
16:02	102.8 °F / 39.3 °C	40.5 °F / 4.7 °C	29.88 in / 1011.7 hPa	WSW	24 mph / 38.6 km/h	24 mph / 38.6 km/h	12%	0.00 in / 0.0 mm
16:32	101.6 °F / 38.7 °C	37.3 °F / 2.9 °C	29.88 in / 1011.7 hPa	WSW	16 mph / 25.7 km/h	24 mph / 38.6 km/h	11%	0.00 in / 0.0 mm
17:02	101.0 °F / 38.3 °C	34.5 °F / 1.4 °C	29.87 in / 1011.4 hPa	SW	14 mph / 22.5 km/h	25 mph / 40.2 km/h	10%	0.00 in / 0.0 mm
17:32	100.2 °F / 37.9 °C	33.9 °F / 1.1 °C	29.87 in / 1011.4 hPa	WSW	16 mph / 25.7 km/h	22 mph / 35.4 km/h	10%	0.00 in / 0.0 mm
18:02	99.0 °F / 37.2 °C	33.0 °F / 0.6 °C	29.87 in / 1011.4 hPa	WSW	16 mph / 25.7 km/h	23 mph / 37.0 km/h	10%	0.00 in / 0.0 mm
18:32	97.9 °F / 36.6 °C	34.5 °F / 1.4 °C	29.87 in / 1011.4 hPa	WSW	18 mph / 29.0 km/h	23 mph / 37.0 km/h	11%	0.00 in / 0.0 mm
19:02	96.5 °F / 35.8 °C	35.7 °F / 2.1 °C	29.88 in / 1011.7 hPa	WSW	14 mph / 22.5 km/h	20 mph / 32.2 km/h	12%	0.00 in / 0.0 mm
19:32	94.3 °F / 34.6 °C	34.0 °F / 1.1 °C	29.89 in / 1012.1 hPa	West	7 mph / 11.3 km/h	20 mph / 32.2 km/h	12%	0.00 in / 0.0 mm
20:02	91.0 °F / 32.8 °C	31.4 °F / -0.3 °C	29.90 in / 1012.4 hPa	West	6 mph / 9.7 km/h	13 mph / 20.9 km/h	12%	0.00 in / 0.0 mm
20:32	87.1 °F / 30.6 °C	38.5 °F / 3.6 °C	29.90 in / 1012.4 hPa	WSW	10 mph / 16.1 km/h	12 mph / 19.3 km/h	18%	0.00 in / 0.0 mm
21:02	81.8 °F / 27.7 °C	36.8 °F / 2.7 °C	29.91 in / 1012.8 hPa	Calm		11 mph / 17.7 km/h	20%	0.00 in / 0.0 mm
21:32	82.1 °F / 27.8 °C	38.3 °F / 3.5 °C	29.91 in / 1012.8 hPa	SSW	4 mph / 6.4 km/h	5 mph / 8.0 km/h	21%	0.00 in / 0.0 mm
22:02	75.5 °F / 24.2 °C	27.7 °F / -2.4 °C	29.93 in / 1013.4 hPa	North	5 mph / 8.0 km/h	9 mph / 14.5 km/h	17%	0.00 in / 0.0 mm
22:32	75.8 °F / 24.3 °C	33.1 °F / 0.6 °C	29.94 in / 1013.8 hPa	Calm		6 mph / 9.7 km/h	21%	0.00 in / 0.0 mm
23:02	75.9 °F / 24.4 °C	33.2 °F / 0.7 °C	29.94 in / 1013.8 hPa	Calm		7 mph / 11.3 km/h	21%	0.00 in / 0.0 mm
23:32	78.3 °F / 25.7 °C	34.0 °F / 1.1 °C	29.93 in / 1013.4 hPa	WSW	3 mph / 4.8 km/h	7 mph / 11.3 km/h	20%	0.00 in / 0.0 mm

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History for KCACALIF2

California Valley, California Valley, CA — [Current Conditions](#)

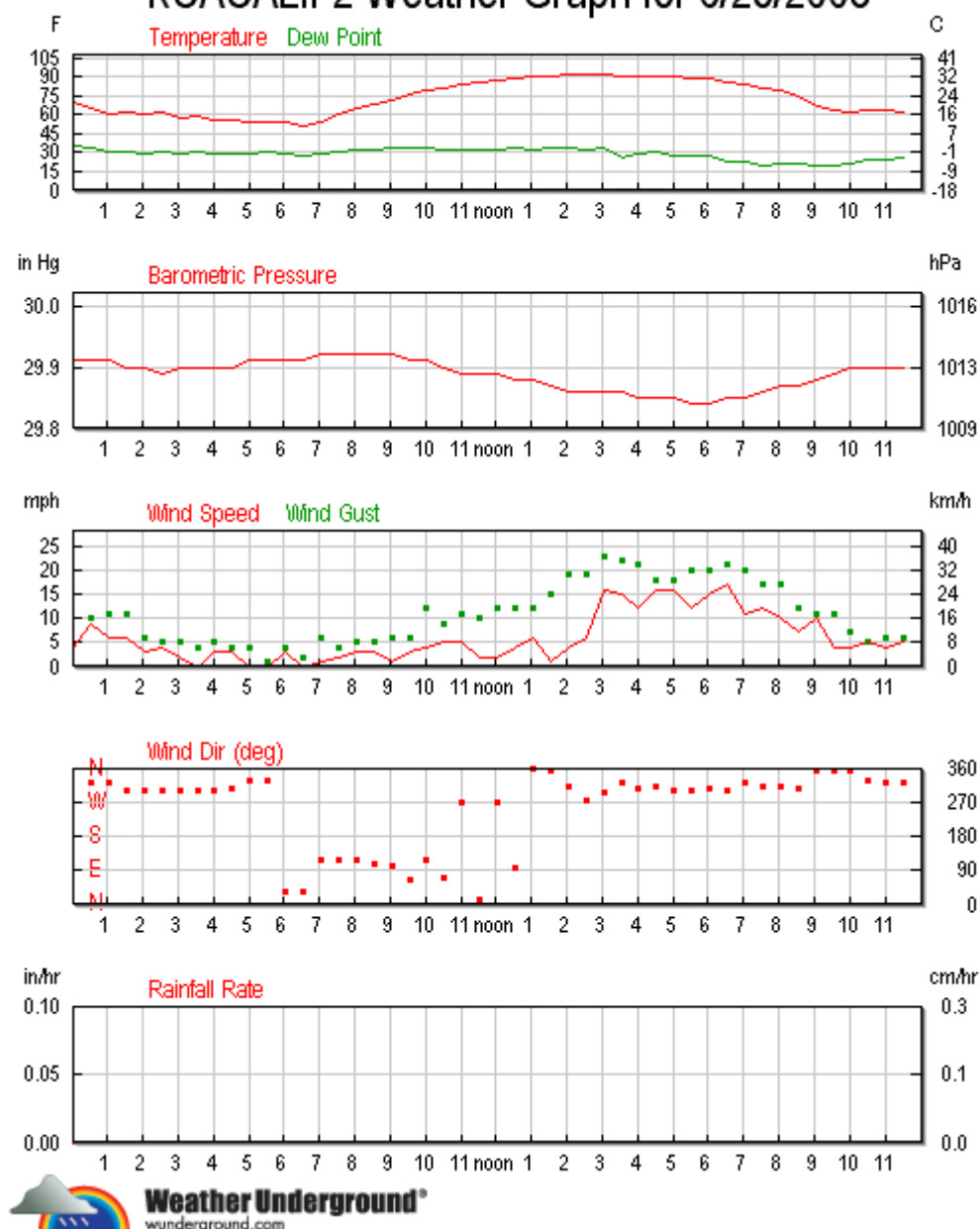
Daily Summary for June 23, 2008

	Current:	High:	Low:	Average:
Temperature:	86.7 °F / 30.4 °C	92.4 °F / 33.6 °C	52.2 °F / 11.2 °C	73.5 °F / 23.1 °C
Dew Point:	56.6 °F / 13.7 °C	35.3 °F / 1.8 °C	19.4 °F / -7.0 °C	29.5 °F / -1.4 °C
Humidity:	36%	40%	10%	22%
Wind Speed:	0.0mph / 0.0km/h /	17.0mph / 27.4km/h	-	6.0mph / 9.6km/h
Wind Gust:	7.0mph / 11.3km/h /	23.0mph / 37.0km/h	-	-
Wind:	WNW	-	-	NW
Pressure:	29.92in / 1013.1hPa	29.92in / 1013.1hPa	29.84in / 1010.4hPa	-
Precipitation:	0.00in / 0.0mm			

Statistics for the rest of the month:

	High:	Low:	Average:
Temperature:	104.8 °F / 40.4 °C	35.6 °F / 2.0 °C	70.9 °F / 21.6 °C
Dew Point:	51.0 °F / 10.6 °C	15.6 °F / -9.1 °C	35.8 °F / 2.1 °C
Humidity:	91.0%	9.0%	32.2%
Wind Speed:	24.0mph / 38.6km/h from the NNE	-	5.6mph / 9.0km/h
Wind Gust:	34.0mph / 54.7km/h from the NNE	-	-
Wind:	-	-	SW
Pressure:	30.05in / 1017.5hPa	29.71in / 1006.0hPa	-
Precipitation:	0.00in / 0.0mm		

KCACALIF2 Weather Graph for 6/23/2008



Tabular Data for June 23, 2008

Time	Temperature	Dew Point	Pressure	Wind	Wind Speed	Wind Gust	Humidity	Rainfall Rate (Hourly)
00:02	69.8 °F / 21.0 °C	35.3 °F / 1.8 °C	29.91in / 1012.8hPa	WNW	4mph / 6.4km/h	5mph / 8.0km/h	28%	0.00in / 0.0mm
00:32	66.1 °F / 18.9 °C	33.8 °F / 1.0 °C	29.91in / 1012.8hPa	NW	9mph / 14.5km/h	10mph / 16.1km/h	30%	0.00in / 0.0mm
01:02	61.6 °F / 16.4 °C	31.5 °F / -0.3 °C	29.91in / 1012.8hPa	NW	6mph / 9.7km/h	11mph / 17.7km/h	32%	0.00in / 0.0mm
01:32	62.1 °F / 16.7 °C	31.1 °F / -0.5 °C	29.90in / 1012.4hPa	NW	6mph / 9.7km/h	11mph / 17.7km/h	31%	0.00in / 0.0mm
02:02	60.8 °F / 16.0 °C	30.0 °F / -1.1 °C	29.90in / 1012.4hPa	NW	3mph / 4.8km/h	6mph / 9.7km/h	31%	0.00in / 0.0mm
	61.9 °F /	31.0 °F /	29.89in /		4mph /	5mph /		0.00in /

02:32	16.6 °C	-0.6 °C	1012.1hPa	NW	6.4km/h	8.0km/h	31%	0.0mm
03:02	57.4 °F / 14.1 °C	30.0 °F / -1.1 °C	29.90in / 1012.4hPa	NW	2mph / 3.2km/h	5mph / 8.0km/h	35%	0.00in / 0.0mm
03:32	60.0 °F / 15.6 °C	30.8 °F / -0.7 °C	29.90in / 1012.4hPa	Calm		4mph / 6.4km/h	33%	0.00in / 0.0mm
04:02	56.7 °F / 13.7 °C	30.1 °F / -1.1 °C	29.90in / 1012.4hPa	WNW	3mph / 4.8km/h	5mph / 8.0km/h	36%	0.00in / 0.0mm
04:32	55.7 °F / 13.2 °C	29.9 °F / -1.2 °C	29.90in / 1012.4hPa	NW	3mph / 4.8km/h	4mph / 6.4km/h	37%	0.00in / 0.0mm
05:02	54.3 °F / 12.4 °C	29.9 °F / -1.2 °C	29.91in / 1012.8hPa	Calm		4mph / 6.4km/h	39%	0.00in / 0.0mm
05:32	54.8 °F / 12.7 °C	30.3 °F / -0.9 °C	29.91in / 1012.8hPa	Calm		1mph / 1.6km/h	39%	0.00in / 0.0mm
06:02	54.6 °F / 12.6 °C	29.5 °F / -1.4 °C	29.91in / 1012.8hPa	NNE	3mph / 4.8km/h	4mph / 6.4km/h	38%	0.00in / 0.0mm
06:32	52.2 °F / 11.2 °C	28.6 °F / -1.9 °C	29.91in / 1012.8hPa	Calm		2mph / 3.2km/h	40%	0.00in / 0.0mm
07:02	54.8 °F / 12.7 °C	29.7 °F / -1.3 °C	29.92in / 1013.1hPa	ESE	1mph / 1.6km/h	6mph / 9.7km/h	38%	0.00in / 0.0mm
07:32	60.3 °F / 15.7 °C	31.8 °F / -0.1 °C	29.92in / 1013.1hPa	ESE	2mph / 3.2km/h	4mph / 6.4km/h	34%	0.00in / 0.0mm
08:02	65.6 °F / 18.7 °C	32.5 °F / 0.3 °C	29.92in / 1013.1hPa	ESE	3mph / 4.8km/h	5mph / 8.0km/h	29%	0.00in / 0.0mm
08:32	69.4 °F / 20.8 °C	33.1 °F / 0.6 °C	29.92in / 1013.1hPa	ESE	3mph / 4.8km/h	5mph / 8.0km/h	26%	0.00in / 0.0mm
09:02	72.7 °F / 22.6 °C	34.9 °F / 1.6 °C	29.92in / 1013.1hPa	ESE	1mph / 1.6km/h	6mph / 9.7km/h	25%	0.00in / 0.0mm
09:32	76.4 °F / 24.7 °C	34.8 °F / 1.6 °C	29.91in / 1012.8hPa	ENE	3mph / 4.8km/h	6mph / 9.7km/h	22%	0.00in / 0.0mm
10:02	79.7 °F / 26.5 °C	33.8 °F / 1.0 °C	29.91in / 1012.8hPa	ESE	4mph / 6.4km/h	12mph / 19.3km/h	19%	0.00in / 0.0mm
10:32	82.2 °F / 27.9 °C	33.1 °F / 0.6 °C	29.90in / 1012.4hPa	ENE	5mph / 8.0km/h	9mph / 14.5km/h	17%	0.00in / 0.0mm
11:02	84.2 °F / 29.0 °C	33.2 °F / 0.7 °C	29.89in / 1012.1hPa	West	5mph / 8.0km/h	11mph / 17.7km/h	16%	0.00in / 0.0mm
11:32	86.5 °F / 30.3 °C	33.4 °F / 0.8 °C	29.89in / 1012.1hPa	NNE	2mph / 3.2km/h	10mph / 16.1km/h	15%	0.00in / 0.0mm
12:02	88.2 °F / 31.2 °C	33.0 °F / 0.6 °C	29.89in / 1012.1hPa	West	2mph / 3.2km/h	12mph / 19.3km/h	14%	0.00in / 0.0mm
12:32	89.2 °F / 31.8 °C	33.8 °F / 1.0 °C	29.88in / 1011.7hPa	East	4mph / 6.4km/h	12mph / 19.3km/h	14%	0.00in / 0.0mm
13:03	91.0 °F / 32.8 °C	33.4 °F / 0.8 °C	29.88in / 1011.7hPa	North	6mph / 9.7km/h	12mph / 19.3km/h	13%	0.00in / 0.0mm
13:32	91.5 °F / 33.1 °C	33.8 °F / 1.0 °C	29.87in / 1011.4hPa	North	1mph / 1.6km/h	15mph / 24.1km/h	13%	0.00in / 0.0mm
14:02	91.8 °F / 33.2 °C	34.0 °F / 1.1 °C	29.86in / 1011.1hPa	NW	4mph / 6.4km/h	19mph / 30.6km/h	13%	0.00in / 0.0mm
14:32	92.4 °F / 33.6 °C	32.5 °F / 0.3 °C	29.86in / 1011.1hPa	West	6mph / 9.7km/h	19mph / 30.6km/h	12%	0.00in / 0.0mm
	91.8 °F /	34.0 °F /	29.86in /		16mph /	23mph /		0.00in /

15:02	33.2 °C	1.1 °C	1011.1 hPa	WNW	25.7 km/h	37.0 km/h	13%	0.0 mm
15:32	91.1 °F / 32.8 °C	27.0 °F / -2.8 °C	29.86 in / 1011.1 hPa	NW	15 mph / 24.1 km/h	22 mph / 35.4 km/h	10%	0.00 in / 0.0 mm
16:02	90.4 °F / 32.4 °C	28.8 °F / -1.8 °C	29.85 in / 1010.7 hPa	NW	12 mph / 19.3 km/h	21 mph / 33.8 km/h	11%	0.00 in / 0.0 mm
16:32	90.2 °F / 32.3 °C	30.8 °F / -0.7 °C	29.85 in / 1010.7 hPa	NW	16 mph / 25.7 km/h	18 mph / 29.0 km/h	12%	0.00 in / 0.0 mm
17:02	90.3 °F / 32.4 °C	28.7 °F / -1.8 °C	29.85 in / 1010.7 hPa	NW	16 mph / 25.7 km/h	18 mph / 29.0 km/h	11%	0.00 in / 0.0 mm
17:32	89.8 °F / 32.1 °C	28.4 °F / -2.0 °C	29.84 in / 1010.4 hPa	NW	12 mph / 19.3 km/h	20 mph / 32.2 km/h	11%	0.00 in / 0.0 mm
18:02	88.6 °F / 31.4 °C	27.4 °F / -2.6 °C	29.84 in / 1010.4 hPa	NW	15 mph / 24.1 km/h	20 mph / 32.2 km/h	11%	0.00 in / 0.0 mm
18:32	86.6 °F / 30.3 °C	23.6 °F / -4.7 °C	29.85 in / 1010.7 hPa	NW	17 mph / 27.4 km/h	21 mph / 33.8 km/h	10%	0.00 in / 0.0 mm
19:02	84.2 °F / 29.0 °C	24.0 °F / -4.4 °C	29.85 in / 1010.7 hPa	NW	11 mph / 17.7 km/h	20 mph / 32.2 km/h	11%	0.00 in / 0.0 mm
19:32	81.8 °F / 27.7 °C	20.0 °F / -6.7 °C	29.86 in / 1011.1 hPa	NW	12 mph / 19.3 km/h	17 mph / 27.4 km/h	10%	0.00 in / 0.0 mm
20:02	79.2 °F / 26.2 °C	22.3 °F / -5.4 °C	29.87 in / 1011.4 hPa	NW	10 mph / 16.1 km/h	17 mph / 27.4 km/h	12%	0.00 in / 0.0 mm
20:32	74.4 °F / 23.6 °C	22.1 °F / -5.5 °C	29.87 in / 1011.4 hPa	NW	7 mph / 11.3 km/h	12 mph / 19.3 km/h	14%	0.00 in / 0.0 mm
21:02	66.8 °F / 19.3 °C	20.6 °F / -6.3 °C	29.88 in / 1011.7 hPa	North	10 mph / 16.1 km/h	11 mph / 17.7 km/h	17%	0.00 in / 0.0 mm
21:32	63.7 °F / 17.6 °C	19.4 °F / -7.0 °C	29.89 in / 1012.1 hPa	North	4 mph / 6.4 km/h	11 mph / 17.7 km/h	18%	0.00 in / 0.0 mm
22:02	62.8 °F / 17.1 °C	21.2 °F / -6.0 °C	29.90 in / 1012.4 hPa	North	4 mph / 6.4 km/h	7 mph / 11.3 km/h	20%	0.00 in / 0.0 mm
22:32	64.9 °F / 18.3 °C	24.1 °F / -4.4 °C	29.90 in / 1012.4 hPa	NNW	5 mph / 8.0 km/h	5 mph / 8.0 km/h	21%	0.00 in / 0.0 mm
23:02	64.7 °F / 18.2 °C	25.0 °F / -3.9 °C	29.90 in / 1012.4 hPa	NNW	4 mph / 6.4 km/h	6 mph / 9.7 km/h	22%	0.00 in / 0.0 mm
23:32	62.6 °F / 17.0 °C	26.3 °F / -3.2 °C	29.90 in / 1012.4 hPa	NNW	5 mph / 8.0 km/h	6 mph / 9.7 km/h	25%	0.00 in / 0.0 mm

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History for KCACALIF2

California Valley, California Valley, CA — [Current Conditions](#)

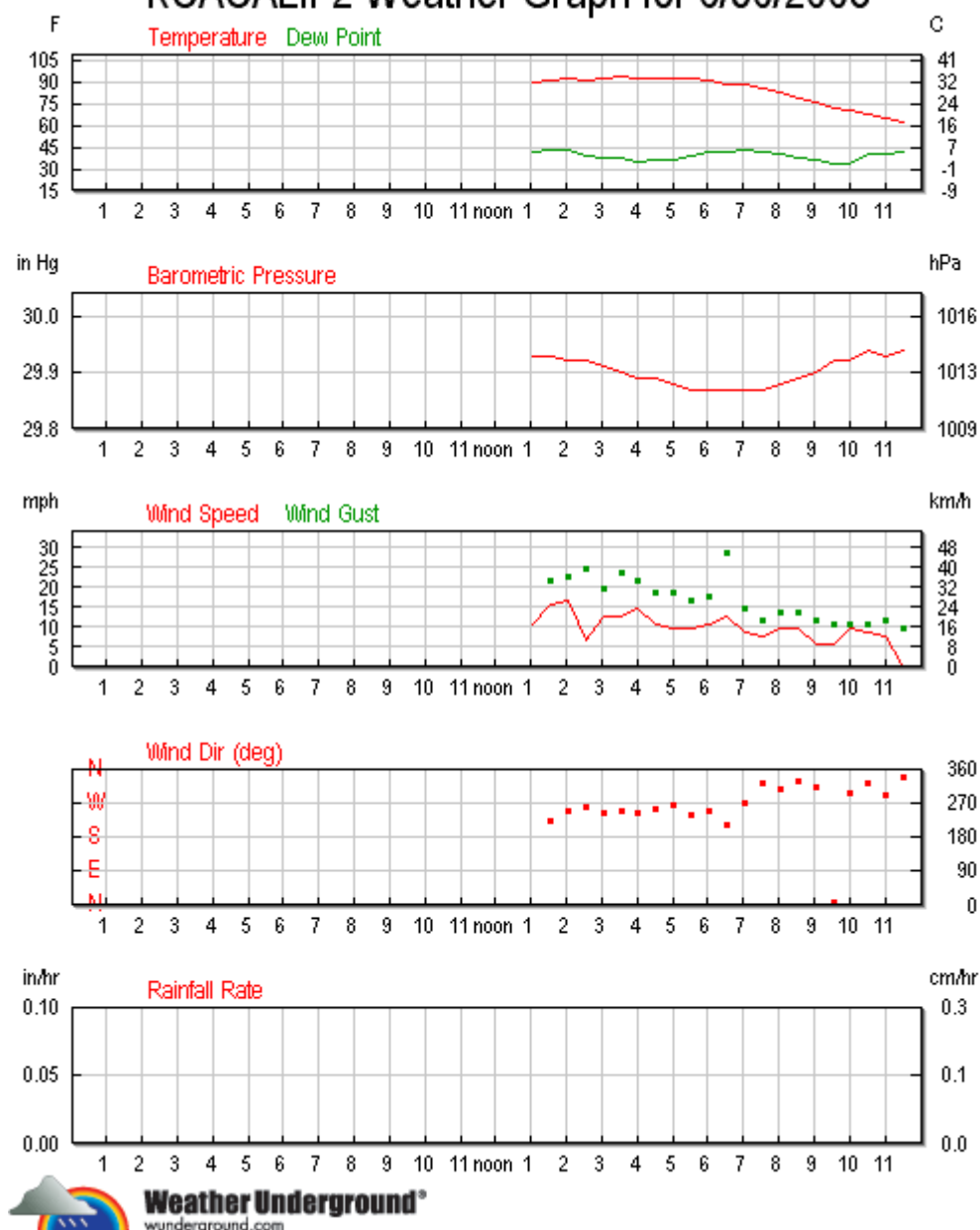
Daily Summary for June 30, 2008

	Current:	High:	Low:	Average:
Temperature:	89.4 °F / 31.9 °C	94.3 °F / 34.6 °C	90.8 °F / 32.7 °C	93.0 °F / 33.9 °C
Dew Point:	57.4 °F / 14.1 °C	44.6 °F / 7.0 °C	35.8 °F / 2.1 °C	40.2 °F / 4.5 °C
Humidity:	34%	19%	13%	16%
Wind Speed:	3.0mph / 4.8km/h /	17.0mph / 27.4km/h	-	12.9mph / 20.7km/h
Wind Gust:	13.0mph / 20.9km/h /	25.0mph / 40.2km/h	-	-
Wind:	WNW	-	-	WSW
Pressure:	29.91in / 1012.8hPa	29.93in / 1013.4hPa	29.89in / 1012.1hPa	-
Precipitation:	0.00in / 0.0mm			

Statistics for the rest of the month:

	High:	Low:	Average:
Temperature:	104.8 °F / 40.4 °C	35.6 °F / 2.0 °C	70.9 °F / 21.6 °C
Dew Point:	51.0 °F / 10.6 °C	15.6 °F / -9.1 °C	35.8 °F / 2.1 °C
Humidity:	91.0%	9.0%	32.2%
Wind Speed:	24.0mph / 38.6km/h from the NNE	-	5.6mph / 9.0km/h
Wind Gust:	34.0mph / 54.7km/h from the NNE	-	-
Wind:	-	-	SW
Pressure:	30.05in / 1017.5hPa	29.71in / 1006.0hPa	-
Precipitation:	0.00in / 0.0mm		

KCACALIF2 Weather Graph for 6/30/2008



Tabular Data for June 30, 2008

Time	Temperature	Dew Point	Pressure	Wind	Wind Speed	Wind Gust	Humidity	Rainfall Rate (Hourly)
13:02	90.8 °F / 32.7 °C	42.9 °F / 6.1 °C	29.93in / 1013.4hPa	WSW	11mph / 17.7km/h	18mph / 29.0km/h	19%	0.00in / 0.0mm
13:32	92.0 °F / 33.3 °C	43.9 °F / 6.6 °C	29.93in / 1013.4hPa	SW	16mph / 25.7km/h	22mph / 35.4km/h	19%	0.00in / 0.0mm
14:02	92.9 °F / 33.8 °C	44.6 °F / 7.0 °C	29.92in / 1013.1hPa	WSW	17mph / 27.4km/h	23mph / 37.0km/h	19%	0.00in / 0.0mm
14:32	92.3 °F / 33.5 °C	39.7 °F / 4.3 °C	29.92in / 1013.1hPa	West	7mph / 11.3km/h	25mph / 40.2km/h	16%	0.00in / 0.0mm
15:02	93.7 °F / 34.3 °C	39.1 °F / 3.9 °C	29.91in / 1012.8hPa	WSW	13mph / 20.9km/h	20mph / 32.2km/h	15%	0.00in / 0.0mm
	94.3 °F /	37.8 °F /	29.90in /		13mph /	24mph /		0.00in /

15:32	34.6 °C	3.2 °C	1012.4 hPa	WSW	20.9 km/h	38.6 km/h	14%	0.0 mm
16:02	94.1 °F / 34.5 °C	35.8 °F / 2.1 °C	29.89 in / 1012.1 hPa	WSW	15 mph / 24.1 km/h	22 mph / 35.4 km/h	13%	0.00 in / 0.0 mm
16:32	93.8 °F / 34.3 °C	37.5 °F / 3.1 °C	29.89 in / 1012.1 hPa	West	11 mph / 17.7 km/h	19 mph / 30.6 km/h	14%	0.00 in / 0.0 mm
17:02	93.7 °F / 34.3 °C	37.4 °F / 3.0 °C	29.88 in / 1011.7 hPa	West	10.0 mph / 16.1 km/h	19.0 mph / 30.6 km/h	14%	0.00 in / 0.0 mm
17:32	93.0 °F / 33.9 °C	40.2 °F / 4.6 °C	29.87 in / 1011.4 hPa	WSW	10.0 mph / 16.1 km/h	17.0 mph / 27.4 km/h	16%	0.00 in / 0.0 mm
18:02	91.7 °F / 33.2 °C	42.2 °F / 5.7 °C	29.87 in / 1011.4 hPa	WSW	11.0 mph / 17.7 km/h	18.0 mph / 29.0 km/h	18%	0.00 in / 0.0 mm
18:32	89.3 °F / 31.8 °C	43.0 °F / 6.1 °C	29.87 in / 1011.4 hPa	SW	13.0 mph / 20.9 km/h	29.0 mph / 46.7 km/h	20%	0.00 in / 0.0 mm
19:02	89.2 °F / 31.8 °C	44.2 °F / 6.8 °C	29.87 in / 1011.4 hPa	West	9.0 mph / 14.5 km/h	15.0 mph / 24.1 km/h	21%	0.00 in / 0.0 mm
19:32	87.1 °F / 30.6 °C	42.5 °F / 5.8 °C	29.87 in / 1011.4 hPa	NW	8.0 mph / 12.9 km/h	12.0 mph / 19.3 km/h	21%	0.00 in / 0.0 mm
20:02	83.9 °F / 28.8 °C	41.0 °F / 5.0 °C	29.88 in / 1011.7 hPa	NW	10.0 mph / 16.1 km/h	14.0 mph / 22.5 km/h	22%	0.00 in / 0.0 mm
20:32	79.9 °F / 26.6 °C	38.8 °F / 3.8 °C	29.89 in / 1012.1 hPa	NNW	10.0 mph / 16.1 km/h	14.0 mph / 22.5 km/h	23%	0.00 in / 0.0 mm
21:02	76.3 °F / 24.6 °C	36.9 °F / 2.7 °C	29.90 in / 1012.4 hPa	NW	6.0 mph / 9.7 km/h	12.0 mph / 19.3 km/h	24%	0.00 in / 0.0 mm
21:32	72.6 °F / 22.6 °C	34.8 °F / 1.6 °C	29.92 in / 1013.1 hPa	North	6.0 mph / 9.7 km/h	11.0 mph / 17.7 km/h	25%	0.00 in / 0.0 mm
22:02	71.3 °F / 21.8 °C	33.7 °F / 0.9 °C	29.92 in / 1013.1 hPa	WNW	10.0 mph / 16.1 km/h	11.0 mph / 17.7 km/h	25%	0.00 in / 0.0 mm
22:32	68.8 °F / 20.4 °C	40.8 °F / 4.9 °C	29.94 in / 1013.8 hPa	NW	9.0 mph / 14.5 km/h	11.0 mph / 17.7 km/h	36%	0.00 in / 0.0 mm
23:02	65.7 °F / 18.7 °C	40.7 °F / 4.8 °C	29.93 in / 1013.4 hPa	WNW	8.0 mph / 12.9 km/h	12.0 mph / 19.3 km/h	40%	0.00 in / 0.0 mm
23:32	63.7 °F / 17.6 °C	42.0 °F / 5.6 °C	29.94 in / 1013.8 hPa	Calm		10.0 mph / 16.1 km/h	45%	0.00 in / 0.0 mm
00:02	62.3 °F / 16.8 °C	42.4 °F / 5.8 °C	29.93 in / 1013.4 hPa	NW	5.0 mph / 8.0 km/h	9.0 mph / 14.5 km/h	48%	0.00 in / 0.0 mm

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History for KCACALIF2

California Valley, California Valley, CA — [Current Conditions](#)

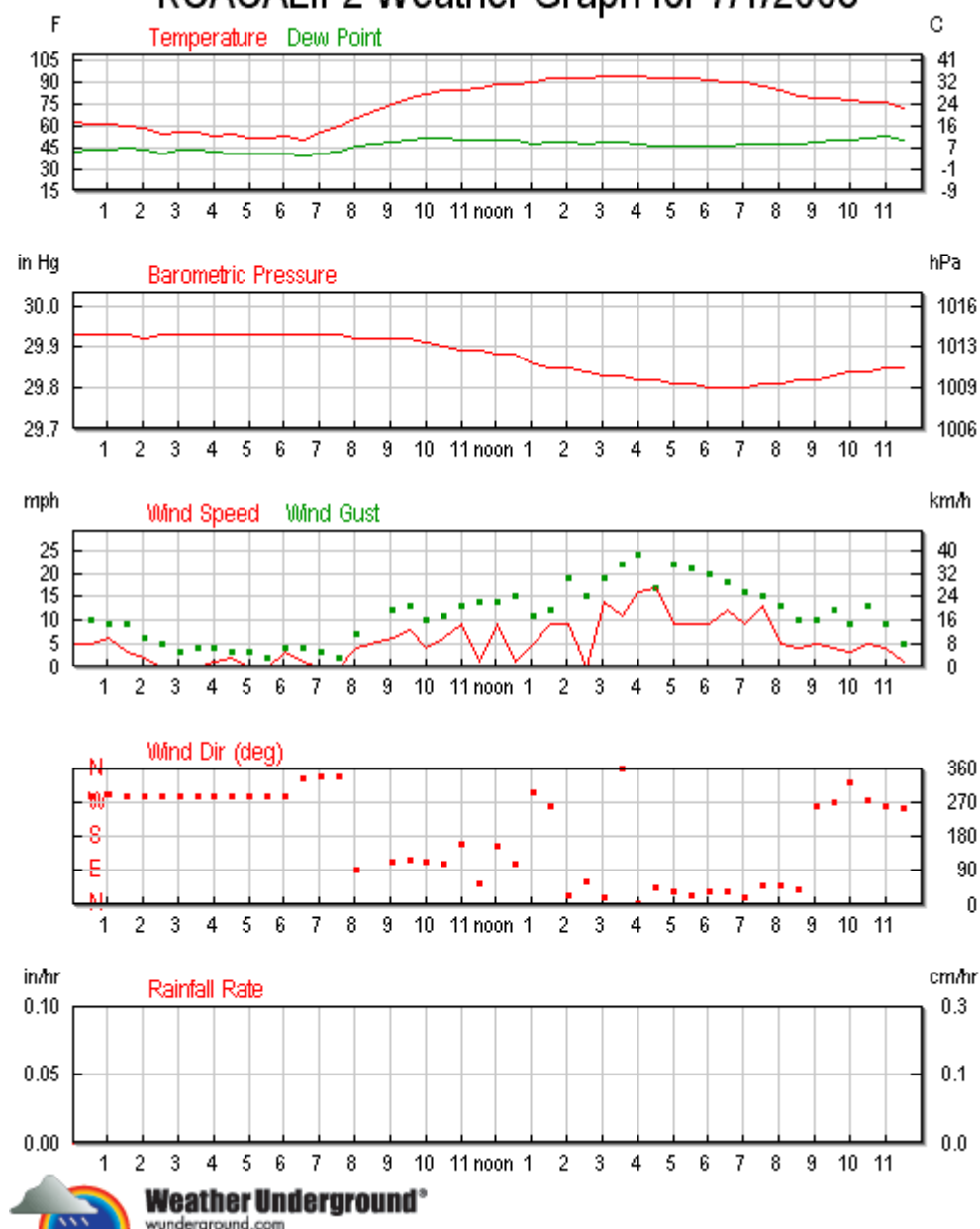
Daily Summary for July 1, 2008

	Current:	High:	Low:	Average:
Temperature:	89.4 °F / 31.9 °C	94.0 °F / 34.4 °C	50.3 °F / 10.2 °C	75.6 °F / 24.2 °C
Dew Point:	57.4 °F / 14.1 °C	52.4 °F / 11.3 °C	39.0 °F / 3.9 °C	46.4 °F / 8.0 °C
Humidity:	34%	66%	20%	39%
Wind Speed:	3.0mph / 4.8km/h /	17.0mph / 27.4km/h	-	5.3mph / 8.5km/h
Wind Gust:	13.0mph / 20.9km/h /	24.0mph / 38.6km/h	-	-
Wind:	WNW	-	-	NNE
Pressure:	29.91in / 1012.8hPa	29.93in / 1013.4hPa	29.80in / 1009.0hPa	-
Precipitation:	0.00in / 0.0mm			

Statistics for the rest of the month:

	High:	Low:	Average:
Temperature:	107.1 °F / 41.7 °C	50.3 °F / 10.2 °C	79.3 °F / 26.3 °C
Dew Point:	58.3 °F / 14.6 °C	36.2 °F / 2.3 °C	48.9 °F / 9.4 °C
Humidity:	76.0%	12.0%	37.6%
Wind Speed:	24.0mph / 38.6km/h from the NW	-	5.2mph / 8.4km/h
Wind Gust:	31.0mph / 49.9km/h from the NNW	-	-
Wind:	-	-	SE
Pressure:	29.95in / 1014.1hPa	29.62in / 1002.9hPa	-
Precipitation:	0.00in / 0.0mm		

KCACALIF2 Weather Graph for 7/1/2008



Tabular Data for July 1, 2008

Time	Temperature	Dew Point	Pressure	Wind	Wind Speed	Wind Gust	Humidity	Rainfall Rate (Hourly)
00:02	62.3 °F / 16.8 °C	42.4 °F / 5.8 °C	29.93in / 1013.4hPa	NW	5.0mph / 8.0km/h	9.0mph / 14.5km/h	48%	0.00in / 0.0mm
00:32	61.9 °F / 16.6 °C	43.6 °F / 6.4 °C	29.93in / 1013.4hPa	WNW	5.0mph / 8.0km/h	10.0mph / 16.1km/h	51%	0.00in / 0.0mm
01:02	60.8 °F / 16.0 °C	43.6 °F / 6.4 °C	29.93in / 1013.4hPa	WNW	6.0mph / 9.7km/h	9.0mph / 14.5km/h	53%	0.00in / 0.0mm
01:32	60.3 °F / 15.7 °C	44.6 °F / 7.0 °C	29.93in / 1013.4hPa	WNW	3.0mph / 4.8km/h	9.0mph / 14.5km/h	56%	0.00in / 0.0mm
02:02	59.2 °F / 15.1 °C	44.0 °F / 6.7 °C	29.92in / 1013.1hPa	WNW	2.0mph / 3.2km/h	6.0mph / 9.7km/h	57%	0.00in / 0.0mm
	54.0 °F /	40.9 °F /	29.93in /			5.0mph /		0.00in /

02:32	12.2 °C	4.9 °C	1013.4 hPa	Calm		8.0 km/h	61%	0.0 mm
03:02	55.9 °F / 13.3 °C	42.7 °F / 5.9 °C	29.93 in / 1013.4 hPa	Calm		3.0 mph / 4.8 km/h	61%	0.00 in / 0.0 mm
03:32	55.7 °F / 13.2 °C	43.3 °F / 6.3 °C	29.93 in / 1013.4 hPa	Calm		4.0 mph / 6.4 km/h	63%	0.00 in / 0.0 mm
04:02	53.1 °F / 11.7 °C	41.3 °F / 5.2 °C	29.93 in / 1013.4 hPa	WNW	1.0 mph / 1.6 km/h	4.0 mph / 6.4 km/h	64%	0.00 in / 0.0 mm
04:32	53.9 °F / 12.2 °C	41.2 °F / 5.1 °C	29.93 in / 1013.4 hPa	WNW	2.0 mph / 3.2 km/h	3.0 mph / 4.8 km/h	62%	0.00 in / 0.0 mm
05:02	51.9 °F / 11.1 °C	40.9 °F / 4.9 °C	29.93 in / 1013.4 hPa	Calm		3.0 mph / 4.8 km/h	66%	0.00 in / 0.0 mm
05:32	52.2 °F / 11.2 °C	40.4 °F / 4.7 °C	29.93 in / 1013.4 hPa	Calm		2.0 mph / 3.2 km/h	64%	0.00 in / 0.0 mm
06:02	52.6 °F / 11.4 °C	40.8 °F / 4.9 °C	29.93 in / 1013.4 hPa	WNW	3.0 mph / 4.8 km/h	4.0 mph / 6.4 km/h	64%	0.00 in / 0.0 mm
06:32	50.3 °F / 10.2 °C	39.0 °F / 3.9 °C	29.93 in / 1013.4 hPa	NNW	1.0 mph / 1.6 km/h	4.0 mph / 6.4 km/h	65%	0.00 in / 0.0 mm
07:02	55.3 °F / 12.9 °C	40.8 °F / 4.9 °C	29.93 in / 1013.4 hPa	Calm		3.0 mph / 4.8 km/h	58%	0.00 in / 0.0 mm
07:32	60.3 °F / 15.7 °C	42.6 °F / 5.9 °C	29.93 in / 1013.4 hPa	Calm		2.0 mph / 3.2 km/h	52%	0.00 in / 0.0 mm
08:02	65.9 °F / 18.8 °C	45.7 °F / 7.6 °C	29.92 in / 1013.1 hPa	East	4.0 mph / 6.4 km/h	7.0 mph / 11.3 km/h	48%	0.00 in / 0.0 mm
09:02	75.2 °F / 24.0 °C	49.2 °F / 9.6 °C	29.92 in / 1013.1 hPa	ESE	6.0 mph / 9.7 km/h	12.0 mph / 19.3 km/h	40%	0.00 in / 0.0 mm
09:32	79.4 °F / 26.3 °C	50.9 °F / 10.5 °C	29.92 in / 1013.1 hPa	ESE	8.0 mph / 12.9 km/h	13.0 mph / 20.9 km/h	37%	0.00 in / 0.0 mm
10:02	82.4 °F / 28.0 °C	51.2 °F / 10.7 °C	29.91 in / 1012.8 hPa	ESE	4.0 mph / 6.4 km/h	10.0 mph / 16.1 km/h	34%	0.00 in / 0.0 mm
10:32	84.2 °F / 29.0 °C	51.2 °F / 10.7 °C	29.90 in / 1012.4 hPa	ESE	6.0 mph / 9.7 km/h	11.0 mph / 17.7 km/h	32%	0.00 in / 0.0 mm
11:02	85.3 °F / 29.6 °C	50.4 °F / 10.2 °C	29.89 in / 1012.1 hPa	SSE	9.0 mph / 14.5 km/h	13.0 mph / 20.9 km/h	30%	0.00 in / 0.0 mm
11:32	86.8 °F / 30.4 °C	49.8 °F / 9.9 °C	29.89 in / 1012.1 hPa	NE	1.0 mph / 1.6 km/h	14.0 mph / 22.5 km/h	28%	0.00 in / 0.0 mm
12:02	88.7 °F / 31.5 °C	50.5 °F / 10.3 °C	29.88 in / 1011.7 hPa	SSE	9.0 mph / 14.5 km/h	14.0 mph / 22.5 km/h	27%	0.00 in / 0.0 mm
12:32	89.2 °F / 31.8 °C	49.9 °F / 9.9 °C	29.88 in / 1011.7 hPa	ESE	1.0 mph / 1.6 km/h	15.0 mph / 24.1 km/h	26%	0.00 in / 0.0 mm
13:02	90.7 °F / 32.6 °C	47.8 °F / 8.8 °C	29.86 in / 1011.1 hPa	WNW	5.0 mph / 8.0 km/h	11.0 mph / 17.7 km/h	23%	0.00 in / 0.0 mm
13:32	93.1 °F / 33.9 °C	48.7 °F / 9.3 °C	29.85 in / 1010.7 hPa	West	9.0 mph / 14.5 km/h	12.0 mph / 19.3 km/h	22%	0.00 in / 0.0 mm
14:02	92.9 °F / 33.8 °C	48.5 °F / 9.2 °C	29.85 in / 1010.7 hPa	NNE	9.0 mph / 14.5 km/h	19.0 mph / 30.6 km/h	22%	0.00 in / 0.0 mm
14:32	93.2 °F / 34.0 °C	47.5 °F / 8.6 °C	29.84 in / 1010.4 hPa	Calm		15.0 mph / 24.1 km/h	21%	0.00 in / 0.0 mm
15:02	94.0 °F / 34.4 °C	49.4 °F / 9.7 °C	29.83 in / 1010.0 hPa	NNE	14.0 mph / 22.5 km/h	19.0 mph / 30.6 km/h	22%	0.00 in / 0.0 mm
	94.0 °F /	48.2 °F /	29.83 in /		11.0 mph /	22.0 mph /		0.00 in /

15:32	34.4 °C	9.0 °C	1010.0 hPa	North	17.7 km/h	35.4 km/h	21%	0.0 mm
16:02	94.0 °F / 34.4 °C	46.9 °F / 8.3 °C	29.82 in / 1009.7 hPa	North	16.0 mph / 25.7 km/h	24.0 mph / 38.6 km/h	20%	0.00 in / 0.0 mm
16:32	93.6 °F / 34.2 °C	46.5 °F / 8.1 °C	29.82 in / 1009.7 hPa	NE	17.0 mph / 27.4 km/h	17.0 mph / 27.4 km/h	20%	0.00 in / 0.0 mm
17:02	92.6 °F / 33.7 °C	45.7 °F / 7.6 °C	29.81 in / 1009.4 hPa	NNE	9.0 mph / 14.5 km/h	22.0 mph / 35.4 km/h	20%	0.00 in / 0.0 mm
17:32	92.6 °F / 33.7 °C	45.7 °F / 7.6 °C	29.81 in / 1009.4 hPa	NNE	9.0 mph / 14.5 km/h	21.0 mph / 33.8 km/h	20%	0.00 in / 0.0 mm
18:02	91.8 °F / 33.2 °C	46.3 °F / 7.9 °C	29.80 in / 1009.0 hPa	NE	9.0 mph / 14.5 km/h	20.0 mph / 32.2 km/h	21%	0.00 in / 0.0 mm
18:32	90.6 °F / 32.6 °C	46.6 °F / 8.1 °C	29.80 in / 1009.0 hPa	NE	12.0 mph / 19.3 km/h	18.0 mph / 29.0 km/h	22%	0.00 in / 0.0 mm
19:02	89.7 °F / 32.1 °C	47.0 °F / 8.3 °C	29.80 in / 1009.0 hPa	NNE	9.0 mph / 14.5 km/h	16.0 mph / 25.7 km/h	23%	0.00 in / 0.0 mm
19:32	87.9 °F / 31.1 °C	47.7 °F / 8.7 °C	29.81 in / 1009.4 hPa	NE	13.0 mph / 20.9 km/h	15.0 mph / 24.1 km/h	25%	0.00 in / 0.0 mm
20:02	84.4 °F / 29.1 °C	47.8 °F / 8.8 °C	29.81 in / 1009.4 hPa	NE	5.0 mph / 8.0 km/h	13.0 mph / 20.9 km/h	28%	0.00 in / 0.0 mm
20:32	81.1 °F / 27.3 °C	46.8 °F / 8.2 °C	29.82 in / 1009.7 hPa	NE	4.0 mph / 6.4 km/h	10.0 mph / 16.1 km/h	30%	0.00 in / 0.0 mm
21:02	79.1 °F / 26.2 °C	48.3 °F / 9.1 °C	29.82 in / 1009.7 hPa	West	5.0 mph / 8.0 km/h	10.0 mph / 16.1 km/h	34%	0.00 in / 0.0 mm
21:32	78.6 °F / 25.9 °C	50.2 °F / 10.1 °C	29.83 in / 1010.0 hPa	West	4.0 mph / 6.4 km/h	12.0 mph / 19.3 km/h	37%	0.00 in / 0.0 mm
22:02	77.6 °F / 25.3 °C	50.7 °F / 10.4 °C	29.84 in / 1010.4 hPa	NW	3.0 mph / 4.8 km/h	9.0 mph / 14.5 km/h	39%	0.00 in / 0.0 mm
22:32	76.1 °F / 24.5 °C	52.0 °F / 11.1 °C	29.84 in / 1010.4 hPa	West	5.0 mph / 8.0 km/h	13.0 mph / 20.9 km/h	43%	0.00 in / 0.0 mm
23:02	77.2 °F / 25.1 °C	52.4 °F / 11.3 °C	29.85 in / 1010.7 hPa	West	4.0 mph / 6.4 km/h	9.0 mph / 14.5 km/h	42%	0.00 in / 0.0 mm
23:32	72.3 °F / 22.4 °C	49.8 °F / 9.9 °C	29.85 in / 1010.7 hPa	West	1.0 mph / 1.6 km/h	5.0 mph / 8.0 km/h	45%	0.00 in / 0.0 mm

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History for KCACALIF2

California Valley, California Valley, CA — [Current Conditions](#)

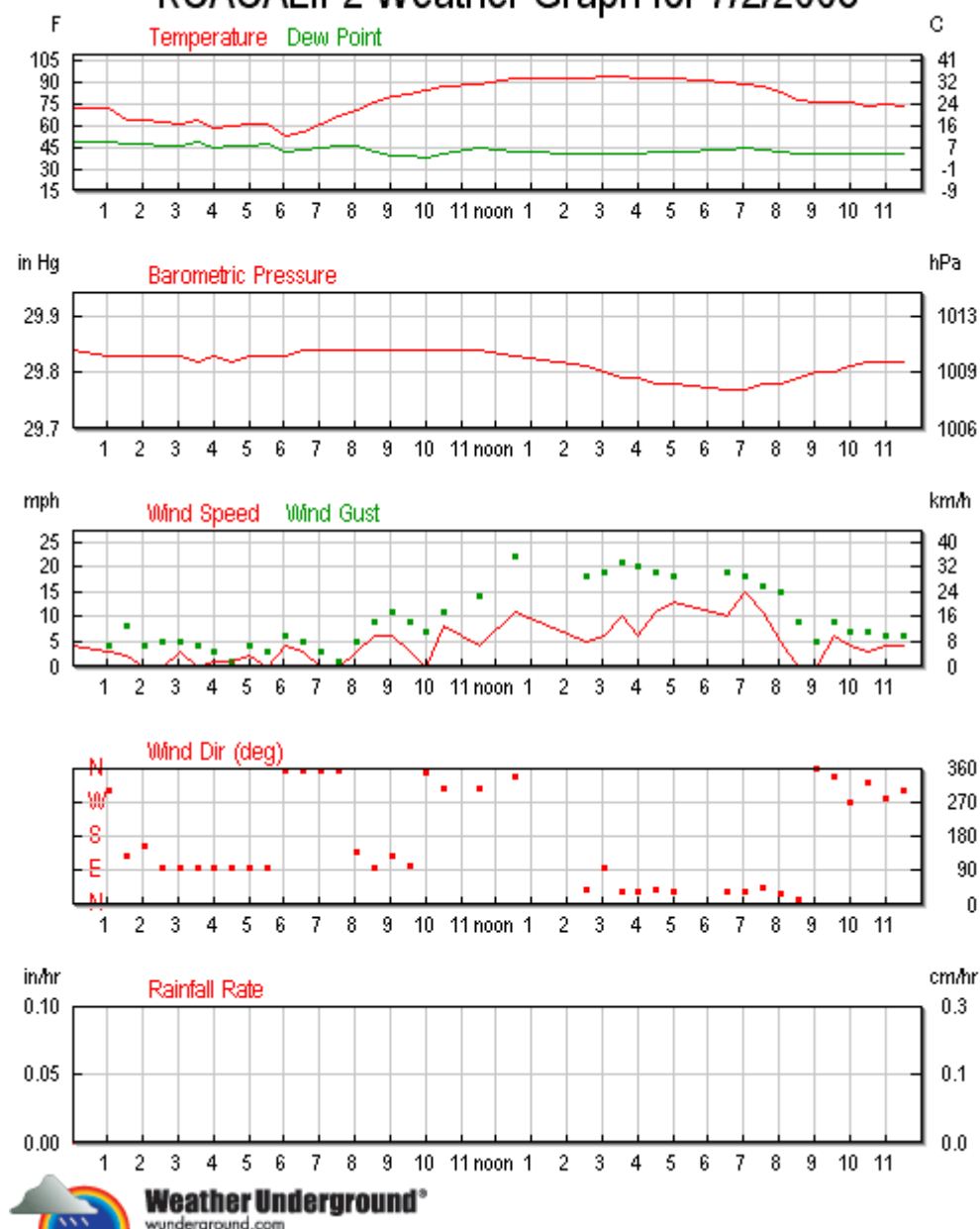
Daily Summary for July 2, 2008

	Current:	High:	Low:	Average:
Temperature:	89.4 °F / 31.9 °C	93.7 °F / 34.3 °C	53.1 °F / 11.7 °C	76.0 °F / 24.5 °C
Dew Point:	57.4 °F / 14.1 °C	49.4 °F / 9.7 °C	38.3 °F / 3.5 °C	43.3 °F / 6.3 °C
Humidity:	34%	65%	16%	35%
Wind Speed:	3.0mph / 4.8km/h /	15.0mph / 24.1km/h	-	4.4mph / 7.1km/h
Wind Gust:	13.0mph / 20.9km/h /	22.0mph / 35.4km/h	-	-
Wind:	WNW	-	-	NNE
Pressure:	29.91in / 1012.8hPa	29.84in / 1010.4hPa	29.77in / 1008.0hPa	-
Precipitation:	0.00in / 0.0mm			

Statistics for the rest of the month:

	High:	Low:	Average:
Temperature:	107.1 °F / 41.7 °C	50.3 °F / 10.2 °C	79.3 °F / 26.3 °C
Dew Point:	58.3 °F / 14.6 °C	36.2 °F / 2.3 °C	48.9 °F / 9.4 °C
Humidity:	76.0%	12.0%	37.6%
Wind Speed:	24.0mph / 38.6km/h from the NW	-	5.2mph / 8.4km/h
Wind Gust:	31.0mph / 49.9km/h from the NNW	-	-
Wind:	-	-	SE
Pressure:	29.95in / 1014.1hPa	29.62in / 1002.9hPa	-
Precipitation:	0.00in / 0.0mm		

KCACALIF2 Weather Graph for 7/2/2008



Tabular Data for July 2, 2008

Time	Temperature	Dew Point	Pressure	Wind	Wind Speed	Wind Gust	Humidity	Rainfall Rate (Hourly)
00:02	71.9 °F / 22.2 °C	49.4 °F / 9.7 °C	29.84in / 1010.4hPa	NW	4.0mph / 6.4km/h	5.0mph / 8.0km/h	45%	0.00in / 0.0mm
01:02	71.8 °F / 22.1 °C	49.3 °F / 9.6 °C	29.83in / 1010.0hPa	WNW	3.0mph / 4.8km/h	4.0mph / 6.4km/h	45%	0.00in / 0.0mm
01:32	64.4 °F / 18.0 °C	46.9 °F / 8.3 °C	29.83in / 1010.0hPa	SE	2.0mph / 3.2km/h	8.0mph / 12.9km/h	53%	0.00in / 0.0mm
02:02	64.5 °F / 18.1 °C	47.5 °F / 8.6 °C	29.83in / 1010.0hPa	Calm		4.0mph / 6.4km/h	54%	0.00in / 0.0mm
02:32	62.0 °F / 16.7 °C	45.7 °F / 7.6 °C	29.83in / 1010.0hPa	Calm		5.0mph / 8.0km/h	55%	0.00in / 0.0mm
	61.3 °F /	46.4 °F /	29.83in /		3.0mph /	5.0mph /		0.00in /

03:02	16.3 °C	8.0 °C	1010.0 hPa	East	4.8 km/h	8.0 km/h	58%	0.0 mm
03:32	64.1 °F / 17.8 °C	49.0 °F / 9.4 °C	29.82 in / 1009.7 hPa	Calm		4.0 mph / 6.4 km/h	58%	0.00 in / 0.0 mm
04:02	59.0 °F / 15.0 °C	44.3 °F / 6.8 °C	29.83 in / 1010.0 hPa	East	1.0 mph / 1.6 km/h	3.0 mph / 4.8 km/h	58%	0.00 in / 0.0 mm
04:32	60.2 °F / 15.7 °C	46.7 °F / 8.2 °C	29.82 in / 1009.7 hPa	East	1.0 mph / 1.6 km/h	1.0 mph / 1.6 km/h	61%	0.00 in / 0.0 mm
05:02	60.7 °F / 15.9 °C	46.8 °F / 8.2 °C	29.83 in / 1010.0 hPa	East	2.0 mph / 3.2 km/h	4.0 mph / 6.4 km/h	60%	0.00 in / 0.0 mm
05:32	61.3 °F / 16.3 °C	47.8 °F / 8.8 °C	29.83 in / 1010.0 hPa	Calm		3.0 mph / 4.8 km/h	61%	0.00 in / 0.0 mm
06:02	53.1 °F / 11.7 °C	41.7 °F / 5.4 °C	29.83 in / 1010.0 hPa	North	4.0 mph / 6.4 km/h	6.0 mph / 9.7 km/h	65%	0.00 in / 0.0 mm
06:32	56.0 °F / 13.3 °C	43.2 °F / 6.2 °C	29.84 in / 1010.4 hPa	North	3.0 mph / 4.8 km/h	5.0 mph / 8.0 km/h	62%	0.00 in / 0.0 mm
07:02	60.9 °F / 16.1 °C	45.1 °F / 7.3 °C	29.84 in / 1010.4 hPa	Calm		3.0 mph / 4.8 km/h	56%	0.00 in / 0.0 mm
07:32	66.9 °F / 19.4 °C	46.0 °F / 7.8 °C	29.84 in / 1010.4 hPa	Calm		1.0 mph / 1.6 km/h	47%	0.00 in / 0.0 mm
08:02	71.2 °F / 21.8 °C	46.3 °F / 7.9 °C	29.84 in / 1010.4 hPa	SE	3.0 mph / 4.8 km/h	5.0 mph / 8.0 km/h	41%	0.00 in / 0.0 mm
08:32	77.0 °F / 25.0 °C	41.4 °F / 5.2 °C	29.84 in / 1010.4 hPa	East	6.0 mph / 9.7 km/h	9.0 mph / 14.5 km/h	28%	0.00 in / 0.0 mm
09:02	80.4 °F / 26.9 °C	39.2 °F / 4.0 °C	29.84 in / 1010.4 hPa	SE	6.0 mph / 9.7 km/h	11.0 mph / 17.7 km/h	23%	0.00 in / 0.0 mm
09:32	82.6 °F / 28.1 °C	38.8 °F / 3.8 °C	29.84 in / 1010.4 hPa	ESE	3.0 mph / 4.8 km/h	9.0 mph / 14.5 km/h	21%	0.00 in / 0.0 mm
10:02	85.2 °F / 29.6 °C	38.3 °F / 3.5 °C	29.84 in / 1010.4 hPa	Calm		7.0 mph / 11.3 km/h	19%	0.00 in / 0.0 mm
10:32	87.2 °F / 30.7 °C	41.3 °F / 5.2 °C	29.84 in / 1010.4 hPa	NW	8.0 mph / 12.9 km/h	11.0 mph / 17.7 km/h	20%	0.00 in / 0.0 mm
11:32	88.1 °F / 31.2 °C	44.5 °F / 6.9 °C	29.84 in / 1010.4 hPa	NW	4.0 mph / 6.4 km/h	14.0 mph / 22.5 km/h	22%	0.00 in / 0.0 mm
12:32	93.0 °F / 33.9 °C	41.8 °F / 5.4 °C	29.83 in / 1010.0 hPa	NNW	11.0 mph / 17.7 km/h	22.0 mph / 35.4 km/h	17%	0.00 in / 0.0 mm
14:32	93.5 °F / 34.2 °C	40.6 °F / 4.8 °C	29.81 in / 1009.4 hPa	NE	5.0 mph / 8.0 km/h	18.0 mph / 29.0 km/h	16%	0.00 in / 0.0 mm
15:02	93.7 °F / 34.3 °C	40.8 °F / 4.9 °C	29.80 in / 1009.0 hPa	East	6.0 mph / 9.7 km/h	19.0 mph / 30.6 km/h	16%	0.00 in / 0.0 mm
15:32	93.7 °F / 34.3 °C	40.8 °F / 4.9 °C	29.79 in / 1008.7 hPa	NE	10.0 mph / 16.1 km/h	21.0 mph / 33.8 km/h	16%	0.00 in / 0.0 mm
16:02	93.5 °F / 34.2 °C	40.6 °F / 4.8 °C	29.79 in / 1008.7 hPa	NE	6.0 mph / 9.7 km/h	20.0 mph / 32.2 km/h	16%	0.00 in / 0.0 mm
16:32	93.2 °F / 34.0 °C	42.0 °F / 5.6 °C	29.78 in / 1008.4 hPa	NE	11.0 mph / 17.7 km/h	19.0 mph / 30.6 km/h	17%	0.00 in / 0.0 mm
17:02	92.7 °F / 33.7 °C	41.5 °F / 5.3 °C	29.78 in / 1008.4 hPa	NE	13.0 mph / 20.9 km/h	18.0 mph / 29.0 km/h	17%	0.00 in / 0.0 mm
18:32	89.7 °F / 32.1 °C	43.3 °F / 6.3 °C	29.77 in / 1008.0 hPa	NE	10.0 mph / 16.1 km/h	19.0 mph / 30.6 km/h	20%	0.00 in / 0.0 mm
	88.5 °F /	44.8 °F /	29.77 in /		15.0 mph /	18.0 mph /		0.00 in /

19:02	31.4 °C	7.1 °C	1008.0hPa	NNE	24.1km/h	29.0km/h	22%	0.0mm
19:32	86.8 °F / 30.4 °C	43.4 °F / 6.3 °C	29.78in / 1008.4hPa	NE	11.0mph / 17.7km/h	16.0mph / 25.7km/h	22%	0.00in / 0.0mm
20:02	83.7 °F / 28.7 °C	42.0 °F / 5.6 °C	29.78in / 1008.4hPa	NNE	5.0mph / 8.0km/h	15.0mph / 24.1km/h	23%	0.00in / 0.0mm
20:32	78.4 °F / 25.8 °C	40.7 °F / 4.8 °C	29.79in / 1008.7hPa	Calm		9.0mph / 14.5km/h	26%	0.00in / 0.0mm
21:02	77.0 °F / 25.0 °C	40.5 °F / 4.7 °C	29.80in / 1009.0hPa	Calm		5.0mph / 8.0km/h	27%	0.00in / 0.0mm
21:32	76.0 °F / 24.4 °C	40.6 °F / 4.8 °C	29.80in / 1009.0hPa	NNW	6.0mph / 9.7km/h	9.0mph / 14.5km/h	28%	0.00in / 0.0mm
22:02	77.0 °F / 25.0 °C	40.5 °F / 4.7 °C	29.81in / 1009.4hPa	West	4.0mph / 6.4km/h	7.0mph / 11.3km/h	27%	0.00in / 0.0mm
22:32	73.8 °F / 23.2 °C	40.5 °F / 4.7 °C	29.82in / 1009.7hPa	NW	3.0mph / 4.8km/h	7.0mph / 11.3km/h	30%	0.00in / 0.0mm
23:02	74.4 °F / 23.6 °C	41.0 °F / 5.0 °C	29.82in / 1009.7hPa	WNW	4.0mph / 6.4km/h	6.0mph / 9.7km/h	30%	0.00in / 0.0mm
23:32	73.4 °F / 23.0 °C	41.0 °F / 5.0 °C	29.82in / 1009.7hPa	NW	4.0mph / 6.4km/h	6.0mph / 9.7km/h	31%	0.00in / 0.0mm

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History for KCACALIF2

California Valley, California Valley, CA — [Current Conditions](#)

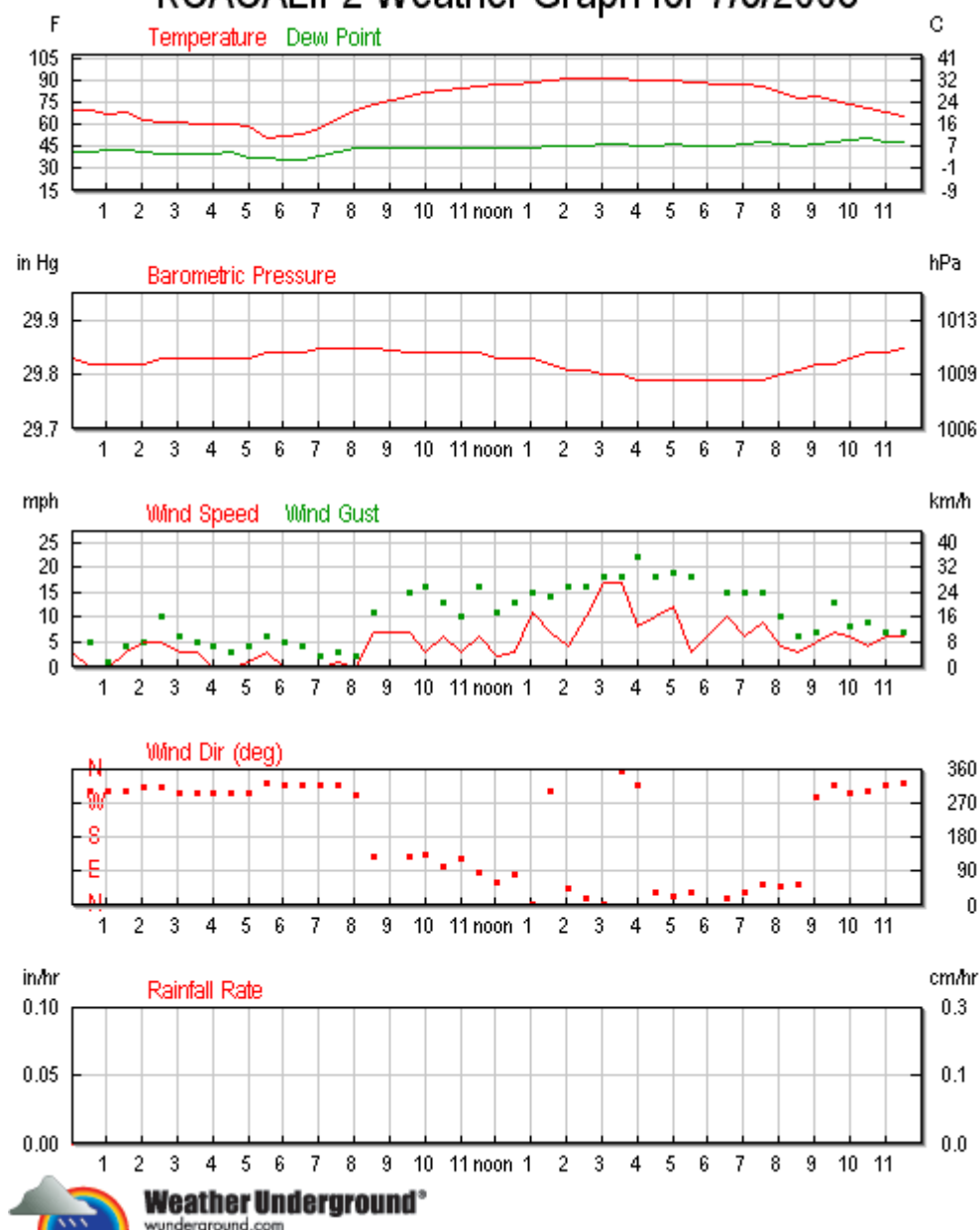
Daily Summary for July 3, 2008

	Current:	High:	Low:	Average:
Temperature:	89.4 °F / 31.9 °C	92.4 °F / 33.6 °C	51.4 °F / 10.8 °C	75.9 °F / 24.4 °C
Dew Point:	57.4 °F / 14.1 °C	51.3 °F / 10.7 °C	36.2 °F / 2.3 °C	44.0 °F / 6.7 °C
Humidity:	34%	58%	20%	34%
Wind Speed:	3.0mph / 4.8km/h /	17.0mph / 27.4km/h	-	5.0mph / 8.0km/h
Wind Gust:	13.0mph / 20.9km/h /	22.0mph / 35.4km/h	-	-
Wind:	WNW	-	-	North
Pressure:	29.91in / 1012.8hPa	29.85in / 1010.7hPa	29.79in / 1008.7hPa	-
Precipitation:	0.00in / 0.0mm			

Statistics for the rest of the month:

	High:	Low:	Average:
Temperature:	107.1 °F / 41.7 °C	50.3 °F / 10.2 °C	79.3 °F / 26.3 °C
Dew Point:	58.3 °F / 14.6 °C	36.2 °F / 2.3 °C	48.9 °F / 9.4 °C
Humidity:	76.0%	12.0%	37.6%
Wind Speed:	24.0mph / 38.6km/h from the NW	-	5.2mph / 8.4km/h
Wind Gust:	31.0mph / 49.9km/h from the NNW	-	-
Wind:	-	-	SE
Pressure:	29.95in / 1014.1hPa	29.62in / 1002.9hPa	-
Precipitation:	0.00in / 0.0mm		

KCACALIF2 Weather Graph for 7/3/2008



Tabular Data for July 3, 2008

Time	Temperature	Dew Point	Pressure	Wind	Wind Speed	Wind Gust	Humidity	Rainfall Rate (Hourly)
00:02	69.6 °F / 20.9 °C	41.5 °F / 5.3 °C	29.83in / 1010.0hPa	WNW	3.0mph / 4.8km/h	5.0mph / 8.0km/h	36%	0.00in / 0.0mm
00:32	70.3 °F / 21.3 °C	42.1 °F / 5.6 °C	29.82in / 1009.7hPa	Calm		5.0mph / 8.0km/h	36%	0.00in / 0.0mm
01:02	66.9 °F / 19.4 °C	43.1 °F / 6.2 °C	29.82in / 1009.7hPa	Calm		1.0mph / 1.6km/h	42%	0.00in / 0.0mm
01:32	69.3 °F / 20.7 °C	43.3 °F / 6.3 °C	29.82in / 1009.7hPa	WNW	3.0mph / 4.8km/h	4.0mph / 6.4km/h	39%	0.00in / 0.0mm
02:02	64.0 °F / 17.8 °C	42.3 °F / 5.7 °C	29.82in / 1009.7hPa	NW	5.0mph / 8.0km/h	5.0mph / 8.0km/h	45%	0.00in / 0.0mm
	62.2 °F /	40.0 °F /	29.83in /		5.0mph /	10.0mph /		0.00in /

02:32	16.8 °C	4.4 °C	1010.0hPa	NW	8.0km/h	16.1km/h	44%	0.0mm
03:02	61.6 °F / 16.4 °C	40.6 °F / 4.8 °C	29.83in / 1010.0hPa	WNW	3.0mph / 4.8km/h	6.0mph / 9.7km/h	46%	0.00in / 0.0mm
03:32	60.9 °F / 16.1 °C	40.0 °F / 4.4 °C	29.83in / 1010.0hPa	WNW	3.0mph / 4.8km/h	5.0mph / 8.0km/h	46%	0.00in / 0.0mm
04:02	60.3 °F / 15.7 °C	40.5 °F / 4.7 °C	29.83in / 1010.0hPa	Calm		4.0mph / 6.4km/h	48%	0.00in / 0.0mm
04:32	60.8 °F / 16.0 °C	41.5 °F / 5.3 °C	29.83in / 1010.0hPa	Calm		3.0mph / 4.8km/h	49%	0.00in / 0.0mm
05:02	59.0 °F / 15.0 °C	37.7 °F / 3.2 °C	29.83in / 1010.0hPa	WNW	1.0mph / 1.6km/h	4.0mph / 6.4km/h	45%	0.00in / 0.0mm
05:32	51.4 °F / 10.8 °C	37.1 °F / 2.8 °C	29.84in / 1010.4hPa	NW	3.0mph / 4.8km/h	6.0mph / 9.7km/h	58%	0.00in / 0.0mm
06:02	52.8 °F / 11.6 °C	36.2 °F / 2.3 °C	29.84in / 1010.4hPa	Calm		5.0mph / 8.0km/h	53%	0.00in / 0.0mm
06:32	53.4 °F / 11.9 °C	36.2 °F / 2.3 °C	29.84in / 1010.4hPa	Calm		4.0mph / 6.4km/h	52%	0.00in / 0.0mm
07:02	58.0 °F / 14.4 °C	39.0 °F / 3.9 °C	29.85in / 1010.7hPa	Calm		2.0mph / 3.2km/h	49%	0.00in / 0.0mm
07:32	64.6 °F / 18.1 °C	41.6 °F / 5.3 °C	29.85in / 1010.7hPa	NW	1.0mph / 1.6km/h	3.0mph / 4.8km/h	43%	0.00in / 0.0mm
08:02	70.4 °F / 21.3 °C	44.3 °F / 6.8 °C	29.85in / 1010.7hPa	Calm		2.0mph / 3.2km/h	39%	0.00in / 0.0mm
08:32	74.1 °F / 23.4 °C	44.0 °F / 6.7 °C	29.85in / 1010.7hPa	SE	7.0mph / 11.3km/h	11.0mph / 17.7km/h	34%	0.00in / 0.0mm
09:32	79.6 °F / 26.4 °C	43.7 °F / 6.5 °C	29.84in / 1010.4hPa	SE	7.0mph / 11.3km/h	15.0mph / 24.1km/h	28%	0.00in / 0.0mm
10:02	82.1 °F / 27.8 °C	44.8 °F / 7.1 °C	29.84in / 1010.4hPa	SE	3.0mph / 4.8km/h	16.0mph / 25.7km/h	27%	0.00in / 0.0mm
10:32	83.1 °F / 28.4 °C	43.7 °F / 6.5 °C	29.84in / 1010.4hPa	East	6.0mph / 9.7km/h	13.0mph / 20.9km/h	25%	0.00in / 0.0mm
11:02	84.4 °F / 29.1 °C	44.8 °F / 7.1 °C	29.84in / 1010.4hPa	ESE	3.0mph / 4.8km/h	10.0mph / 16.1km/h	25%	0.00in / 0.0mm
11:32	85.8 °F / 29.9 °C	43.8 °F / 6.6 °C	29.84in / 1010.4hPa	East	6.0mph / 9.7km/h	16.0mph / 25.7km/h	23%	0.00in / 0.0mm
12:02	87.2 °F / 30.7 °C	43.8 °F / 6.6 °C	29.83in / 1010.0hPa	ENE	2.0mph / 3.2km/h	11.0mph / 17.7km/h	22%	0.00in / 0.0mm
12:32	88.3 °F / 31.3 °C	44.7 °F / 7.1 °C	29.83in / 1010.0hPa	East	3.0mph / 4.8km/h	13.0mph / 20.9km/h	22%	0.00in / 0.0mm
13:02	89.6 °F / 32.0 °C	44.5 °F / 6.9 °C	29.83in / 1010.0hPa	North	11.0mph / 17.7km/h	15.0mph / 24.1km/h	21%	0.00in / 0.0mm
13:32	90.6 °F / 32.6 °C	45.4 °F / 7.4 °C	29.82in / 1009.7hPa	NW	7.0mph / 11.3km/h	14.0mph / 22.5km/h	21%	0.00in / 0.0mm
14:02	91.8 °F / 33.2 °C	45.1 °F / 7.3 °C	29.81in / 1009.4hPa	NE	4.0mph / 6.4km/h	16.0mph / 25.7km/h	20%	0.00in / 0.0mm
14:32	91.8 °F / 33.2 °C	45.1 °F / 7.3 °C	29.81in / 1009.4hPa	NNE	10.0mph / 16.1km/h	16.0mph / 25.7km/h	20%	0.00in / 0.0mm
15:02	92.4 °F / 33.6 °C	46.8 °F / 8.2 °C	29.80in / 1009.0hPa	North	17.0mph / 27.4km/h	18.0mph / 29.0km/h	21%	0.00in / 0.0mm
	91.9 °F /	46.4 °F /	29.80in /		17.0mph /	18.0mph /		0.00in /

15:32	33.3 °C	8.0 °C	1009.0 hPa	North	27.4 km/h	29.0 km/h	21%	0.0 mm
16:02	91.1 °F / 32.8 °C	45.8 °F / 7.7 °C	29.79 in / 1008.7 hPa	NW	8.0 mph / 12.9 km/h	22.0 mph / 35.4 km/h	21%	0.00 in / 0.0 mm
16:32	91.0 °F / 32.8 °C	45.7 °F / 7.6 °C	29.79 in / 1008.7 hPa	NNE	10.0 mph / 16.1 km/h	18.0 mph / 29.0 km/h	21%	0.00 in / 0.0 mm
17:02	90.5 °F / 32.5 °C	46.5 °F / 8.1 °C	29.79 in / 1008.7 hPa	NNE	12.0 mph / 19.3 km/h	19.0 mph / 30.6 km/h	22%	0.00 in / 0.0 mm
17:32	89.7 °F / 32.1 °C	45.8 °F / 7.7 °C	29.79 in / 1008.7 hPa	NE	3.0 mph / 4.8 km/h	18.0 mph / 29.0 km/h	22%	0.00 in / 0.0 mm
18:32	88.2 °F / 31.2 °C	45.8 °F / 7.7 °C	29.79 in / 1008.7 hPa	NNE	10.0 mph / 16.1 km/h	15.0 mph / 24.1 km/h	23%	0.00 in / 0.0 mm
19:02	87.1 °F / 30.6 °C	47.0 °F / 8.3 °C	29.79 in / 1008.7 hPa	NE	6.0 mph / 9.7 km/h	15.0 mph / 24.1 km/h	25%	0.00 in / 0.0 mm
19:32	85.8 °F / 29.9 °C	48.0 °F / 8.9 °C	29.79 in / 1008.7 hPa	NE	9.0 mph / 14.5 km/h	15.0 mph / 24.1 km/h	27%	0.00 in / 0.0 mm
20:02	81.9 °F / 27.7 °C	46.6 °F / 8.1 °C	29.80 in / 1009.0 hPa	NE	4.0 mph / 6.4 km/h	10.0 mph / 16.1 km/h	29%	0.00 in / 0.0 mm
20:32	78.9 °F / 26.1 °C	45.7 °F / 7.6 °C	29.81 in / 1009.4 hPa	NE	3.0 mph / 4.8 km/h	6.0 mph / 9.7 km/h	31%	0.00 in / 0.0 mm
21:02	79.5 °F / 26.4 °C	47.1 °F / 8.4 °C	29.82 in / 1009.7 hPa	WNW	5.0 mph / 8.0 km/h	7.0 mph / 11.3 km/h	32%	0.00 in / 0.0 mm
21:32	76.8 °F / 24.9 °C	48.6 °F / 9.2 °C	29.82 in / 1009.7 hPa	NW	7.0 mph / 11.3 km/h	13.0 mph / 20.9 km/h	37%	0.00 in / 0.0 mm
22:02	74.1 °F / 23.4 °C	50.2 °F / 10.1 °C	29.83 in / 1010.0 hPa	WNW	6.0 mph / 9.7 km/h	8.0 mph / 12.9 km/h	43%	0.00 in / 0.0 mm
22:32	72.0 °F / 22.2 °C	51.3 °F / 10.7 °C	29.84 in / 1010.4 hPa	WNW	4.0 mph / 6.4 km/h	9.0 mph / 14.5 km/h	48%	0.00 in / 0.0 mm
23:02	68.1 °F / 20.1 °C	48.8 °F / 9.3 °C	29.84 in / 1010.4 hPa	NW	6.0 mph / 9.7 km/h	7.0 mph / 11.3 km/h	50%	0.00 in / 0.0 mm
23:32	66.7 °F / 19.3 °C	48.0 °F / 8.9 °C	29.85 in / 1010.7 hPa	NW	6.0 mph / 9.7 km/h	7.0 mph / 11.3 km/h	51%	0.00 in / 0.0 mm

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History for KCACALIF2

California Valley, California Valley, CA — [Current Conditions](#)

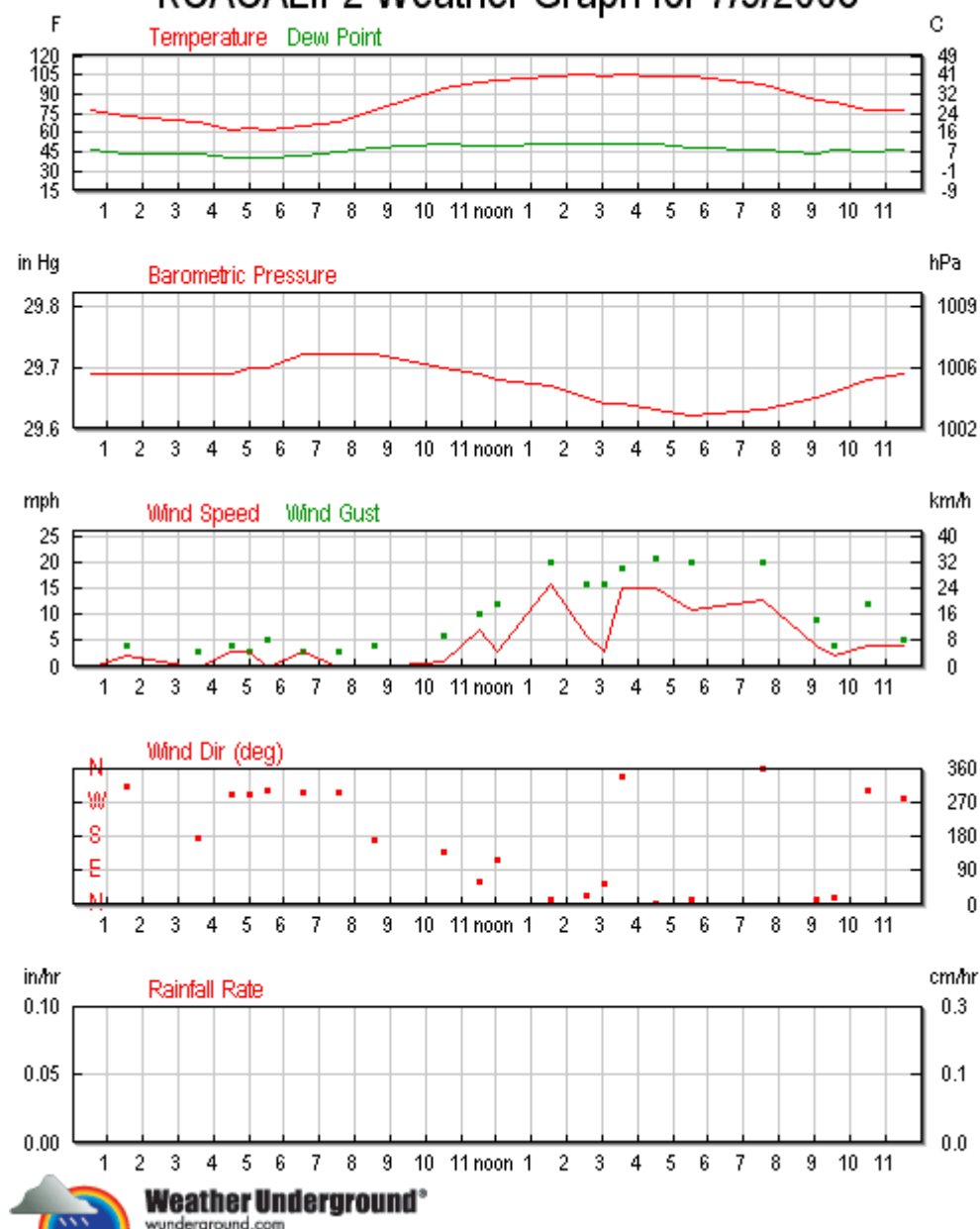
Daily Summary for July 9, 2008

	Current:	High:	Low:	Average:
Temperature:	89.4 °F / 31.9 °C	106.0 °F / 41.1 °C	62.6 °F / 17.0 °C	85.9 °F / 30.0 °C
Dew Point:	57.4 °F / 14.1 °C	52.2 °F / 11.2 °C	40.6 °F / 4.8 °C	47.4 °F / 8.6 °C
Humidity:	34%	45%	16%	29%
Wind Speed:	3.0mph / 4.8km/h /	16.0mph / 25.7km/h	-	5.0mph / 8.0km/h
Wind Gust:	13.0mph / 20.9km/h /	21.0mph / 33.8km/h	-	-
Wind:	WNW	-	-	North
Pressure:	29.91in / 1012.8hPa	29.72in / 1006.3hPa	29.62in / 1002.9hPa	-
Precipitation:	0.00in / 0.0mm			

Statistics for the rest of the month:

	High:	Low:	Average:
Temperature:	107.1 °F / 41.7 °C	50.3 °F / 10.2 °C	79.3 °F / 26.3 °C
Dew Point:	58.3 °F / 14.6 °C	36.2 °F / 2.3 °C	48.9 °F / 9.4 °C
Humidity:	76.0%	12.0%	37.6%
Wind Speed:	24.0mph / 38.6km/h from the NW	-	5.2mph / 8.4km/h
Wind Gust:	31.0mph / 49.9km/h from the NNW	-	-
Wind:	-	-	SE
Pressure:	29.95in / 1014.1hPa	29.62in / 1002.9hPa	-
Precipitation:	0.00in / 0.0mm		

KCACALIF2 Weather Graph for 7/9/2008



Tabular Data for July 9, 2008

Time	Temperature	Dew Point	Pressure	Wind	Wind Speed	Wind Gust	Humidity	Rainfall Rate (Hourly)
00:32	78.7 °F / 25.9 °C	47.2 °F / 8.4 °C	29.69in / 1005.3hPa	Calm		4.0mph / 6.4km/h	33%	0.00in / 0.0mm
01:32	73.8 °F / 23.2 °C	44.5 °F / 6.9 °C	29.69in / 1005.3hPa	NW	2.0mph / 3.2km/h	4.0mph / 6.4km/h	35%	0.00in / 0.0mm
03:32	68.9 °F / 20.5 °C	44.2 °F / 6.8 °C	29.69in / 1005.3hPa	Calm		3.0mph / 4.8km/h	41%	0.00in / 0.0mm
04:32	62.6 °F / 17.0 °C	41.0 °F / 5.0 °C	29.69in / 1005.3hPa	WNW	3.0mph / 4.8km/h	4.0mph / 6.4km/h	45%	0.00in / 0.0mm
05:02	64.3 °F / 17.9 °C	41.9 °F / 5.5 °C	29.70in / 1005.6hPa	WNW	3.0mph / 4.8km/h	3.0mph / 4.8km/h	44%	0.00in / 0.0mm
	62.8 °F /	40.6 °F /	29.70in /			5.0mph /		0.00in /

05:32	17.1 °C	4.8 °C	1005.6 hPa	Calm		8.0 km/h	44%	0.0 mm
06:32	65.7 °F / 18.7 °C	43.2 °F / 6.2 °C	29.72 in / 1006.3 hPa	WNW	3.0 mph / 4.8 km/h	3.0 mph / 4.8 km/h	44%	0.00 in / 0.0 mm
07:32	68.5 °F / 20.3 °C	45.1 °F / 7.3 °C	29.72 in / 1006.3 hPa	Calm		3.0 mph / 4.8 km/h	43%	0.00 in / 0.0 mm
08:32	78.7 °F / 25.9 °C	48.8 °F / 9.3 °C	29.72 in / 1006.3 hPa	Calm		4.0 mph / 6.4 km/h	35%	0.00 in / 0.0 mm
10:32	95.3 °F / 35.2 °C	51.7 °F / 10.9 °C	29.70 in / 1005.6 hPa	SE	1.0 mph / 1.6 km/h	6.0 mph / 9.7 km/h	23%	0.00 in / 0.0 mm
11:32	100.2 °F / 37.9 °C	50.5 °F / 10.3 °C	29.69 in / 1005.3 hPa	ENE	7.0 mph / 11.3 km/h	10.0 mph / 16.1 km/h	19%	0.00 in / 0.0 mm
12:02	101.2 °F / 38.4 °C	49.9 °F / 9.9 °C	29.68 in / 1005.0 hPa	ESE	3.0 mph / 4.8 km/h	12.0 mph / 19.3 km/h	18%	0.00 in / 0.0 mm
13:32	105.2 °F / 40.7 °C	51.6 °F / 10.9 °C	29.67 in / 1004.6 hPa	NNE	16.0 mph / 25.7 km/h	20.0 mph / 32.2 km/h	17%	0.00 in / 0.0 mm
14:32	105.7 °F / 40.9 °C	52.0 °F / 11.1 °C	29.65 in / 1003.9 hPa	NNE	6.0 mph / 9.7 km/h	16.0 mph / 25.7 km/h	17%	0.00 in / 0.0 mm
15:02	104.9 °F / 40.5 °C	51.3 °F / 10.7 °C	29.64 in / 1003.6 hPa	NE	3.0 mph / 4.8 km/h	16.0 mph / 25.7 km/h	17%	0.00 in / 0.0 mm
15:32	106.0 °F / 41.1 °C	52.2 °F / 11.2 °C	29.64 in / 1003.6 hPa	NNW	15.0 mph / 24.1 km/h	19.0 mph / 30.6 km/h	17%	0.00 in / 0.0 mm
16:32	105.1 °F / 40.6 °C	51.5 °F / 10.8 °C	29.63 in / 1003.3 hPa	North	15.0 mph / 24.1 km/h	21.0 mph / 33.8 km/h	17%	0.00 in / 0.0 mm
17:32	104.6 °F / 40.3 °C	49.5 °F / 9.7 °C	29.62 in / 1002.9 hPa	NNE	11.0 mph / 17.7 km/h	20.0 mph / 32.2 km/h	16%	0.00 in / 0.0 mm
19:32	98.2 °F / 36.8 °C	47.5 °F / 8.6 °C	29.63 in / 1003.3 hPa	North	13.0 mph / 20.9 km/h	20.0 mph / 32.2 km/h	18%	0.00 in / 0.0 mm
21:02	85.9 °F / 29.9 °C	45.0 °F / 7.2 °C	29.65 in / 1003.9 hPa	NNE	4.0 mph / 6.4 km/h	9.0 mph / 14.5 km/h	24%	0.00 in / 0.0 mm
21:32	83.8 °F / 28.8 °C	47.2 °F / 8.4 °C	29.66 in / 1004.3 hPa	NNE	2.0 mph / 3.2 km/h	4.0 mph / 6.4 km/h	28%	0.00 in / 0.0 mm
22:32	77.9 °F / 25.5 °C	46.5 °F / 8.1 °C	29.68 in / 1005.0 hPa	WNW	4.0 mph / 6.4 km/h	12.0 mph / 19.3 km/h	33%	0.00 in / 0.0 mm
23:32	78.7 °F / 25.9 °C	47.2 °F / 8.4 °C	29.69 in / 1005.3 hPa	West	4.0 mph / 6.4 km/h	5.0 mph / 8.0 km/h	33%	0.00 in / 0.0 mm

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History for MKTLC1

KETTLEMAN HILLS CA US, Kettleman City, CA — [Current Conditions](#)

The data provider for this station: RAW5

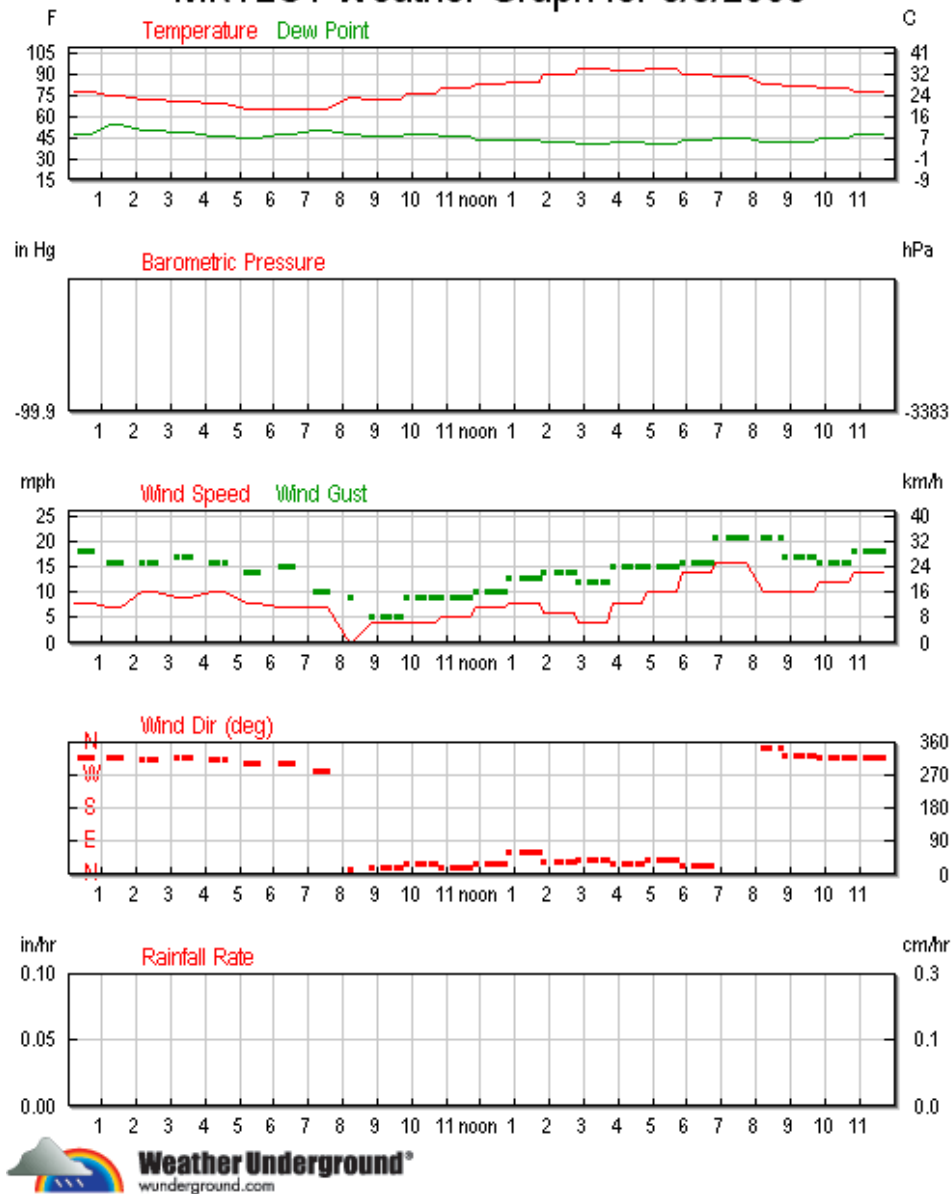
Daily Summary for August 9, 2008

	Current:	High:	Low:	Average:
Temperature:	61.0 °F	94.0 °F	65.0 °F	81.1 °F
Dew Point:	38.0 °F	54.0 °F	41.0 °F	45.0 °F
Humidity:	43%	59%	16%	31%
Wind Speed:	4.0mph	16.0mph	-	8.5mph
Wind Gust:	8.0mph	21.0mph	-	-
Wind:	NNE	-	-	North
Pressure:	0.00in	0.00in	40.00in	-
Precipitation:	0.00in			

Statistics for the rest of the month:

	High:	Low:	Average:
Temperature:	106.0 °F	63.0 °F	88.5 °F
Dew Point:	59.0 °F	-99.9 °F	43.8 °F
Humidity:	68.0%	7.0%	23.6%
Wind Speed:	18.0mph from the NW	-	7.9mph
Wind Gust:	29.0mph from the NNW	-	-
Wind:	-	-	South
Pressure:	0.00in	40.00in	-
Precipitation:	0.00in		

MKTLC1 Weather Graph for 8/9/2008



Tabular Data for August 9, 2008

Time	Temp.	Dew Point	Pressure	Wind	Wind Speed	Wind Gust	Humidity	Rainfall Rate (Hourly)
00:11	78.0 °F	47.0 °F	-100.00in	NW	8.0mph	18.0mph	34%	0.00in
00:22	78.0 °F	47.0 °F	-100.00in	NW	8.0mph	18.0mph	34%	0.00in
00:33	78.0 °F	47.0 °F	-100.00in	NW	8.0mph	18.0mph	34%	0.00in
00:42	78.0 °F	47.0 °F	-100.00in	NW	8.0mph	18.0mph	34%	0.00in
01:12	75.0 °F	54.0 °F	-100.00in	NW	7.0mph	16.0mph	48%	0.00in
01:23	75.0 °F	54.0 °F	-100.00in	NW	7.0mph	16.0mph	48%	0.00in
01:34	75.0 °F	54.0 °F	-100.00in	NW	7.0mph	16.0mph	48%	0.00in
02:11	72.0 °F	50.0 °F	-100.00in	NW	10.0mph	16.0mph	46%	0.00in
02:22	72.0 °F	50.0 °F	-100.00in	NW	10.0mph	16.0mph	46%	0.00in
02:33	72.0 °F	50.0 °F	-100.00in	NW	10.0mph	16.0mph	46%	0.00in
03:11	71.0 °F	49.0 °F	-100.00in	NW	9.0mph	17.0mph	46%	0.00in
03:22	71.0 °F	49.0 °F	-100.00in	NW	9.0mph	17.0mph	46%	0.00in
03:33	71.0 °F	49.0 °F	-100.00in	NW	9.0mph	17.0mph	46%	0.00in

Time	Temp.	Dew Point	Pressure	Wind	Wind Speed	Wind Gust	Humidity	Rainfall Rate (Hourly)
04:11	69.0 °F	46.0 °F	-100.00in	NW	10.0mph	16.0mph	44%	0.00in
04:22	69.0 °F	46.0 °F	-100.00in	NW	10.0mph	16.0mph	44%	0.00in
04:33	69.0 °F	46.0 °F	-100.00in	NW	10.0mph	16.0mph	44%	0.00in
05:11	66.0 °F	45.0 °F	-100.00in	NW	8.0mph	14.0mph	47%	0.00in
05:21	66.0 °F	45.0 °F	-100.00in	NW	8.0mph	14.0mph	47%	0.00in
05:33	66.0 °F	45.0 °F	-100.00in	NW	8.0mph	14.0mph	47%	0.00in
06:11	65.0 °F	48.0 °F	-100.00in	WNW	7.0mph	15.0mph	54%	0.00in
06:22	65.0 °F	48.0 °F	-100.00in	WNW	7.0mph	15.0mph	54%	0.00in
06:33	65.0 °F	48.0 °F	-100.00in	WNW	7.0mph	15.0mph	54%	0.00in
07:12	65.0 °F	50.0 °F	-100.00in	WNW	7.0mph	10.0mph	59%	0.00in
07:23	65.0 °F	50.0 °F	-100.00in	WNW	7.0mph	10.0mph	59%	0.00in
07:34	65.0 °F	50.0 °F	-100.00in	WNW	7.0mph	10.0mph	59%	0.00in
08:12	74.0 °F	47.0 °F	-100.00in	Calm		9.0mph	38%	0.00in
08:50	72.0 °F	46.0 °F	-100.00in	NNE	4.0mph	5.0mph	39%	0.00in
09:11	72.0 °F	46.0 °F	-100.00in	NNE	4.0mph	5.0mph	39%	0.00in
09:21	72.0 °F	46.0 °F	-100.00in	NNE	4.0mph	5.0mph	39%	0.00in
09:33	72.0 °F	46.0 °F	-100.00in	NNE	4.0mph	5.0mph	39%	0.00in
09:42	72.0 °F	46.0 °F	-100.00in	NNE	4.0mph	5.0mph	39%	0.00in
09:50	77.0 °F	48.0 °F	-100.00in	NNE	4.0mph	9.0mph	36%	0.00in
10:11	77.0 °F	48.0 °F	-100.00in	NNE	4.0mph	9.0mph	36%	0.00in
10:22	77.0 °F	48.0 °F	-100.00in	NNE	4.0mph	9.0mph	36%	0.00in
10:33	77.0 °F	48.0 °F	-100.00in	NNE	4.0mph	9.0mph	36%	0.00in
10:42	77.0 °F	48.0 °F	-100.00in	NNE	4.0mph	9.0mph	36%	0.00in
10:50	80.0 °F	46.0 °F	-100.00in	NNE	5.0mph	9.0mph	30%	0.00in
11:12	80.0 °F	46.0 °F	-100.00in	NNE	5.0mph	9.0mph	30%	0.00in
11:22	80.0 °F	46.0 °F	-100.00in	NNE	5.0mph	9.0mph	30%	0.00in
11:32	80.0 °F	46.0 °F	-100.00in	NNE	5.0mph	9.0mph	30%	0.00in
11:42	80.0 °F	46.0 °F	-100.00in	NNE	5.0mph	9.0mph	30%	0.00in
11:50	84.0 °F	43.0 °F	-100.00in	NNE	7.0mph	10.0mph	24%	0.00in
12:11	84.0 °F	43.0 °F	-100.00in	NNE	7.0mph	10.0mph	24%	0.00in
12:22	84.0 °F	43.0 °F	-100.00in	NNE	7.0mph	10.0mph	24%	0.00in
12:33	84.0 °F	43.0 °F	-100.00in	NNE	7.0mph	10.0mph	24%	0.00in
12:42	84.0 °F	43.0 °F	-100.00in	NNE	7.0mph	10.0mph	24%	0.00in
12:50	85.0 °F	43.0 °F	-100.00in	ENE	8.0mph	13.0mph	23%	0.00in
13:11	85.0 °F	43.0 °F	-100.00in	ENE	8.0mph	13.0mph	23%	0.00in
13:21	85.0 °F	43.0 °F	-100.00in	ENE	8.0mph	13.0mph	23%	0.00in
13:33	85.0 °F	43.0 °F	-100.00in	ENE	8.0mph	13.0mph	23%	0.00in
13:41	85.0 °F	43.0 °F	-100.00in	ENE	8.0mph	13.0mph	23%	0.00in
13:50	90.0 °F	42.0 °F	-100.00in	NNE	6.0mph	14.0mph	19%	0.00in
14:12	90.0 °F	42.0 °F	-100.00in	NNE	6.0mph	14.0mph	19%	0.00in
14:21	90.0 °F	42.0 °F	-100.00in	NNE	6.0mph	14.0mph	19%	0.00in
14:33	90.0 °F	42.0 °F	-100.00in	NNE	6.0mph	14.0mph	19%	0.00in

Time	Temp.	Dew Point	Pressure	Wind	Wind Speed	Wind Gust	Humidity	Rainfall Rate (Hourly)
14:42	90.0 °F	42.0 °F	-100.00in	NNE	6.0mph	14.0mph	19%	0.00in
14:50	94.0 °F	41.0 °F	-100.00in	NE	4.0mph	12.0mph	16%	0.00in
15:11	94.0 °F	41.0 °F	-100.00in	NE	4.0mph	12.0mph	16%	0.00in
15:21	94.0 °F	41.0 °F	-100.00in	NE	4.0mph	12.0mph	16%	0.00in
15:33	94.0 °F	41.0 °F	-100.00in	NE	4.0mph	12.0mph	16%	0.00in
15:42	94.0 °F	41.0 °F	-100.00in	NE	4.0mph	12.0mph	16%	0.00in
15:50	93.0 °F	42.0 °F	-100.00in	NNE	8.0mph	15.0mph	17%	0.00in
16:11	93.0 °F	42.0 °F	-100.00in	NNE	8.0mph	15.0mph	17%	0.00in
16:22	93.0 °F	42.0 °F	-100.00in	NNE	8.0mph	15.0mph	17%	0.00in
16:33	93.0 °F	42.0 °F	-100.00in	NNE	8.0mph	15.0mph	17%	0.00in
16:42	93.0 °F	42.0 °F	-100.00in	NNE	8.0mph	15.0mph	17%	0.00in
16:50	94.0 °F	41.0 °F	-100.00in	NE	10.0mph	15.0mph	16%	0.00in
17:11	94.0 °F	41.0 °F	-100.00in	NE	10.0mph	15.0mph	16%	0.00in
17:21	94.0 °F	41.0 °F	-100.00in	NE	10.0mph	15.0mph	16%	0.00in
17:33	94.0 °F	41.0 °F	-100.00in	NE	10.0mph	15.0mph	16%	0.00in
17:42	94.0 °F	41.0 °F	-100.00in	NE	10.0mph	15.0mph	16%	0.00in
17:50	90.0 °F	43.0 °F	-100.00in	NNE	14.0mph	16.0mph	20%	0.00in
18:11	90.0 °F	43.0 °F	-100.00in	NNE	14.0mph	16.0mph	20%	0.00in
18:22	90.0 °F	43.0 °F	-100.00in	NNE	14.0mph	16.0mph	20%	0.00in
18:33	90.0 °F	43.0 °F	-100.00in	NNE	14.0mph	16.0mph	20%	0.00in
18:42	90.0 °F	43.0 °F	-100.00in	NNE	14.0mph	16.0mph	20%	0.00in
18:50	89.0 °F	45.0 °F	-100.00in	North	16.0mph	21.0mph	22%	0.00in
19:11	89.0 °F	45.0 °F	-100.00in	North	16.0mph	21.0mph	22%	0.00in
19:21	89.0 °F	45.0 °F	-100.00in	North	16.0mph	21.0mph	22%	0.00in
19:33	89.0 °F	45.0 °F	-100.00in	North	16.0mph	21.0mph	22%	0.00in
19:42	89.0 °F	45.0 °F	-100.00in	North	16.0mph	21.0mph	22%	0.00in
20:12	84.0 °F	42.0 °F	-100.00in	NNW	10.0mph	21.0mph	23%	0.00in
20:22	84.0 °F	42.0 °F	-100.00in	NNW	10.0mph	21.0mph	23%	0.00in
20:42	84.0 °F	42.0 °F	-100.00in	NNW	10.0mph	21.0mph	23%	0.00in
20:50	82.0 °F	42.0 °F	-100.00in	NW	10.0mph	17.0mph	24%	0.00in
21:11	82.0 °F	42.0 °F	-100.00in	NW	10.0mph	17.0mph	24%	0.00in
21:21	82.0 °F	42.0 °F	-100.00in	NW	10.0mph	17.0mph	24%	0.00in
21:33	82.0 °F	42.0 °F	-100.00in	NW	10.0mph	17.0mph	24%	0.00in
21:42	82.0 °F	42.0 °F	-100.00in	NW	10.0mph	17.0mph	24%	0.00in
21:50	80.0 °F	45.0 °F	-100.00in	NW	12.0mph	16.0mph	29%	0.00in
22:11	80.0 °F	45.0 °F	-100.00in	NW	12.0mph	16.0mph	29%	0.00in
22:22	80.0 °F	45.0 °F	-100.00in	NW	12.0mph	16.0mph	29%	0.00in
22:33	80.0 °F	45.0 °F	-100.00in	NW	12.0mph	16.0mph	29%	0.00in
22:42	80.0 °F	45.0 °F	-100.00in	NW	12.0mph	16.0mph	29%	0.00in
22:50	78.0 °F	47.0 °F	-100.00in	NW	14.0mph	18.0mph	34%	0.00in
23:11	78.0 °F	47.0 °F	-100.00in	NW	14.0mph	18.0mph	34%	0.00in
23:22	78.0 °F	47.0 °F	-100.00in	NW	14.0mph	18.0mph	34%	0.00in

Time	Temp.	Dew Point	Pressure	Wind	Wind Speed	Wind Gust	Humidity	Rainfall Rate (Hourly)
23:33	78.0 °F	47.0 °F	-100.00in	NW	14.0mph	18.0mph	34%	0.00in
23:42	78.0 °F	47.0 °F	-100.00in	NW	14.0mph	18.0mph	34%	0.00in

[Comma Delimited File](#)

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History for MKTLC1

KETTLEMAN HILLS CA US, Kettleman City, CA — [Current Conditions](#)

The data provider for this station: RAW5

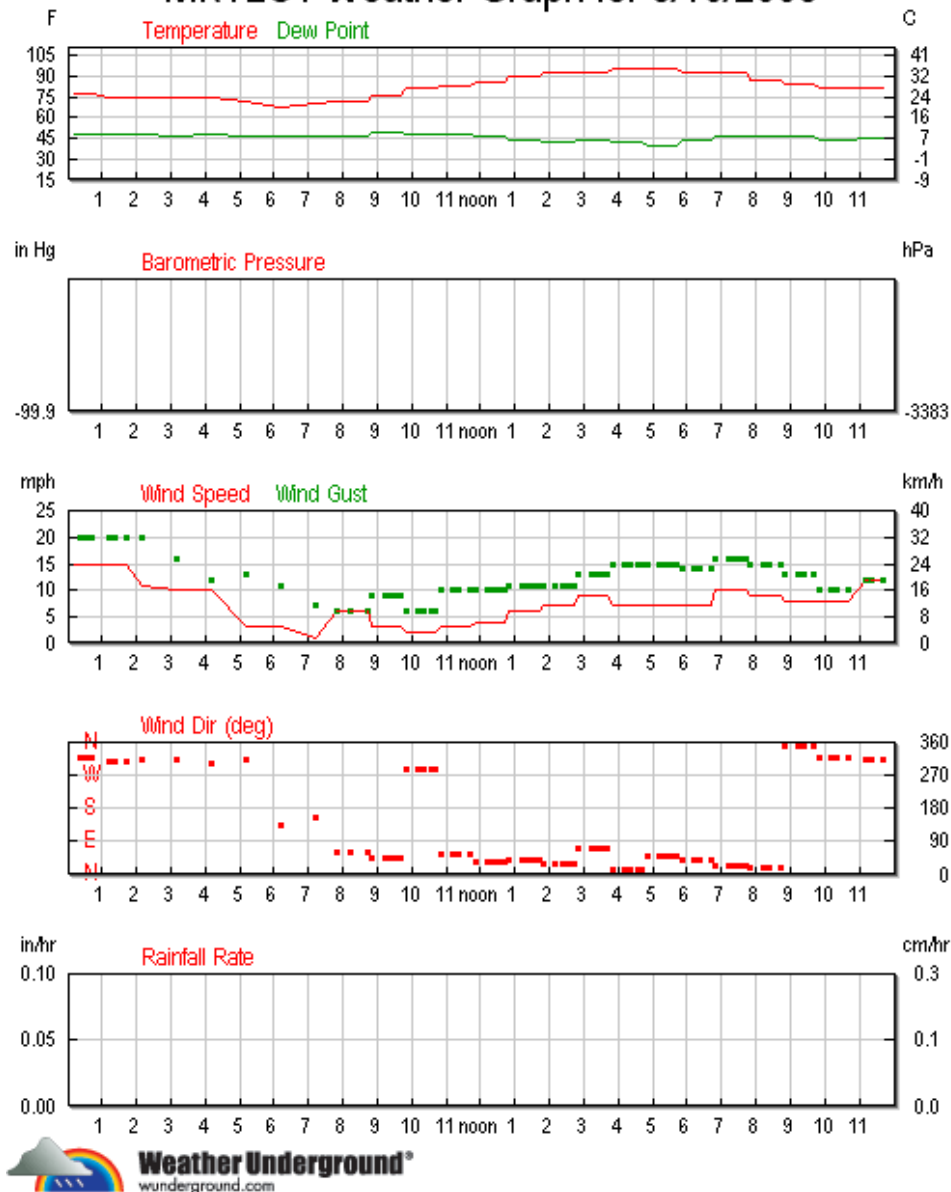
Daily Summary for August 10, 2008

	Current:	High:	Low:	Average:
Temperature:	61.0 °F	95.0 °F	68.0 °F	85.1 °F
Dew Point:	38.0 °F	49.0 °F	40.0 °F	45.2 °F
Humidity:	43%	45%	15%	27%
Wind Speed:	4.0mph	15.0mph	-	7.3mph
Wind Gust:	8.0mph	20.0mph	-	-
Wind:	NNE	-	-	North
Pressure:	0.00in	0.00in	40.00in	-
Precipitation:	0.00in			

Statistics for the rest of the month:

	High:	Low:	Average:
Temperature:	106.0 °F	63.0 °F	88.5 °F
Dew Point:	59.0 °F	-99.9 °F	43.8 °F
Humidity:	68.0%	7.0%	23.6%
Wind Speed:	18.0mph from the NW	-	7.9mph
Wind Gust:	29.0mph from the NNW	-	-
Wind:	-	-	South
Pressure:	0.00in	40.00in	-
Precipitation:	0.00in		

MKTLC1 Weather Graph for 8/10/2008



Tabular Data for August 10, 2008

Time	Temp.	Dew Point	Pressure	Wind	Wind Speed	Wind Gust	Humidity	Rainfall Rate (Hourly)
00:11	77.0 °F	48.0 °F	-100.00in	NW	15.0mph	20.0mph	36%	0.00in
00:22	77.0 °F	48.0 °F	-100.00in	NW	15.0mph	20.0mph	36%	0.00in
00:33	77.0 °F	48.0 °F	-100.00in	NW	15.0mph	20.0mph	36%	0.00in
00:42	77.0 °F	48.0 °F	-100.00in	NW	15.0mph	20.0mph	36%	0.00in
01:12	75.0 °F	48.0 °F	-100.00in	NW	15.0mph	20.0mph	39%	0.00in
01:22	75.0 °F	48.0 °F	-100.00in	NW	15.0mph	20.0mph	39%	0.00in
01:42	75.0 °F	48.0 °F	-100.00in	NW	15.0mph	20.0mph	39%	0.00in
02:11	74.0 °F	48.0 °F	-100.00in	NW	11.0mph	20.0mph	40%	0.00in
03:11	74.0 °F	47.0 °F	-100.00in	NW	10.0mph	16.0mph	38%	0.00in
04:11	75.0 °F	48.0 °F	-100.00in	WNW	10.0mph	12.0mph	38%	0.00in
05:11	71.0 °F	46.0 °F	-100.00in	NW	3.0mph	13.0mph	41%	0.00in
06:11	68.0 °F	46.0 °F	-100.00in	SE	3.0mph	11.0mph	45%	0.00in
07:12	70.0 °F	46.0 °F	-100.00in	SSE	1.0mph	7.0mph	42%	0.00in

Time	Temp.	Dew Point	Pressure	Wind	Wind Speed	Wind Gust	Humidity	Rainfall Rate (Hourly)
07:50	72.0 °F	46.0 °F	-100.00in	ENE	6.0mph	6.0mph	40%	0.00in
08:12	72.0 °F	46.0 °F	-100.00in	ENE	6.0mph	6.0mph	40%	0.00in
08:42	72.0 °F	46.0 °F	-100.00in	ENE	6.0mph	6.0mph	40%	0.00in
08:50	76.0 °F	49.0 °F	-100.00in	NE	3.0mph	9.0mph	39%	0.00in
09:12	76.0 °F	49.0 °F	-100.00in	NE	3.0mph	9.0mph	39%	0.00in
09:22	76.0 °F	49.0 °F	-100.00in	NE	3.0mph	9.0mph	39%	0.00in
09:33	76.0 °F	49.0 °F	-100.00in	NE	3.0mph	9.0mph	39%	0.00in
09:42	76.0 °F	49.0 °F	-100.00in	NE	3.0mph	9.0mph	39%	0.00in
09:50	81.0 °F	48.0 °F	-100.00in	WNW	2.0mph	6.0mph	32%	0.00in
10:12	81.0 °F	48.0 °F	-100.00in	WNW	2.0mph	6.0mph	32%	0.00in
10:22	81.0 °F	48.0 °F	-100.00in	WNW	2.0mph	6.0mph	32%	0.00in
10:33	81.0 °F	48.0 °F	-100.00in	WNW	2.0mph	6.0mph	32%	0.00in
10:42	81.0 °F	48.0 °F	-100.00in	WNW	2.0mph	6.0mph	32%	0.00in
10:50	83.0 °F	48.0 °F	-100.00in	NE	3.0mph	10.0mph	30%	0.00in
11:12	83.0 °F	48.0 °F	-100.00in	NE	3.0mph	10.0mph	30%	0.00in
11:22	83.0 °F	48.0 °F	-100.00in	NE	3.0mph	10.0mph	30%	0.00in
11:42	83.0 °F	48.0 °F	-100.00in	NE	3.0mph	10.0mph	30%	0.00in
11:50	86.0 °F	46.0 °F	-100.00in	NNE	4.0mph	10.0mph	25%	0.00in
12:11	86.0 °F	46.0 °F	-100.00in	NNE	4.0mph	10.0mph	25%	0.00in
12:22	86.0 °F	46.0 °F	-100.00in	NNE	4.0mph	10.0mph	25%	0.00in
12:33	86.0 °F	46.0 °F	-100.00in	NNE	4.0mph	10.0mph	25%	0.00in
12:42	86.0 °F	46.0 °F	-100.00in	NNE	4.0mph	10.0mph	25%	0.00in
12:50	90.0 °F	43.0 °F	-100.00in	NE	6.0mph	11.0mph	20%	0.00in
13:12	90.0 °F	43.0 °F	-100.00in	NE	6.0mph	11.0mph	20%	0.00in
13:22	90.0 °F	43.0 °F	-100.00in	NE	6.0mph	11.0mph	20%	0.00in
13:33	90.0 °F	43.0 °F	-100.00in	NE	6.0mph	11.0mph	20%	0.00in
13:42	90.0 °F	43.0 °F	-100.00in	NE	6.0mph	11.0mph	20%	0.00in
13:50	93.0 °F	42.0 °F	-100.00in	NNE	7.0mph	11.0mph	17%	0.00in
14:11	93.0 °F	42.0 °F	-100.00in	NNE	7.0mph	11.0mph	17%	0.00in
14:22	93.0 °F	42.0 °F	-100.00in	NNE	7.0mph	11.0mph	17%	0.00in
14:32	93.0 °F	42.0 °F	-100.00in	NNE	7.0mph	11.0mph	17%	0.00in
14:42	93.0 °F	42.0 °F	-100.00in	NNE	7.0mph	11.0mph	17%	0.00in
14:50	93.0 °F	43.0 °F	-100.00in	ENE	9.0mph	13.0mph	18%	0.00in
15:12	93.0 °F	43.0 °F	-100.00in	ENE	9.0mph	13.0mph	18%	0.00in
15:22	93.0 °F	43.0 °F	-100.00in	ENE	9.0mph	13.0mph	18%	0.00in
15:33	93.0 °F	43.0 °F	-100.00in	ENE	9.0mph	13.0mph	18%	0.00in
15:42	93.0 °F	43.0 °F	-100.00in	ENE	9.0mph	13.0mph	18%	0.00in
15:50	95.0 °F	42.0 °F	-100.00in	NNE	7.0mph	15.0mph	16%	0.00in
16:11	95.0 °F	42.0 °F	-100.00in	NNE	7.0mph	15.0mph	16%	0.00in
16:22	95.0 °F	42.0 °F	-100.00in	NNE	7.0mph	15.0mph	16%	0.00in
16:33	95.0 °F	42.0 °F	-100.00in	NNE	7.0mph	15.0mph	16%	0.00in
16:42	95.0 °F	42.0 °F	-100.00in	NNE	7.0mph	15.0mph	16%	0.00in

Time	Temp.	Dew Point	Pressure	Wind	Wind Speed	Wind Gust	Humidity	Rainfall Rate (Hourly)
16:50	95.0 °F	40.0 °F	-100.00in	NE	7.0mph	15.0mph	15%	0.00in
17:11	95.0 °F	40.0 °F	-100.00in	NE	7.0mph	15.0mph	15%	0.00in
17:22	95.0 °F	40.0 °F	-100.00in	NE	7.0mph	15.0mph	15%	0.00in
17:33	95.0 °F	40.0 °F	-100.00in	NE	7.0mph	15.0mph	15%	0.00in
17:42	95.0 °F	40.0 °F	-100.00in	NE	7.0mph	15.0mph	15%	0.00in
17:50	93.0 °F	43.0 °F	-100.00in	NE	7.0mph	14.0mph	18%	0.00in
18:11	93.0 °F	43.0 °F	-100.00in	NE	7.0mph	14.0mph	18%	0.00in
18:22	93.0 °F	43.0 °F	-100.00in	NE	7.0mph	14.0mph	18%	0.00in
18:42	93.0 °F	43.0 °F	-100.00in	NE	7.0mph	14.0mph	18%	0.00in
18:50	92.0 °F	46.0 °F	-100.00in	NNE	10.0mph	16.0mph	21%	0.00in
19:11	92.0 °F	46.0 °F	-100.00in	NNE	10.0mph	16.0mph	21%	0.00in
19:22	92.0 °F	46.0 °F	-100.00in	NNE	10.0mph	16.0mph	21%	0.00in
19:33	92.0 °F	46.0 °F	-100.00in	NNE	10.0mph	16.0mph	21%	0.00in
19:42	92.0 °F	46.0 °F	-100.00in	NNE	10.0mph	16.0mph	21%	0.00in
19:50	87.0 °F	46.0 °F	-100.00in	NNE	9.0mph	15.0mph	24%	0.00in
20:12	87.0 °F	46.0 °F	-100.00in	NNE	9.0mph	15.0mph	24%	0.00in
20:22	87.0 °F	46.0 °F	-100.00in	NNE	9.0mph	15.0mph	24%	0.00in
20:42	87.0 °F	46.0 °F	-100.00in	NNE	9.0mph	15.0mph	24%	0.00in
20:50	84.0 °F	47.0 °F	-100.00in	North	8.0mph	13.0mph	28%	0.00in
21:12	84.0 °F	47.0 °F	-100.00in	North	8.0mph	13.0mph	28%	0.00in
21:22	84.0 °F	47.0 °F	-100.00in	North	8.0mph	13.0mph	28%	0.00in
21:42	84.0 °F	47.0 °F	-100.00in	North	8.0mph	13.0mph	28%	0.00in
21:50	82.0 °F	44.0 °F	-100.00in	NW	8.0mph	10.0mph	26%	0.00in
22:11	82.0 °F	44.0 °F	-100.00in	NW	8.0mph	10.0mph	26%	0.00in
22:21	82.0 °F	44.0 °F	-100.00in	NW	8.0mph	10.0mph	26%	0.00in
22:42	82.0 °F	44.0 °F	-100.00in	NW	8.0mph	10.0mph	26%	0.00in
23:11	81.0 °F	45.0 °F	-100.00in	NW	12.0mph	12.0mph	28%	0.00in
23:22	81.0 °F	45.0 °F	-100.00in	NW	12.0mph	12.0mph	28%	0.00in
23:42	81.0 °F	45.0 °F	-100.00in	NW	12.0mph	12.0mph	28%	0.00in

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Do you know your Credit Score?

Excellent	750 - 840		Fair	620 - 659		I Don't Know ????
Good	660 - 749		Poor	340 - 619		Find out INSTANTLY! 

History for MKTLC1

KETTLEMAN HILLS CA US, Kettleman City, CA — [Current Conditions](#)

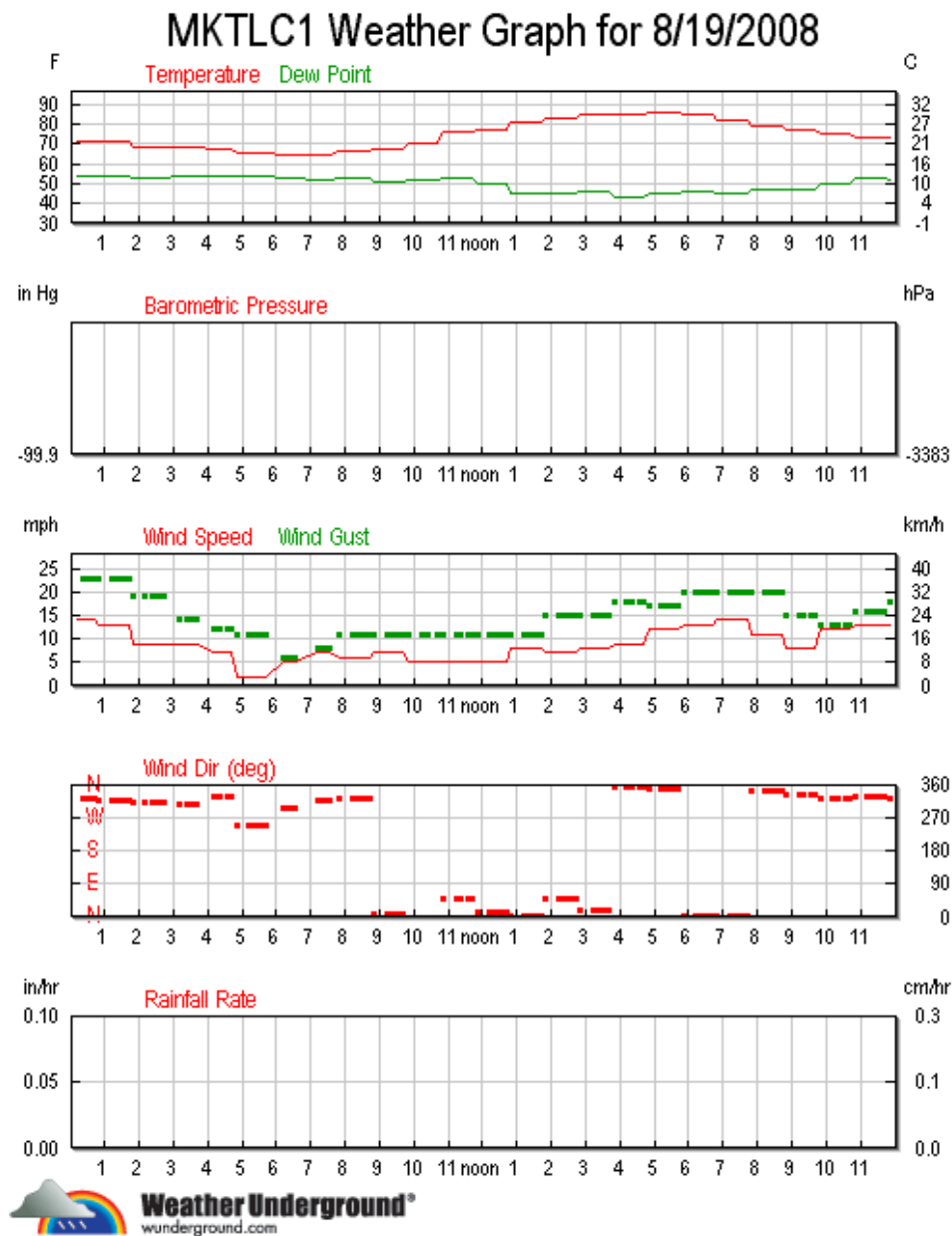
The data provider for this station: RAW5

Daily Summary for August 19, 2008

	Current:	High:	Low:	Average:
Temperature:	61.0 °F	86.0 °F	64.0 °F	74.9 °F
Dew Point:	38.0 °F	54.0 °F	43.0 °F	49.8 °F
Humidity:	43%	68%	23%	44%
Wind Speed:	4.0mph	14.0mph	-	8.8mph
Wind Gust:	8.0mph	23.0mph	-	-
Wind:	NNE	-	-	NNW
Pressure:	0.00in	0.00in	40.00in	-
Precipitation:	0.00in			

Statistics for the rest of the month:

	High:	Low:	Average:
Temperature:	106.0 °F	63.0 °F	88.5 °F
Dew Point:	59.0 °F	-99.9 °F	43.8 °F
Humidity:	68.0%	7.0%	23.6%
Wind Speed:	18.0mph from the NW	-	7.9mph
Wind Gust:	29.0mph from the NNW	-	-
Wind:	-	-	South
Pressure:	0.00in	40.00in	-
Precipitation:	0.00in		

**Tabular Data for August 19, 2008**

Time	Temp.	Dew Point	Pressure	Wind	Wind Speed	Wind Gust	Humidity	Rainfall Rate (Hourly)
00:11	71.0 °F	54.0 °F	-100.00in	NW	14.0mph	23.0mph	56%	0.00in
00:22	71.0 °F	54.0 °F	-100.00in	NW	14.0mph	23.0mph	56%	0.00in
00:33	71.0 °F	54.0 °F	-100.00in	NW	14.0mph	23.0mph	56%	0.00in
00:42	71.0 °F	54.0 °F	-100.00in	NW	14.0mph	23.0mph	56%	0.00in
00:50	71.0 °F	54.0 °F	-100.00in	NW	13.0mph	23.0mph	56%	0.00in
01:12	71.0 °F	54.0 °F	-100.00in	NW	13.0mph	23.0mph	56%	0.00in
01:22	71.0 °F	54.0 °F	-100.00in	NW	13.0mph	23.0mph	56%	0.00in
01:33	71.0 °F	54.0 °F	-100.00in	NW	13.0mph	23.0mph	56%	0.00in
01:42	71.0 °F	54.0 °F	-100.00in	NW	13.0mph	23.0mph	56%	0.00in
01:50	68.0 °F	53.0 °F	-100.00in	NW	9.0mph	19.0mph	59%	0.00in
02:11	68.0 °F	53.0 °F	-100.00in	NW	9.0mph	19.0mph	59%	0.00in
02:22	68.0 °F	53.0 °F	-100.00in	NW	9.0mph	19.0mph	59%	0.00in
02:33	68.0 °F	53.0 °F	-100.00in	NW	9.0mph	19.0mph	59%	0.00in

Time	Temp.	Dew Point	Pressure	Wind	Wind Speed	Wind Gust	Humidity	Rainfall Rate (Hourly)
02:42	68.0 °F	53.0 °F	-100.00in	NW	9.0mph	19.0mph	59%	0.00in
03:11	68.0 °F	54.0 °F	-100.00in	NW	9.0mph	14.0mph	62%	0.00in
03:22	68.0 °F	54.0 °F	-100.00in	NW	9.0mph	14.0mph	62%	0.00in
03:33	68.0 °F	54.0 °F	-100.00in	NW	9.0mph	14.0mph	62%	0.00in
03:42	68.0 °F	54.0 °F	-100.00in	NW	9.0mph	14.0mph	62%	0.00in
04:11	67.0 °F	54.0 °F	-100.00in	NNW	7.0mph	12.0mph	63%	0.00in
04:22	67.0 °F	54.0 °F	-100.00in	NNW	7.0mph	12.0mph	63%	0.00in
04:33	67.0 °F	54.0 °F	-100.00in	NNW	7.0mph	12.0mph	63%	0.00in
04:42	67.0 °F	54.0 °F	-100.00in	NNW	7.0mph	12.0mph	63%	0.00in
04:50	65.0 °F	54.0 °F	-100.00in	WSW	2.0mph	11.0mph	68%	0.00in
05:11	65.0 °F	54.0 °F	-100.00in	WSW	2.0mph	11.0mph	68%	0.00in
05:22	65.0 °F	54.0 °F	-100.00in	WSW	2.0mph	11.0mph	68%	0.00in
05:33	65.0 °F	54.0 °F	-100.00in	WSW	2.0mph	11.0mph	68%	0.00in
05:42	65.0 °F	54.0 °F	-100.00in	WSW	2.0mph	11.0mph	68%	0.00in
06:12	64.0 °F	53.0 °F	-100.00in	WNW	5.0mph	6.0mph	68%	0.00in
06:22	64.0 °F	53.0 °F	-100.00in	WNW	5.0mph	6.0mph	68%	0.00in
06:33	64.0 °F	53.0 °F	-100.00in	WNW	5.0mph	6.0mph	68%	0.00in
07:12	64.0 °F	52.0 °F	-100.00in	NW	7.0mph	8.0mph	64%	0.00in
07:22	64.0 °F	52.0 °F	-100.00in	NW	7.0mph	8.0mph	64%	0.00in
07:33	64.0 °F	52.0 °F	-100.00in	NW	7.0mph	8.0mph	64%	0.00in
07:50	66.0 °F	53.0 °F	-100.00in	NW	6.0mph	11.0mph	62%	0.00in
08:12	66.0 °F	53.0 °F	-100.00in	NW	6.0mph	11.0mph	62%	0.00in
08:22	66.0 °F	53.0 °F	-100.00in	NW	6.0mph	11.0mph	62%	0.00in
08:33	66.0 °F	53.0 °F	-100.00in	NW	6.0mph	11.0mph	62%	0.00in
08:42	66.0 °F	53.0 °F	-100.00in	NW	6.0mph	11.0mph	62%	0.00in
08:50	67.0 °F	51.0 °F	-100.00in	North	7.0mph	11.0mph	56%	0.00in
09:12	67.0 °F	51.0 °F	-100.00in	North	7.0mph	11.0mph	56%	0.00in
09:22	67.0 °F	51.0 °F	-100.00in	North	7.0mph	11.0mph	56%	0.00in
09:33	67.0 °F	51.0 °F	-100.00in	North	7.0mph	11.0mph	56%	0.00in
09:42	67.0 °F	51.0 °F	-100.00in	North	7.0mph	11.0mph	56%	0.00in
09:50	70.0 °F	52.0 °F	-100.00in	North	5.0mph	11.0mph	52%	0.00in
10:13	70.0 °F	52.0 °F	-100.00in	North	5.0mph	11.0mph	52%	0.00in
10:23	70.0 °F	52.0 °F	-100.00in	North	5.0mph	11.0mph	52%	0.00in
10:42	70.0 °F	52.0 °F	-100.00in	North	5.0mph	11.0mph	52%	0.00in
10:50	76.0 °F	53.0 °F	-100.00in	NE	5.0mph	11.0mph	45%	0.00in
11:13	76.0 °F	53.0 °F	-100.00in	NE	5.0mph	11.0mph	45%	0.00in
11:22	76.0 °F	53.0 °F	-100.00in	NE	5.0mph	11.0mph	45%	0.00in
11:34	76.0 °F	53.0 °F	-100.00in	NE	5.0mph	11.0mph	45%	0.00in
11:42	76.0 °F	53.0 °F	-100.00in	NE	5.0mph	11.0mph	45%	0.00in
11:50	77.0 °F	50.0 °F	-100.00in	NNE	5.0mph	11.0mph	39%	0.00in
12:12	77.0 °F	50.0 °F	-100.00in	NNE	5.0mph	11.0mph	39%	0.00in
12:22	77.0 °F	50.0 °F	-100.00in	NNE	5.0mph	11.0mph	39%	0.00in

Time	Temp.	Dew Point	Pressure	Wind	Wind Speed	Wind Gust	Humidity	Rainfall Rate (Hourly)
12:33	77.0 °F	50.0 °F	-100.00in	NNE	5.0mph	11.0mph	39%	0.00in
12:42	77.0 °F	50.0 °F	-100.00in	NNE	5.0mph	11.0mph	39%	0.00in
12:50	81.0 °F	45.0 °F	-100.00in	North	8.0mph	11.0mph	28%	0.00in
13:12	81.0 °F	45.0 °F	-100.00in	North	8.0mph	11.0mph	28%	0.00in
13:23	81.0 °F	45.0 °F	-100.00in	North	8.0mph	11.0mph	28%	0.00in
13:33	81.0 °F	45.0 °F	-100.00in	North	8.0mph	11.0mph	28%	0.00in
13:42	81.0 °F	45.0 °F	-100.00in	North	8.0mph	11.0mph	28%	0.00in
13:50	83.0 °F	45.0 °F	-100.00in	NE	7.0mph	15.0mph	26%	0.00in
14:12	83.0 °F	45.0 °F	-100.00in	NE	7.0mph	15.0mph	26%	0.00in
14:22	83.0 °F	45.0 °F	-100.00in	NE	7.0mph	15.0mph	26%	0.00in
14:33	83.0 °F	45.0 °F	-100.00in	NE	7.0mph	15.0mph	26%	0.00in
14:42	83.0 °F	45.0 °F	-100.00in	NE	7.0mph	15.0mph	26%	0.00in
14:50	85.0 °F	46.0 °F	-100.00in	NNE	8.0mph	15.0mph	26%	0.00in
15:12	85.0 °F	46.0 °F	-100.00in	NNE	8.0mph	15.0mph	26%	0.00in
15:22	85.0 °F	46.0 °F	-100.00in	NNE	8.0mph	15.0mph	26%	0.00in
15:33	85.0 °F	46.0 °F	-100.00in	NNE	8.0mph	15.0mph	26%	0.00in
15:42	85.0 °F	46.0 °F	-100.00in	NNE	8.0mph	15.0mph	26%	0.00in
15:50	85.0 °F	43.0 °F	-100.00in	North	9.0mph	18.0mph	23%	0.00in
16:12	85.0 °F	43.0 °F	-100.00in	North	9.0mph	18.0mph	23%	0.00in
16:22	85.0 °F	43.0 °F	-100.00in	North	9.0mph	18.0mph	23%	0.00in
16:33	85.0 °F	43.0 °F	-100.00in	North	9.0mph	18.0mph	23%	0.00in
16:42	85.0 °F	43.0 °F	-100.00in	North	9.0mph	18.0mph	23%	0.00in
16:50	86.0 °F	45.0 °F	-100.00in	North	12.0mph	17.0mph	24%	0.00in
17:12	86.0 °F	45.0 °F	-100.00in	North	12.0mph	17.0mph	24%	0.00in
17:22	86.0 °F	45.0 °F	-100.00in	North	12.0mph	17.0mph	24%	0.00in
17:33	86.0 °F	45.0 °F	-100.00in	North	12.0mph	17.0mph	24%	0.00in
17:42	86.0 °F	45.0 °F	-100.00in	North	12.0mph	17.0mph	24%	0.00in
17:50	85.0 °F	46.0 °F	-100.00in	North	13.0mph	20.0mph	26%	0.00in
18:12	85.0 °F	46.0 °F	-100.00in	North	13.0mph	20.0mph	26%	0.00in
18:22	85.0 °F	46.0 °F	-100.00in	North	13.0mph	20.0mph	26%	0.00in
18:33	85.0 °F	46.0 °F	-100.00in	North	13.0mph	20.0mph	26%	0.00in
18:42	85.0 °F	46.0 °F	-100.00in	North	13.0mph	20.0mph	26%	0.00in
18:50	82.0 °F	45.0 °F	-100.00in	North	14.0mph	20.0mph	27%	0.00in
19:12	82.0 °F	45.0 °F	-100.00in	North	14.0mph	20.0mph	27%	0.00in
19:22	82.0 °F	45.0 °F	-100.00in	North	14.0mph	20.0mph	27%	0.00in
19:33	82.0 °F	45.0 °F	-100.00in	North	14.0mph	20.0mph	27%	0.00in
19:42	82.0 °F	45.0 °F	-100.00in	North	14.0mph	20.0mph	27%	0.00in
19:50	79.0 °F	47.0 °F	-100.00in	NNW	11.0mph	20.0mph	32%	0.00in
20:12	79.0 °F	47.0 °F	-100.00in	NNW	11.0mph	20.0mph	32%	0.00in
20:22	79.0 °F	47.0 °F	-100.00in	NNW	11.0mph	20.0mph	32%	0.00in
20:33	79.0 °F	47.0 °F	-100.00in	NNW	11.0mph	20.0mph	32%	0.00in
20:42	79.0 °F	47.0 °F	-100.00in	NNW	11.0mph	20.0mph	32%	0.00in

Time	Temp.	Dew Point	Pressure	Wind	Wind Speed	Wind Gust	Humidity	Rainfall Rate (Hourly)
20:50	77.0 °F	47.0 °F	-100.00in	NNW	8.0mph	15.0mph	35%	0.00in
21:12	77.0 °F	47.0 °F	-100.00in	NNW	8.0mph	15.0mph	35%	0.00in
21:21	77.0 °F	47.0 °F	-100.00in	NNW	8.0mph	15.0mph	35%	0.00in
21:33	77.0 °F	47.0 °F	-100.00in	NNW	8.0mph	15.0mph	35%	0.00in
21:42	77.0 °F	47.0 °F	-100.00in	NNW	8.0mph	15.0mph	35%	0.00in
21:50	75.0 °F	50.0 °F	-100.00in	NW	12.0mph	13.0mph	41%	0.00in
22:12	75.0 °F	50.0 °F	-100.00in	NW	12.0mph	13.0mph	41%	0.00in
22:21	75.0 °F	50.0 °F	-100.00in	NW	12.0mph	13.0mph	41%	0.00in
22:33	75.0 °F	50.0 °F	-100.00in	NW	12.0mph	13.0mph	41%	0.00in
22:42	75.0 °F	50.0 °F	-100.00in	NW	12.0mph	13.0mph	41%	0.00in
22:50	73.0 °F	53.0 °F	-100.00in	NNW	13.0mph	16.0mph	49%	0.00in
23:11	73.0 °F	53.0 °F	-100.00in	NNW	13.0mph	16.0mph	49%	0.00in
23:22	73.0 °F	53.0 °F	-100.00in	NNW	13.0mph	16.0mph	49%	0.00in
23:32	73.0 °F	53.0 °F	-100.00in	NNW	13.0mph	16.0mph	49%	0.00in
23:42	73.0 °F	53.0 °F	-100.00in	NNW	13.0mph	16.0mph	49%	0.00in
23:50	73.0 °F	52.0 °F	-100.00in	NW	13.0mph	18.0mph	47%	0.00in

[Comma Delimited File](#)

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Do you know your Credit Score?

Excellent	750 - 840		Fair	620 - 659		I Don't Know ????
Good	660 - 749		Poor	340 - 619		Find out INSTANTLY! Free score.com

History for MKTLC1

KETTLEMAN HILLS CA US, Kettleman City, CA — [Current Conditions](#)

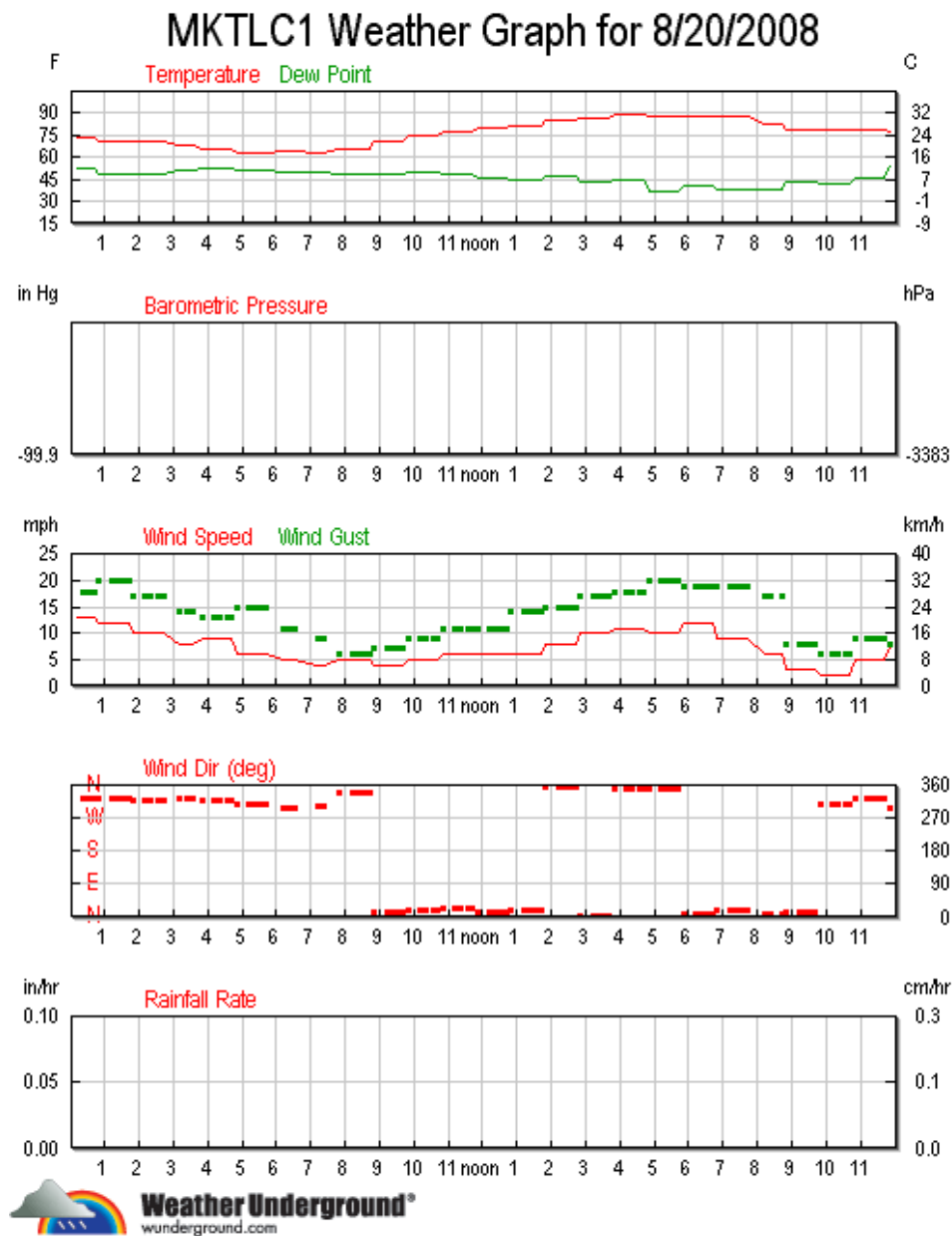
The data provider for this station: RAW5

Daily Summary for August 20, 2008

	Current:	High:	Low:	Average:
Temperature:	61.0 °F	89.0 °F	63.0 °F	76.9 °F
Dew Point:	38.0 °F	53.0 °F	36.0 °F	46.1 °F
Humidity:	43%	64%	16%	37%
Wind Speed:	4.0mph	13.0mph	-	7.4mph
Wind Gust:	8.0mph	20.0mph	-	-
Wind:	NNE	-	-	NNW
Pressure:	0.00in	0.00in	40.00in	-
Precipitation:	0.00in			

Statistics for the rest of the month:

	High:	Low:	Average:
Temperature:	106.0 °F	63.0 °F	88.5 °F
Dew Point:	59.0 °F	-99.9 °F	43.8 °F
Humidity:	68.0%	7.0%	23.6%
Wind Speed:	18.0mph from the NW	-	7.9mph
Wind Gust:	29.0mph from the NNW	-	-
Wind:	-	-	South
Pressure:	0.00in	40.00in	-
Precipitation:	0.00in		

**Tabular Data for August 20, 2008**

Time	Temp.	Dew Point	Pressure	Wind	Wind Speed	Wind Gust	Humidity	Rainfall Rate (Hourly)
00:11	73.0 °F	52.0 °F	-100.00in	NW	13.0mph	18.0mph	47%	0.00in
00:22	73.0 °F	52.0 °F	-100.00in	NW	13.0mph	18.0mph	47%	0.00in
00:33	73.0 °F	52.0 °F	-100.00in	NW	13.0mph	18.0mph	47%	0.00in
00:42	73.0 °F	52.0 °F	-100.00in	NW	13.0mph	18.0mph	47%	0.00in
00:50	70.0 °F	49.0 °F	-100.00in	NNW	12.0mph	20.0mph	48%	0.00in
01:12	70.0 °F	49.0 °F	-100.00in	NNW	12.0mph	20.0mph	48%	0.00in
01:22	70.0 °F	49.0 °F	-100.00in	NNW	12.0mph	20.0mph	48%	0.00in
01:33	70.0 °F	49.0 °F	-100.00in	NNW	12.0mph	20.0mph	48%	0.00in
01:42	70.0 °F	49.0 °F	-100.00in	NNW	12.0mph	20.0mph	48%	0.00in
01:50	70.0 °F	49.0 °F	-100.00in	NW	10.0mph	17.0mph	48%	0.00in
02:11	70.0 °F	49.0 °F	-100.00in	NW	10.0mph	17.0mph	48%	0.00in
02:21	70.0 °F	49.0 °F	-100.00in	NW	10.0mph	17.0mph	48%	0.00in
02:32	70.0 °F	49.0 °F	-100.00in	NW	10.0mph	17.0mph	48%	0.00in

Time	Temp.	Dew Point	Pressure	Wind	Wind Speed	Wind Gust	Humidity	Rainfall Rate (Hourly)
02:42	70.0 °F	49.0 °F	-100.00in	NW	10.0mph	17.0mph	48%	0.00in
03:11	68.0 °F	51.0 °F	-100.00in	NW	8.0mph	14.0mph	55%	0.00in
03:22	68.0 °F	51.0 °F	-100.00in	NW	8.0mph	14.0mph	55%	0.00in
03:32	68.0 °F	51.0 °F	-100.00in	NW	8.0mph	14.0mph	55%	0.00in
03:50	66.0 °F	52.0 °F	-100.00in	NW	9.0mph	13.0mph	61%	0.00in
04:12	66.0 °F	52.0 °F	-100.00in	NW	9.0mph	13.0mph	61%	0.00in
04:22	66.0 °F	52.0 °F	-100.00in	NW	9.0mph	13.0mph	61%	0.00in
04:33	66.0 °F	52.0 °F	-100.00in	NW	9.0mph	13.0mph	61%	0.00in
04:42	66.0 °F	52.0 °F	-100.00in	NW	9.0mph	13.0mph	61%	0.00in
04:50	63.0 °F	51.0 °F	-100.00in	NW	6.0mph	15.0mph	64%	0.00in
05:12	63.0 °F	51.0 °F	-100.00in	NW	6.0mph	15.0mph	64%	0.00in
05:22	63.0 °F	51.0 °F	-100.00in	NW	6.0mph	15.0mph	64%	0.00in
05:33	63.0 °F	51.0 °F	-100.00in	NW	6.0mph	15.0mph	64%	0.00in
05:42	63.0 °F	51.0 °F	-100.00in	NW	6.0mph	15.0mph	64%	0.00in
06:12	64.0 °F	50.0 °F	-100.00in	WNW	5.0mph	11.0mph	61%	0.00in
06:22	64.0 °F	50.0 °F	-100.00in	WNW	5.0mph	11.0mph	61%	0.00in
06:33	64.0 °F	50.0 °F	-100.00in	WNW	5.0mph	11.0mph	61%	0.00in
07:12	63.0 °F	50.0 °F	-100.00in	WNW	4.0mph	9.0mph	62%	0.00in
07:22	63.0 °F	50.0 °F	-100.00in	WNW	4.0mph	9.0mph	62%	0.00in
07:50	66.0 °F	48.0 °F	-100.00in	NNW	5.0mph	6.0mph	52%	0.00in
08:12	66.0 °F	48.0 °F	-100.00in	NNW	5.0mph	6.0mph	52%	0.00in
08:23	66.0 °F	48.0 °F	-100.00in	NNW	5.0mph	6.0mph	52%	0.00in
08:34	66.0 °F	48.0 °F	-100.00in	NNW	5.0mph	6.0mph	52%	0.00in
08:42	66.0 °F	48.0 °F	-100.00in	NNW	5.0mph	6.0mph	52%	0.00in
08:50	71.0 °F	49.0 °F	-100.00in	North	4.0mph	7.0mph	46%	0.00in
09:12	71.0 °F	49.0 °F	-100.00in	North	4.0mph	7.0mph	46%	0.00in
09:22	71.0 °F	49.0 °F	-100.00in	North	4.0mph	7.0mph	46%	0.00in
09:33	71.0 °F	49.0 °F	-100.00in	North	4.0mph	7.0mph	46%	0.00in
09:42	71.0 °F	49.0 °F	-100.00in	North	4.0mph	7.0mph	46%	0.00in
09:50	75.0 °F	50.0 °F	-100.00in	NNE	5.0mph	9.0mph	41%	0.00in
10:12	75.0 °F	50.0 °F	-100.00in	NNE	5.0mph	9.0mph	41%	0.00in
10:22	75.0 °F	50.0 °F	-100.00in	NNE	5.0mph	9.0mph	41%	0.00in
10:33	75.0 °F	50.0 °F	-100.00in	NNE	5.0mph	9.0mph	41%	0.00in
10:42	75.0 °F	50.0 °F	-100.00in	NNE	5.0mph	9.0mph	41%	0.00in
10:50	77.0 °F	49.0 °F	-100.00in	NNE	6.0mph	11.0mph	37%	0.00in
11:12	77.0 °F	49.0 °F	-100.00in	NNE	6.0mph	11.0mph	37%	0.00in
11:22	77.0 °F	49.0 °F	-100.00in	NNE	6.0mph	11.0mph	37%	0.00in
11:34	77.0 °F	49.0 °F	-100.00in	NNE	6.0mph	11.0mph	37%	0.00in
11:42	77.0 °F	49.0 °F	-100.00in	NNE	6.0mph	11.0mph	37%	0.00in
11:50	80.0 °F	46.0 °F	-100.00in	NNE	6.0mph	11.0mph	30%	0.00in
12:12	80.0 °F	46.0 °F	-100.00in	NNE	6.0mph	11.0mph	30%	0.00in
12:22	80.0 °F	46.0 °F	-100.00in	NNE	6.0mph	11.0mph	30%	0.00in

Time	Temp.	Dew Point	Pressure	Wind	Wind Speed	Wind Gust	Humidity	Rainfall Rate (Hourly)
12:33	80.0 °F	46.0 °F	-100.00in	NNE	6.0mph	11.0mph	30%	0.00in
12:42	80.0 °F	46.0 °F	-100.00in	NNE	6.0mph	11.0mph	30%	0.00in
12:50	81.0 °F	45.0 °F	-100.00in	NNE	6.0mph	14.0mph	28%	0.00in
13:12	81.0 °F	45.0 °F	-100.00in	NNE	6.0mph	14.0mph	28%	0.00in
13:22	81.0 °F	45.0 °F	-100.00in	NNE	6.0mph	14.0mph	28%	0.00in
13:33	81.0 °F	45.0 °F	-100.00in	NNE	6.0mph	14.0mph	28%	0.00in
13:42	81.0 °F	45.0 °F	-100.00in	NNE	6.0mph	14.0mph	28%	0.00in
13:50	85.0 °F	47.0 °F	-100.00in	North	8.0mph	15.0mph	27%	0.00in
14:12	85.0 °F	47.0 °F	-100.00in	North	8.0mph	15.0mph	27%	0.00in
14:22	85.0 °F	47.0 °F	-100.00in	North	8.0mph	15.0mph	27%	0.00in
14:34	85.0 °F	47.0 °F	-100.00in	North	8.0mph	15.0mph	27%	0.00in
14:42	85.0 °F	47.0 °F	-100.00in	North	8.0mph	15.0mph	27%	0.00in
14:50	86.0 °F	43.0 °F	-100.00in	North	10.0mph	17.0mph	22%	0.00in
15:12	86.0 °F	43.0 °F	-100.00in	North	10.0mph	17.0mph	22%	0.00in
15:22	86.0 °F	43.0 °F	-100.00in	North	10.0mph	17.0mph	22%	0.00in
15:33	86.0 °F	43.0 °F	-100.00in	North	10.0mph	17.0mph	22%	0.00in
15:42	86.0 °F	43.0 °F	-100.00in	North	10.0mph	17.0mph	22%	0.00in
15:50	89.0 °F	44.0 °F	-100.00in	North	11.0mph	18.0mph	21%	0.00in
16:12	89.0 °F	44.0 °F	-100.00in	North	11.0mph	18.0mph	21%	0.00in
16:22	89.0 °F	44.0 °F	-100.00in	North	11.0mph	18.0mph	21%	0.00in
16:33	89.0 °F	44.0 °F	-100.00in	North	11.0mph	18.0mph	21%	0.00in
16:42	89.0 °F	44.0 °F	-100.00in	North	11.0mph	18.0mph	21%	0.00in
16:50	88.0 °F	36.0 °F	-100.00in	North	10.0mph	20.0mph	16%	0.00in
17:12	88.0 °F	36.0 °F	-100.00in	North	10.0mph	20.0mph	16%	0.00in
17:22	88.0 °F	36.0 °F	-100.00in	North	10.0mph	20.0mph	16%	0.00in
17:33	88.0 °F	36.0 °F	-100.00in	North	10.0mph	20.0mph	16%	0.00in
17:42	88.0 °F	36.0 °F	-100.00in	North	10.0mph	20.0mph	16%	0.00in
17:50	87.0 °F	41.0 °F	-100.00in	North	12.0mph	19.0mph	20%	0.00in
18:12	87.0 °F	41.0 °F	-100.00in	North	12.0mph	19.0mph	20%	0.00in
18:22	87.0 °F	41.0 °F	-100.00in	North	12.0mph	19.0mph	20%	0.00in
18:33	87.0 °F	41.0 °F	-100.00in	North	12.0mph	19.0mph	20%	0.00in
18:42	87.0 °F	41.0 °F	-100.00in	North	12.0mph	19.0mph	20%	0.00in
18:50	88.0 °F	38.0 °F	-100.00in	NNE	9.0mph	19.0mph	17%	0.00in
19:12	88.0 °F	38.0 °F	-100.00in	NNE	9.0mph	19.0mph	17%	0.00in
19:22	88.0 °F	38.0 °F	-100.00in	NNE	9.0mph	19.0mph	17%	0.00in
19:33	88.0 °F	38.0 °F	-100.00in	NNE	9.0mph	19.0mph	17%	0.00in
19:42	88.0 °F	38.0 °F	-100.00in	NNE	9.0mph	19.0mph	17%	0.00in
20:12	82.0 °F	38.0 °F	-100.00in	North	6.0mph	17.0mph	21%	0.00in
20:22	82.0 °F	38.0 °F	-100.00in	North	6.0mph	17.0mph	21%	0.00in
20:42	82.0 °F	38.0 °F	-100.00in	North	6.0mph	17.0mph	21%	0.00in
20:50	79.0 °F	43.0 °F	-100.00in	NNE	3.0mph	8.0mph	28%	0.00in
21:12	79.0 °F	43.0 °F	-100.00in	NNE	3.0mph	8.0mph	28%	0.00in

Time	Temp.	Dew Point	Pressure	Wind	Wind Speed	Wind Gust	Humidity	Rainfall Rate (Hourly)
21:22	79.0 °F	43.0 °F	-100.00in	NNE	3.0mph	8.0mph	28%	0.00in
21:33	79.0 °F	43.0 °F	-100.00in	NNE	3.0mph	8.0mph	28%	0.00in
21:42	79.0 °F	43.0 °F	-100.00in	NNE	3.0mph	8.0mph	28%	0.00in
21:50	79.0 °F	42.0 °F	-100.00in	NW	2.0mph	6.0mph	27%	0.00in
22:12	79.0 °F	42.0 °F	-100.00in	NW	2.0mph	6.0mph	27%	0.00in
22:22	79.0 °F	42.0 °F	-100.00in	NW	2.0mph	6.0mph	27%	0.00in
22:33	79.0 °F	42.0 °F	-100.00in	NW	2.0mph	6.0mph	27%	0.00in
22:42	79.0 °F	42.0 °F	-100.00in	NW	2.0mph	6.0mph	27%	0.00in
22:50	79.0 °F	46.0 °F	-100.00in	NW	5.0mph	9.0mph	31%	0.00in
23:12	79.0 °F	46.0 °F	-100.00in	NW	5.0mph	9.0mph	31%	0.00in
23:22	79.0 °F	46.0 °F	-100.00in	NW	5.0mph	9.0mph	31%	0.00in
23:33	79.0 °F	46.0 °F	-100.00in	NW	5.0mph	9.0mph	31%	0.00in
23:42	79.0 °F	46.0 °F	-100.00in	NW	5.0mph	9.0mph	31%	0.00in
23:50	77.0 °F	53.0 °F	-100.00in	WNW	7.0mph	8.0mph	44%	0.00in

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History for MKTLC1

KETTLEMAN HILLS CA US, Kettleman City, CA — [Current Conditions](#)

The data provider for this station: RAW5

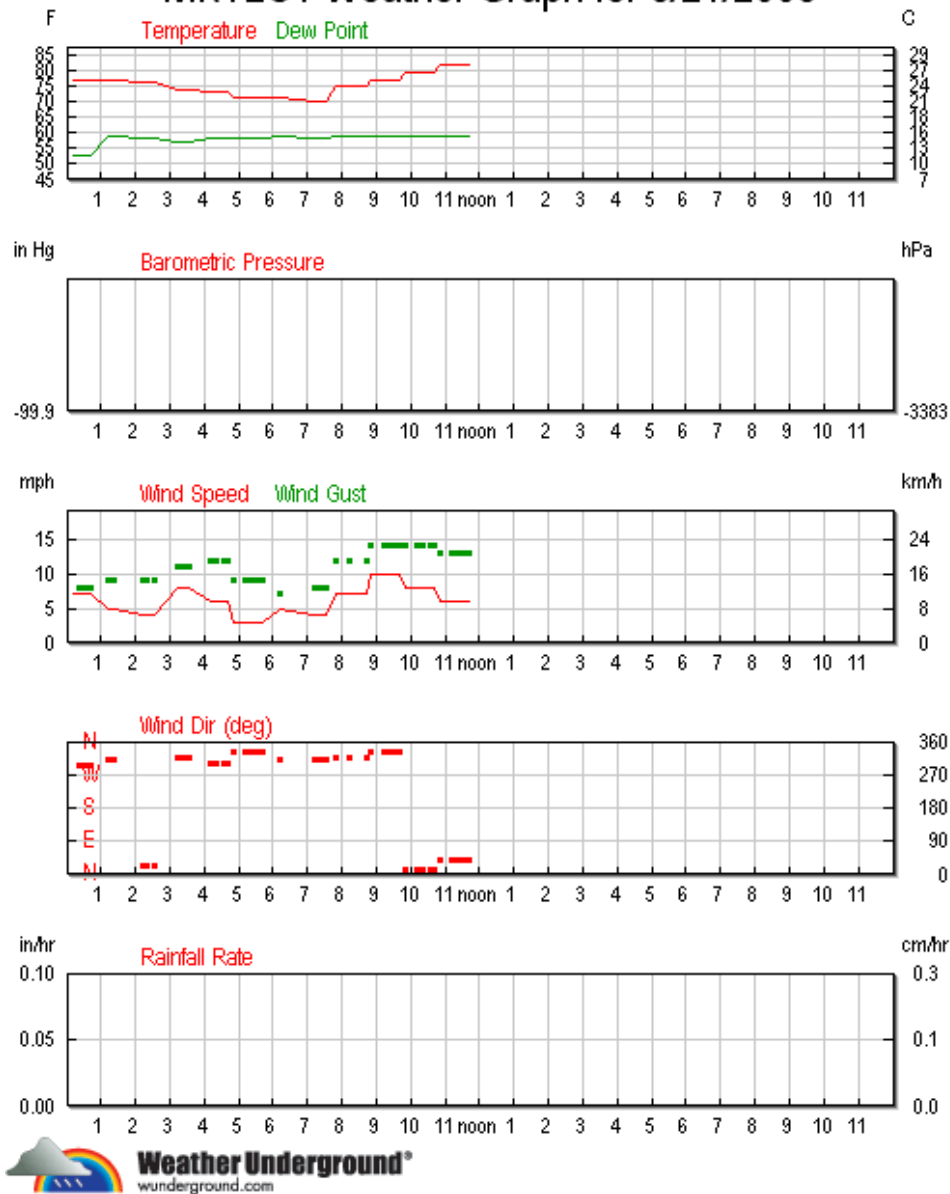
Daily Summary for August 21, 2008

	Current:	High:	Low:	Average:
Temperature:	61.0 °F	82.0 °F	70.0 °F	75.7 °F
Dew Point:	38.0 °F	59.0 °F	53.0 °F	58.0 °F
Humidity:	43%	67%	44%	54%
Wind Speed:	4.0mph	10.0mph	-	6.3mph
Wind Gust:	8.0mph	14.0mph	-	-
Wind:	NNE	-	-	NNW
Pressure:	0.00in	0.00in	40.00in	-
Precipitation:	0.00in			

Statistics for the rest of the month:

	High:	Low:	Average:
Temperature:	106.0 °F	63.0 °F	88.5 °F
Dew Point:	59.0 °F	-99.9 °F	43.8 °F
Humidity:	68.0%	7.0%	23.6%
Wind Speed:	18.0mph from the NW	-	7.9mph
Wind Gust:	29.0mph from the NNW	-	-
Wind:	-	-	South
Pressure:	0.00in	40.00in	-
Precipitation:	0.00in		

MKTLC1 Weather Graph for 8/21/2008



Tabular Data for August 21, 2008

Time	Temp.	Dew Point	Pressure	Wind	Wind Speed	Wind Gust	Humidity	Rainfall Rate (Hourly)
00:11	77.0 °F	53.0 °F	-100.00in	WNW	7.0mph	8.0mph	44%	0.00in
00:22	77.0 °F	53.0 °F	-100.00in	WNW	7.0mph	8.0mph	44%	0.00in
00:33	77.0 °F	53.0 °F	-100.00in	WNW	7.0mph	8.0mph	44%	0.00in
00:42	77.0 °F	53.0 °F	-100.00in	WNW	7.0mph	8.0mph	44%	0.00in
01:12	77.0 °F	59.0 °F	-100.00in	NW	5.0mph	9.0mph	53%	0.00in
01:22	77.0 °F	59.0 °F	-100.00in	NW	5.0mph	9.0mph	53%	0.00in
02:12	76.0 °F	58.0 °F	-100.00in	NNE	4.0mph	9.0mph	54%	0.00in
02:21	76.0 °F	58.0 °F	-100.00in	NNE	4.0mph	9.0mph	54%	0.00in
02:32	76.0 °F	58.0 °F	-100.00in	NNE	4.0mph	9.0mph	54%	0.00in
03:12	74.0 °F	57.0 °F	-100.00in	NW	8.0mph	11.0mph	56%	0.00in
03:22	74.0 °F	57.0 °F	-100.00in	NW	8.0mph	11.0mph	56%	0.00in
03:33	74.0 °F	57.0 °F	-100.00in	NW	8.0mph	11.0mph	56%	0.00in
04:12	73.0 °F	58.0 °F	-100.00in	NW	6.0mph	12.0mph	60%	0.00in

Time	Temp.	Dew Point	Pressure	Wind	Wind Speed	Wind Gust	Humidity	Rainfall Rate (Hourly)
04:22	73.0 °F	58.0 °F	-100.00in	NW	6.0mph	12.0mph	60%	0.00in
04:33	73.0 °F	58.0 °F	-100.00in	NW	6.0mph	12.0mph	60%	0.00in
04:42	73.0 °F	58.0 °F	-100.00in	NW	6.0mph	12.0mph	60%	0.00in
04:50	71.0 °F	58.0 °F	-100.00in	NNW	3.0mph	9.0mph	63%	0.00in
05:12	71.0 °F	58.0 °F	-100.00in	NNW	3.0mph	9.0mph	63%	0.00in
05:22	71.0 °F	58.0 °F	-100.00in	NNW	3.0mph	9.0mph	63%	0.00in
05:33	71.0 °F	58.0 °F	-100.00in	NNW	3.0mph	9.0mph	63%	0.00in
05:42	71.0 °F	58.0 °F	-100.00in	NNW	3.0mph	9.0mph	63%	0.00in
06:12	71.0 °F	59.0 °F	-100.00in	NW	5.0mph	7.0mph	67%	0.00in
07:13	70.0 °F	58.0 °F	-100.00in	NW	4.0mph	8.0mph	65%	0.00in
07:22	70.0 °F	58.0 °F	-100.00in	NW	4.0mph	8.0mph	65%	0.00in
07:34	70.0 °F	58.0 °F	-100.00in	NW	4.0mph	8.0mph	65%	0.00in
07:50	75.0 °F	59.0 °F	-100.00in	NW	7.0mph	12.0mph	57%	0.00in
08:12	75.0 °F	59.0 °F	-100.00in	NW	7.0mph	12.0mph	57%	0.00in
08:43	75.0 °F	59.0 °F	-100.00in	NW	7.0mph	12.0mph	57%	0.00in
08:50	77.0 °F	59.0 °F	-100.00in	NNW	10.0mph	14.0mph	53%	0.00in
09:12	77.0 °F	59.0 °F	-100.00in	NNW	10.0mph	14.0mph	53%	0.00in
09:22	77.0 °F	59.0 °F	-100.00in	NNW	10.0mph	14.0mph	53%	0.00in
09:34	77.0 °F	59.0 °F	-100.00in	NNW	10.0mph	14.0mph	53%	0.00in
09:42	77.0 °F	59.0 °F	-100.00in	NNW	10.0mph	14.0mph	53%	0.00in
09:50	79.0 °F	59.0 °F	-100.00in	NNE	8.0mph	14.0mph	50%	0.00in
10:12	79.0 °F	59.0 °F	-100.00in	NNE	8.0mph	14.0mph	50%	0.00in
10:22	79.0 °F	59.0 °F	-100.00in	NNE	8.0mph	14.0mph	50%	0.00in
10:33	79.0 °F	59.0 °F	-100.00in	NNE	8.0mph	14.0mph	50%	0.00in
10:42	79.0 °F	59.0 °F	-100.00in	NNE	8.0mph	14.0mph	50%	0.00in
10:50	82.0 °F	59.0 °F	-100.00in	NE	6.0mph	13.0mph	45%	0.00in
11:12	82.0 °F	59.0 °F	-100.00in	NE	6.0mph	13.0mph	45%	0.00in
11:22	82.0 °F	59.0 °F	-100.00in	NE	6.0mph	13.0mph	45%	0.00in
11:33	82.0 °F	59.0 °F	-100.00in	NE	6.0mph	13.0mph	45%	0.00in
11:42	82.0 °F	59.0 °F	-100.00in	NE	6.0mph	13.0mph	45%	0.00in

[Comma Delimited File](#)

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Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 05/28/2008

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: *Lanius ludovicianus*

Common Name: Loggerhead shrike

Species Found? ☒ Yes ☐ No If not, why? _____

Total No. Individuals 1 Subsequent Visit? ☒ yes ☐ no

Is this an existing NDDDB occurrence? ☐ no ☒ unk.
Yes, Occ. # _____

Collection? If yes: _____
Number _____ Museum / Herbarium _____

Reporter: URS Corporation

Address: 1615 Murray Canyon Road, Suite 1000
San Diego, CA 92108

E-mail Address: _____

Phone: (619) 294-9400

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

1
adults # juveniles # larvae # egg masses # unknown
☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Fresno County Landowner / Mgr.: William Mouren

Quad Name: _____ Elevation: _____

T _____ R _____ Sec _____, _____ 1/4 of _____ 1/4, Meridian: ☐ H ☐ M ☐ S Source of Coordinates (GPS, topo. map & type): GPS

T _____ R _____ Sec _____, _____ 1/4 of _____ 1/4, Meridian: ☐ H ☐ M ☐ S GPS Make & Model Garmin Rhino 520

DATUM: NAD27 ☐ NAD83 ☐ WGS84 ☒ Horizontal Accuracy 3 meters _____ meters/feet

Coordinate System: UTM Zone 10 ☒ UTM Zone 11 ☐ OR Geographic (Latitude & Longitude) ☐

Coordinates: 10S 0751650, 4002781 and 10S 0751958 4002951

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

Disturbed in nature and includes disturbed and agricultural vegetation communities.

Other rare taxa seen at THIS site on THIS date: Blunt-nosed leopard lizard, Golden Eagle
(separate form preferred)

Site Information Overall site/occurrence quality/viability (site + population): ☐ Excellent ☐ Good ☒ Fair ☐ Poor

Immediate AND surrounding land use: Agriculture, several unpaved service roads, abandoned concrete pad

Visible disturbances: Disturbed areas are associated with the aforementioned land uses

Threats: Development/Anthropogenic activity

Comments: Two LOSH sitings were documented on two separate site visits (05/28/2008 amd 07/03/2008).

Determination: (check one or more, and fill in blanks)

- ☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☒ Compared with photo / drawing in: Sibley Field Guide to Birds: Western North America
☐ By another person (name): _____
☐ Other: _____

Photographs: (check one or more)

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☒
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? yes ☒ no ☐

History for KCACALIF2

California Valley, California Valley, CA — [Current Conditions](#)

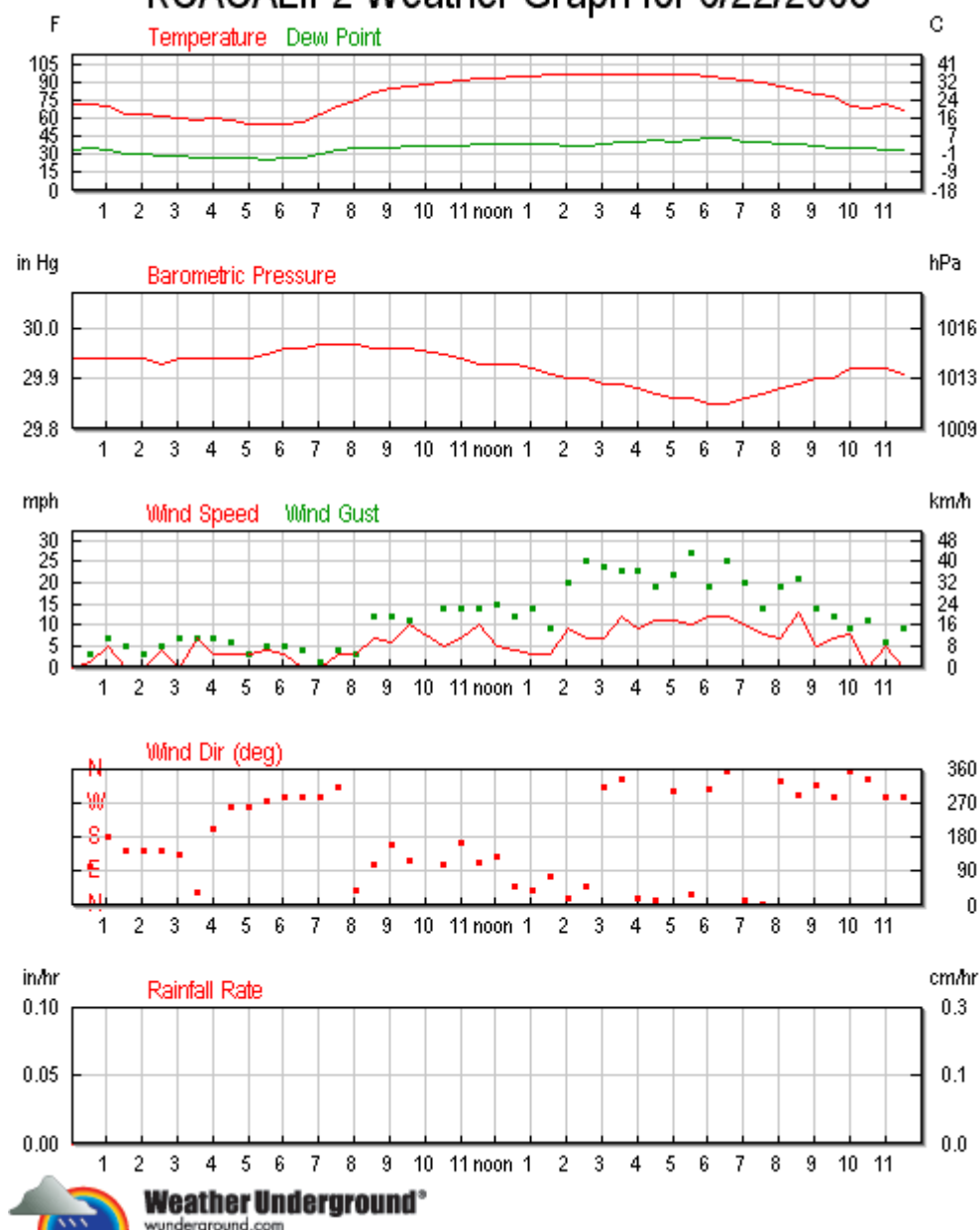
Daily Summary for June 22, 2008

	Current:	High:	Low:	Average:
Temperature:	86.7 °F / 30.4 °C	97.5 °F / 36.4 °C	54.9 °F / 12.7 °C	79.7 °F / 26.5 °C
Dew Point:	56.6 °F / 13.7 °C	44.1 °F / 6.7 °C	26.4 °F / -3.1 °C	35.8 °F / 2.1 °C
Humidity:	36%	35%	13%	22%
Wind Speed:	0.0mph / 0.0km/h /	13.0mph / 20.9km/h	-	5.6mph / 9.0km/h
Wind Gust:	7.0mph / 11.3km/h /	27.0mph / 43.4km/h	-	-
Wind:	WNW	-	-	North
Pressure:	29.92in / 1013.1hPa	29.97in / 1014.8hPa	29.85in / 1010.7hPa	-
Precipitation:	0.00in / 0.0mm			

Statistics for the rest of the month:

	High:	Low:	Average:
Temperature:	104.8 °F / 40.4 °C	35.6 °F / 2.0 °C	70.9 °F / 21.6 °C
Dew Point:	51.0 °F / 10.6 °C	15.6 °F / -9.1 °C	35.8 °F / 2.1 °C
Humidity:	91.0%	9.0%	32.2%
Wind Speed:	24.0mph / 38.6km/h from the NNE	-	5.6mph / 9.0km/h
Wind Gust:	34.0mph / 54.7km/h from the NNE	-	-
Wind:	-	-	SW
Pressure:	30.05in / 1017.5hPa	29.71in / 1006.0hPa	-
Precipitation:	0.00in / 0.0mm		

KCACALIF2 Weather Graph for 6/22/2008



Tabular Data for June 22, 2008

Time	Temperature	Dew Point	Pressure	Wind	Wind Speed	Wind Gust	Humidity	Rainfall Rate (Hourly)
00:02	71.7 °F / 22.1 °C	35.0 °F / 1.7 °C	29.94in / 1013.8hPa	Calm		11mph / 17.7km/h	26%	0.00in / 0.0mm
00:32	72.3 °F / 22.4 °C	35.5 °F / 1.9 °C	29.94in / 1013.8hPa	ESE	1mph / 1.6km/h	3mph / 4.8km/h	26%	0.00in / 0.0mm
01:02	70.5 °F / 21.4 °C	34.0 °F / 1.1 °C	29.94in / 1013.8hPa	South	5mph / 8.0km/h	7mph / 11.3km/h	26%	0.00in / 0.0mm
01:32	64.1 °F / 17.8 °C	31.2 °F / -0.4 °C	29.94in / 1013.8hPa	Calm		5mph / 8.0km/h	29%	0.00in / 0.0mm
02:02	64.5 °F / 18.1 °C	30.7 °F / -0.7 °C	29.94in / 1013.8hPa	Calm		3mph / 4.8km/h	28%	0.00in / 0.0mm
	62.3 °F /	29.7 °F /	29.93in /		4mph /	5mph /		0.00in /

02:32	16.8 °C	-1.3 °C	1013.4 hPa	SE	6.4 km/h	8.0 km/h	29%	0.0 mm
03:02	61.0 °F / 16.1 °C	28.5 °F / -1.9 °C	29.94 in / 1013.8 hPa	Calm		7 mph / 11.3 km/h	29%	0.00 in / 0.0 mm
03:32	59.0 °F / 15.0 °C	26.8 °F / -2.9 °C	29.94 in / 1013.8 hPa	NE	7 mph / 11.3 km/h	7 mph / 11.3 km/h	29%	0.00 in / 0.0 mm
04:02	60.1 °F / 15.6 °C	27.8 °F / -2.3 °C	29.94 in / 1013.8 hPa	SSW	3 mph / 4.8 km/h	7 mph / 11.3 km/h	29%	0.00 in / 0.0 mm
04:32	58.7 °F / 14.8 °C	28.2 °F / -2.1 °C	29.94 in / 1013.8 hPa	West	3 mph / 4.8 km/h	6 mph / 9.7 km/h	31%	0.00 in / 0.0 mm
05:02	56.0 °F / 13.3 °C	27.3 °F / -2.6 °C	29.94 in / 1013.8 hPa	West	3 mph / 4.8 km/h	3 mph / 4.8 km/h	33%	0.00 in / 0.0 mm
05:32	54.9 °F / 12.7 °C	26.4 °F / -3.1 °C	29.95 in / 1014.1 hPa	West	4 mph / 6.4 km/h	5 mph / 8.0 km/h	33%	0.00 in / 0.0 mm
06:02	55.2 °F / 12.9 °C	28.0 °F / -2.2 °C	29.96 in / 1014.4 hPa	WNW	3 mph / 4.8 km/h	5 mph / 8.0 km/h	35%	0.00 in / 0.0 mm
06:32	56.8 °F / 13.8 °C	28.0 °F / -2.2 °C	29.96 in / 1014.4 hPa	Calm		4 mph / 6.4 km/h	33%	0.00 in / 0.0 mm
07:02	63.9 °F / 17.7 °C	31.0 °F / -0.6 °C	29.97 in / 1014.8 hPa	Calm		1 mph / 1.6 km/h	29%	0.00 in / 0.0 mm
07:32	71.0 °F / 21.7 °C	33.4 °F / 0.8 °C	29.97 in / 1014.8 hPa	NW	3 mph / 4.8 km/h	4 mph / 6.4 km/h	25%	0.00 in / 0.0 mm
08:02	75.4 °F / 24.1 °C	35.1 °F / 1.7 °C	29.97 in / 1014.8 hPa	NE	3 mph / 4.8 km/h	3 mph / 4.8 km/h	23%	0.00 in / 0.0 mm
08:32	81.5 °F / 27.5 °C	36.6 °F / 2.6 °C	29.96 in / 1014.4 hPa	ESE	7 mph / 11.3 km/h	12 mph / 19.3 km/h	20%	0.00 in / 0.0 mm
09:02	84.8 °F / 29.3 °C	36.6 °F / 2.6 °C	29.96 in / 1014.4 hPa	SSE	6 mph / 9.7 km/h	12 mph / 19.3 km/h	18%	0.00 in / 0.0 mm
09:32	86.8 °F / 30.4 °C	36.8 °F / 2.7 °C	29.96 in / 1014.4 hPa	ESE	10 mph / 16.1 km/h	11 mph / 17.7 km/h	17%	0.00 in / 0.0 mm
10:32	90.6 °F / 32.6 °C	38.3 °F / 3.5 °C	29.95 in / 1014.1 hPa	ESE	5 mph / 8.0 km/h	14 mph / 22.5 km/h	16%	0.00 in / 0.0 mm
11:02	92.2 °F / 33.4 °C	37.9 °F / 3.3 °C	29.94 in / 1013.8 hPa	SSE	7 mph / 11.3 km/h	14 mph / 22.5 km/h	15%	0.00 in / 0.0 mm
11:32	93.5 °F / 34.2 °C	39.0 °F / 3.9 °C	29.93 in / 1013.4 hPa	ESE	10 mph / 16.1 km/h	14 mph / 22.5 km/h	15%	0.00 in / 0.0 mm
12:02	93.9 °F / 34.4 °C	39.3 °F / 4.1 °C	29.93 in / 1013.4 hPa	SE	5 mph / 8.0 km/h	15 mph / 24.1 km/h	15%	0.00 in / 0.0 mm
12:32	94.4 °F / 34.7 °C	39.7 °F / 4.3 °C	29.93 in / 1013.4 hPa	NE	4 mph / 6.4 km/h	12 mph / 19.3 km/h	15%	0.00 in / 0.0 mm
13:02	95.9 °F / 35.5 °C	39.1 °F / 3.9 °C	29.92 in / 1013.1 hPa	NE	3 mph / 4.8 km/h	14 mph / 22.5 km/h	14%	0.00 in / 0.0 mm
13:32	96.4 °F / 35.8 °C	39.5 °F / 4.2 °C	29.91 in / 1012.8 hPa	ENE	3 mph / 4.8 km/h	9 mph / 14.5 km/h	14%	0.00 in / 0.0 mm
14:02	96.9 °F / 36.1 °C	38.0 °F / 3.3 °C	29.90 in / 1012.4 hPa	NNE	9 mph / 14.5 km/h	20 mph / 32.2 km/h	13%	0.00 in / 0.0 mm
14:32	96.6 °F / 35.9 °C	37.8 °F / 3.2 °C	29.90 in / 1012.4 hPa	NE	7 mph / 11.3 km/h	25 mph / 40.2 km/h	13%	0.00 in / 0.0 mm
15:02	96.8 °F / 36.0 °C	39.8 °F / 4.3 °C	29.89 in / 1012.1 hPa	NW	7 mph / 11.3 km/h	24 mph / 38.6 km/h	14%	0.00 in / 0.0 mm
	97.0 °F /	40.0 °F /	29.89 in /		12 mph /	23 mph /		0.00 in /

15:32	36.1 °C	4.4 °C	1012.1 hPa	NNW	19.3 km/h	37.0 km/h	14%	0.0 mm
16:02	97.5 °F / 36.4 °C	40.3 °F / 4.6 °C	29.88 in / 1011.7 hPa	NNE	9 mph / 14.5 km/h	23 mph / 37.0 km/h	14%	0.00 in / 0.0 mm
16:32	96.9 °F / 36.1 °C	41.7 °F / 5.4 °C	29.87 in / 1011.4 hPa	NNE	11 mph / 17.7 km/h	19 mph / 30.6 km/h	15%	0.00 in / 0.0 mm
17:02	96.8 °F / 36.0 °C	41.6 °F / 5.3 °C	29.86 in / 1011.1 hPa	NW	11 mph / 17.7 km/h	22 mph / 35.4 km/h	15%	0.00 in / 0.0 mm
17:32	96.1 °F / 35.6 °C	42.7 °F / 5.9 °C	29.86 in / 1011.1 hPa	NNE	10 mph / 16.1 km/h	27 mph / 43.4 km/h	16%	0.00 in / 0.0 mm
18:02	95.2 °F / 35.1 °C	43.6 °F / 6.4 °C	29.85 in / 1010.7 hPa	NW	12 mph / 19.3 km/h	19 mph / 30.6 km/h	17%	0.00 in / 0.0 mm
18:32	94.0 °F / 34.4 °C	44.1 °F / 6.7 °C	29.85 in / 1010.7 hPa	North	12 mph / 19.3 km/h	25 mph / 40.2 km/h	18%	0.00 in / 0.0 mm
19:02	92.3 °F / 33.5 °C	41.2 °F / 5.1 °C	29.86 in / 1011.1 hPa	NNE	10 mph / 16.1 km/h	20 mph / 32.2 km/h	17%	0.00 in / 0.0 mm
19:32	90.2 °F / 32.3 °C	41.0 °F / 5.0 °C	29.87 in / 1011.4 hPa	North	8 mph / 12.9 km/h	14 mph / 22.5 km/h	18%	0.00 in / 0.0 mm
20:02	87.1 °F / 30.6 °C	39.9 °F / 4.4 °C	29.88 in / 1011.7 hPa	NNW	7 mph / 11.3 km/h	19 mph / 30.6 km/h	19%	0.00 in / 0.0 mm
20:32	84.4 °F / 29.1 °C	39.0 °F / 3.9 °C	29.89 in / 1012.1 hPa	WNW	13 mph / 20.9 km/h	21 mph / 33.8 km/h	20%	0.00 in / 0.0 mm
21:02	80.2 °F / 26.8 °C	38.0 °F / 3.3 °C	29.90 in / 1012.4 hPa	NW	5 mph / 8.0 km/h	14 mph / 22.5 km/h	22%	0.00 in / 0.0 mm
21:32	78.4 °F / 25.8 °C	36.5 °F / 2.5 °C	29.90 in / 1012.4 hPa	WNW	7 mph / 11.3 km/h	12 mph / 19.3 km/h	22%	0.00 in / 0.0 mm
22:02	71.0 °F / 21.7 °C	35.4 °F / 1.9 °C	29.92 in / 1013.1 hPa	North	8 mph / 12.9 km/h	9 mph / 14.5 km/h	27%	0.00 in / 0.0 mm
22:32	69.6 °F / 20.9 °C	35.1 °F / 1.7 °C	29.92 in / 1013.1 hPa	Calm		11 mph / 17.7 km/h	28%	0.00 in / 0.0 mm
23:02	71.5 °F / 21.9 °C	34.8 °F / 1.6 °C	29.92 in / 1013.1 hPa	WNW	5 mph / 8.0 km/h	6 mph / 9.7 km/h	26%	0.00 in / 0.0 mm
23:32	67.9 °F / 19.9 °C	34.5 °F / 1.4 °C	29.91 in / 1012.8 hPa	Calm		9 mph / 14.5 km/h	29%	0.00 in / 0.0 mm

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Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 05/28/2008

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: *Lanius ludovicianus*

Common Name: Loggerhead shrike

Species Found? ☒ Yes ☐ No If not, why? _____

Total No. Individuals 1 Subsequent Visit? ☒ yes ☐ no

Is this an existing NDDB occurrence? ☐ no ☒ unk.
Yes, Occ. # _____

Collection? If yes: _____
Number Museum / Herbarium

Reporter: URS Corporation

Address: 1615 Murray Canyon Road, Suite 1000
San Diego, CA 92108

E-mail Address: _____

Phone: (619) 294-9400

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

1
adults # juveniles # larvae # egg masses # unknown
☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Fresno County Landowner / Mgr.: William Mouren

Quad Name: _____ Elevation: _____

T _____ R _____ Sec _____, _____ 1/4 of _____ 1/4, Meridian: ☐ H ☐ M ☐ S Source of Coordinates (GPS, topo. map & type): GPS

T _____ R _____ Sec _____, _____ 1/4 of _____ 1/4, Meridian: ☐ H ☐ M ☐ S GPS Make & Model Garmin Rhino 520

DATUM: NAD27 ☐ NAD83 ☐ WGS84 ☒ Horizontal Accuracy 3 meters _____ meters/feet

Coordinate System: UTM Zone 10 ☒ UTM Zone 11 ☐ OR Geographic (Latitude & Longitude) ☐

Coordinates: 10S 0751650, 4002781 and 10S 0751958 4002951

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

Disturbed in nature and includes disturbed and agricultural vegetation communities.

Other rare taxa seen at THIS site on THIS date: Blunt-nosed leopard lizard, Golden Eagle
(separate form preferred)

Site Information Overall site/occurrence quality/viability (site + population): ☐ Excellent ☐ Good ☒ Fair ☐ Poor

Immediate AND surrounding land use: Agriculture, several unpaved service roads, abandoned concrete pad

Visible disturbances: Disturbed areas are associated with the aforementioned land uses

Threats: Development/Anthropogenic activity

Comments: Two LOSH sitings were documented on two separate site visits (05/28/2008 amd 07/03/2008).

Determination: (check one or more, and fill in blanks)

- ☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☒ Compared with photo / drawing in: Sibley Field Guide to Birds: Western North America
☐ By another person (name): _____
☐ Other: _____

Photographs: (check one or more)

Slide Print Digital
Plant / animal ☐ ☐ ☐
Habitat ☐ ☐ ☒
Diagnostic feature ☐ ☐ ☐

May we obtain duplicates at our expense? yes ☒ no ☐

For Office Use Only

Source Code _____ Quad Code _____
Elm Code _____ Occ. No. _____
EO Index No. _____ Map Index No. _____

Date of Field Work (mm/dd/yyyy): 05/28/2008

Reset

California Native Species Field Survey Form

Send Form

Scientific Name: *Lanius ludovicianus*

Common Name: Loggerhead shrike

Species Found? ☒ Yes ☐ No If not, why? _____

Total No. Individuals 1 Subsequent Visit? ☒ yes ☐ no

Is this an existing NDDDB occurrence? ☐ no ☒ unk.
Yes, Occ. # _____

Collection? If yes: _____
Number Museum / Herbarium

Reporter: URS Corporation

Address: 1615 Murray Canyon Road, Suite 1000
San Diego, CA 92108

E-mail Address: _____

Phone: (619) 294-9400

Plant Information

Phenology: _____% vegetative _____% flowering _____% fruiting

Animal Information

1
adults # juveniles # larvae # egg masses # unknown
☐ breeding ☐ wintering ☐ burrow site ☐ rookery ☐ nesting ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Fresno County Landowner / Mgr.: William Mouren

Quad Name: _____ Elevation: _____

T _____ R _____ Sec _____, _____ 1/4 of _____ 1/4, Meridian: ☐ H ☐ M ☐ S Source of Coordinates (GPS, topo. map & type): GPS

T _____ R _____ Sec _____, _____ 1/4 of _____ 1/4, Meridian: ☐ H ☐ M ☐ S GPS Make & Model Garmin Rhino 520

DATUM: NAD27 ☐ NAD83 ☐ WGS84 ☒ Horizontal Accuracy 3 meters _____ meters/feet

Coordinate System: UTM Zone 10 ☒ UTM Zone 11 ☐ OR Geographic (Latitude & Longitude) ☐

Coordinates: 10S 0751650, 4002781 and 10S 0751958 4002951

Habitat Description (plant communities, dominants, associates, substrates/soils, aspects/slope):

Disturbed in nature and includes disturbed and agricultural vegetation communities.

Other rare taxa seen at THIS site on THIS date: Blunt-nosed leopard lizard, Golden Eagle
(separate form preferred)

Site Information Overall site/occurrence quality/viability (site + population): ☐ Excellent ☐ Good ☒ Fair ☐ Poor

Immediate AND surrounding land use: Agriculture, several unpaved service roads, abandoned concrete pad

Visible disturbances: Disturbed areas are associated with the aforementioned land uses

Threats: Development/Anthropogenic activity

Comments: Two LOSH sitings were documented on two separate site visits (05/28/2008 and 07/03/2008).

Determination: (check one or more, and fill in blanks)

- ☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☒ Compared with photo / drawing in: Sibley Field Guide to Birds: Western North America
☐ By another person (name): _____
☐ Other: _____

Photographs: (check one or more)

Slide Print Digital
Plant / animal ☐ ☐ ☐
Habitat ☐ ☐ ☒
Diagnostic feature ☐ ☐ ☐

May we obtain duplicates at our expense? yes ☒ no ☐

BIOLOGISTS' QUALIFICATIONS

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Areas of Expertise	Wildlife Biology Biological Impact Assessment ESA/Wetlands Permitting Habitat Conservation Planning Wildlife Corridor Assessment Habitat Restoration Planning and Monitoring Biology Group Management
Years of Experience	29
URS	10
Other Firms	19
Education	PhD/1990/Biology/University of California, Los Angeles CPh/1983/Biology/University of California, Los Angeles BS/1979/Wildlife Biology/University of California, Davis
Registration/Certification	Certified Senior Ecologist/Ecological Society of America Certified Wildlife Biologist®/The Wildlife Society Training in ACOE Wetland Delineation Methods & Regulatory Policy OSHA Hazardous Waste Operations and Emergency Response Training/Section 1910.120 Training in Use of ArcView and Auto Cad R14 Software
Overview	Dr. Mock has over 29 years of professional experience as a wildlife biologist and environmental consultant. He has served as principal investigator for studies of endangered wildlife, directing and participating in field investigations, data analysis, and preparation and review of technical reports and mitigation plans. Dr. Mock has extensive national and international experience in the assessment of impacts on biological resources, especially in relation to wetland ecosystems, coastal sage scrub, and endangered species. Dr. Mock has produced environmental impact assessments of various development projects throughout western US and the Pacific Rim in conformance with NEPA, CWA, and ESA. His specific area of expertise is in the ecology, management, and monitoring of vertebrate populations. He has conducted investigations of several sensitive bird species, including California least tern, brown pelican, least Bell's vireo, California gnatcatcher, coastal cactus wren, and bald eagle. He is experienced in landscape scale habitat evaluation modeling, preserve design, wildlife corridor assessment, and population viability analysis. He is certified as a Senior Ecologist by the Ecological Society of America and as a Certified Wildlife Biologist® by The Wildlife Society. Dr. Mock participates in all aspects of project management, including client liaison, budgeting, field investigations and research, supervision of field biologists, regulatory permitting assistance, agency liaison, report preparation and review, public presentations, and expert testimony. Dr. Mock has also served as a Lecturer at the University of San Diego and University of California, San Diego, where he has taught courses on biological assessment, principles of ecology, and wildlife management. Dr. Mock has thirteen publications in peer-reviewed science journals related to wildlife ecology, ornithology, and habitat conservation topics.

Project Experience

ECOLOGICAL RESEARCH

Ecological Studies of California Gnatcatcher (*Polioptila californica*), Home Capital Corporation, Weingarten, Siegel, Fletcher Group, Inc., and Skyline Wesleyan Presbyterian Church. Served as project manager/principal investigator for a comprehensive ecological study of over 40 pairs of California gnatcatchers in the Rancho San Diego area in order to document home range size, habitat preferences, dispersal behavior, breeding/population biology, and effects of development.

Foraging Ecology of California Least Tern (*Sterna antillarum browni*), Mission Bay, Department of Parks and Recreation, City of San Diego. Served as project manager/principal investigator, responsible for documentation of least tern foraging habitats within Mission Bay Park.

Habitat Characterization of Ephemeral Watercourses Receiving Treated Wastewater Effluents in the Arid Western U.S., Wastewater Management Department, Pima County, Arizona/EPA. Served as project coordinator for the research team assigned to gather data at two southern California sites and acted as the lead wildlife biologist for the overall program.

Behavioral Study of the Effects of Military Helicopter Activity on Breeding Least Bell's Vireo, U.S. Navy. Served as the principal investigator for an intensive behavioral study of least Bell's vireo breeding adjacent to Camp Pendleton Marine Corps Air Station. This empirical study verified a theoretical model of noise impacts to breeding vireos.

Study of the Effects Associated with Modification of Sand Grain-size on Shorebird Foraging Behavior, Department of Parks and Recreation, City of San Diego. Project manager/principal investigator for an impact assessment of proposed modification of sand grain-size as an erosion-control measure in Mission Bay Park. Study involved documentation of changes in shorebird foraging behavior associated with erosion-control methods.

San Diego Bay Waterbird Survey, U.S. Navy. Project Director of a three-year study of waterbird use of north and central San Diego Bay. Involved weekly boat surveys of waterbirds and other sensitive species. This study allowed for a detailed analysis of spatial and temporal variation of waterbird abundance and habitat use within San Diego Bay.

Behavioral Study of the Effects of Military, Fixed-wing Aircraft Activity on Idaho Bighorn Sheep, U.S. Air Force. Dr. Mock participated in the experimental design and statistical analysis of this intensive behavioral study of bighorn sheep in the Owahee Range of western Idaho.

Wildlife Corridor Study of the 23,000-Acre Otay Ranch, San Diego County, City of Chula Vista. Project director responsible for documentation of wildlife corridors on Otay Ranch and the Miramar-Peñasquitos area of San Diego, made recommendations for the retention and protection of regionally significant corridors within and throughout the ranch.

Wildlife Corridor Assessment for Canyon Crest Development Project, Brea California. City of Brea. Senior biologist for a detailed, wildlife corridor assessment for the project vicinity around a proposed residential development project in the City of Brea, California. Landscape-scale wildlife movement routes

between open space areas associated with Carbon Canyon Road were identified and redundant routes through the project site were conserved as part of the project design.

Cavallo Farms Wildlife Corridor Study, City of San Diego, CA. 2006. – Sr. biologist for a wildlife corridor assessment of an 21-acre horse farm/training property located within an presumed MSCP wildlife corridor linkage in Del Mar, California. Study monitored 24 passive tracking stations and 5 camera stations within and surrounding the property for 8 weeks to identify tracks and scat of large mammal species, including mountain lion, bobcat, coyote, and southern mule deer. California gnatcatcher protocol surveys and identified territories were conducted throughout study area.

Raptor Ecology and Management Study on Otay Ranch, City of Chula Vista. Project director responsible for documenting nesting, roosting, and foraging areas of sensitive bird-of-prey species using radio telemetry methods. Species studied included golden eagle, northern harrier, black-shouldered kite, Cooper's hawk, and burrowing owl.

Analysis of Brown Pelican Migration Patterns from Band Recovery Data, Los Angeles County Natural History Museum. Principal investigator. Dr. Mock also assisted Dr. R.W. Schreiber in his field studies of the reproductive ecology of pelicaniform birds on Johnston Atoll, Central Pacific Ocean.

Study of Growth Energetics and Food Intake of Nestling Thick-billed Murre (*Uria lomvia*) Pribilof Islands, Bering Sea, Alaska, Department of Ecology and Evolutionary Biology, University of California, Irvine. Principal investigator for a study that included use of isotopically labeled water and body composition analysis. Dr. Mock was a member of a large research team led by Dr. G.L. Hunt, which studied the effects of colony size on the reproductive ecology and energetics of colonial seabirds.

Comprehensive Studies of the Reproductive Energetics and Ecology of the Western Bluebird (*Sialia mexicana*), Department of Biology and Laboratory of Biomedical and Environmental Sciences, University of California, Los Angeles. As a doctoral candidate, Dr. Mock's studies included comparative growth energetics of nestling western bluebird and ash-throated flycatcher (*Myiarchus cinerascens*), use of the doubly-labeled water method, time-activity budget analysis, nestling growth analysis, laboratory measurement of animal metabolism, body composition analysis, bird banding methods, and statistical analysis.

Development of an *in vivo* Method to Estimate Lipid Reserves of Vertebrates, Laboratory of Biomedical and Environmental Sciences, University of California, Los Angeles. As a research associate in Dr. Ken Nagy's Lab, Dr. Mock participated in validation studies of the cyclopropane methods to estimate lipid reserves of vertebrates.

San Diego County Breeding and Wintering Bird Atlas Project, San Diego Natural History Museum. A principal participant in the design and implementation of 6-year atlas project. Providing GIS mapping support and assistance in data analysis.

REGIONAL NATURAL RESOURCE PLANNING

Multiple Species Conservation Program, City of San Diego Clean Water Program. Principal wildlife biologist directing the gap analysis, preserve design, wildlife corridor analysis, and resource assessment to delineate a network of potential preserve areas for a 900-square mile area in southwestern San Diego County. The objective of this three-year program is to develop a plan for the conservation and management of self-sustaining, viable populations of federally listed species and key candidate species and their habitats. Included in this program is the development of population viability analyses for California gnatcatcher and coastal cactus wren, a comprehensive GIS-based habitat evaluation model to aid in the relative valuation of habitat areas and identification preserve planning areas, and a long-term monitoring plan of conserved habitats and selected target species. This project received numerous citations and awards for excellence in resource planning.

Carlsbad Subarea Habitat Conservation Plan/NCCP, Department of Planning, City of Carlsbad. A principal participant in the evaluation of habitat and target species evaluations for proposed city-wide preserve system.

California Gnatcatcher Management Plan for Fallbrook Detachment, Seal Beach NWS, U.S. Navy. Dr. Mock participated in the development of a management and research plan to aid in the relative valuation of habitat areas and assignment of habitat management priorities within the study area.

San Marcos Subarea Habitat Conservation Plan/NCCP, Department of Planning, City of San Marcos. Providing technical assistance to City staff regarding habitat and target species evaluations for proposed city-wide preserve system; Technical review of subarea plan document.

Rancho Palos Verdes Natural Communities Conservation Program Subarea Habitat Conservation Plan and EIR, City of Rancho Palos Verdes. Project Manager and Technical Lead for program assisting the City of Rancho Palos Verdes in the first phase of a NCCP subarea plan for coastal sage scrub habitats. Phase I involves the following tasks: (1) assemble and review existing information on biological resources, land uses, and land-use constraints, (2) perform reconnaissance and focused biological surveys, (3) refine current vegetation mapping and assess the restoration/enhancement potential of disturbed habitats and non-native vegetation, (4) develop three preliminary preserve design alternatives being evaluated in Phase II of the program, and (5) interact with resource agencies, landowners, and local working group of interested parties to incorporate their concerns into the preserve design process. Phase II involved the preparation of the HCP document for public review and Phase III involved the preparation of the EIR and Implementing Agreement documents. Key sensitive species evaluated in the plan include Palos Verdes Blue and El Segundo Blue butterflies, California gnatcatcher, coastal cactus wren, and bright green dudleya.

Desert Lands Habitat Conservation Plan, Metropolitan Water District. Project Manager for HCP and CEQA/NEPA process to address potential incidental take associated with the operation and maintenance of the Colorado River Aqueduct. Program included sample plot assessments across 97,000 acres of MWD owned lands.

North County Multiple Habitat Conservation Program, San Diego Association of Governments. Principal member of a team of biologists formulating a regional

preserve design for a 1,000-square-mile area in northwestern San Diego County. This program is similar to the City of San Diego's MSCP program (see above).

Key Deer Habitat Conservation Plan (HCP), Florida Department of Transportation and Monroe County. A principal participant in habitat and target species assessments and the development of a conservation plan for Big Pine Key and No Name Key encompassing over 5,000 acres of potential Key Deer habitat.

Adaptive Management Research Program for Sweetwater Reservoir Least Bell's Vireo Population, Sweetwater Authority. Dr. Mock provided technical assistance in the development of testable hypotheses, including statistical power analyses for the habitat and population monitoring of the large least Bell's vireo population associated with the reservoir.

Chevron Lokern HCP EIR, Chevron Oil Corporation. Senior biologist overseeing EIR assessment of proposed HCP for over 14,400 acres of sensitive habitats and 31 sensitive species within Kern County.

Santa Monica Mountains National Recreation Area General Development Plan EIS, National Parks Service. Senior biologist overseeing biological assessment of the master plan for the 150,000-acre NRA in coastal Los Angeles County.

California Gnatcatcher Sweetwater River HCP, Home Capital Corporation/San Diego Association of Governments. Project manager and principal author of the first HCP developed for the California gnatcatcher. This HCP presented a program designed to ensure the continued existence of the California gnatcatcher in the Rancho San Diego/Sweetwater River Drainage and proposed to merge the management of the upland habitats with the riparian habitat proposed for management of the least Bell's vireo. This document presented information on the status and biology of the gnatcatcher, including a population viability analysis of the Sweetwater River gnatcatcher subpopulation as an isolate. The plan set guidelines for the conservation and management of coastal sage scrub designated as Conserved Habitat. Management actions were identified in a structured program within the Sweetwater River Drainage through preservation and active management of sage scrub habitat, specifically applied land use controls, and local private and public agreements.

City-wide Biological Resource Assessment and Environmental Planning for the City of Poway, San Diego County, Department of Planning, City of Poway. Task manager for a city-wide California gnatcatcher survey encompassing over 8,000 acres of suitable habitat and development of habitat assessment for coastal sage scrub habitats. Suitable California gnatcatcher habitat within Poway and its Sphere of Influence was identified and recommendations for habitat acquisition priorities and management of biological open space to sustain viable California gnatcatcher populations were made. This project won an Orchid award in the Orchids and Onions Community Awareness Program.

Otay Mountain/Kuchamaa Cooperative Planning Area Biological Monitoring Plan, GIS Database Development, and Cultural Resources Study, BLM. URS prepared a complete GIS Database, Biological Monitoring Plan, and Cultural Resources Study for the Otay/Kuchamaa Cooperative Planning Area managed by the Bureau of Land Management in San Diego County, Ca. The objective of this task order was the development of the baseline database – developed as GIS data

layers – needed to conduct the planning process and EIS analysis, including development of a reasonable range of land management alternatives. The focus of the baseline conditions was related directly to the biological and cultural resources for the management area. This project received a Merit Award from the San Diego AEP.

BLM Resource Management Plan Revision, and EIS, and Biological Assessment, Socorro, New Mexico. Biology task manager for impacts analyses on special status species, vegetation, wildlife and livestock grazing sections for an EIS and BA.

Oceanside Subarea Habitat Conservation Plan/NCCP, Department of Planning, City of Oceanside. A principal participant in habitat and target species assessments and the evaluation of a regional California gnatcatcher movement corridor between San Marcos and Camp Pendleton through Carlsbad and Oceanside.

Point Loma Habitat Management Plan, U.S. Navy. Participated in the development of a habitat evaluation model to aid in the relative valuation of habitat areas and assignment of conservation and habitat management priorities within the study area.

Escondido Master Plan of Parks, Trails, and Open Space/EIR, Department of Planning, City of Escondido. Task manager for identification of regionally significant wildlife corridors throughout the City of Escondido. Regional and site-specific analyses of Escondido's biological resources were made as part of the city's commitment to expand park and recreation facilities, establish long-term open space, and identify mitigation priorities. The regional analysis identified a primary wildlife corridor system to be retained within the city, and concentrations of high quality biological resources recommended for protection through open space easements or for use as mitigation.

Wetlands Management Plan for the Island of Saipan, Coastal Resource Management Office, Commonwealth Government of the Northern Mariana Islands. Project manager/zoologist for a comprehensive wetlands management plan for the island of Saipan. Study involved habitat evaluation and assessment. Recommendations for habitat acquisition priorities and management were made for the conservation of significant wetland resources on Saipan.

The Oasis Project, U.S. Air Force, Air Combat Command. Senior wildlife biologist involved in landscape level evaluation of biodiversity on two Air Force training ranges (in Idaho and North Carolina) compared to adjacent areas where land use patterns differ from the training ranges.

DeLuz Habitat Mitigation Bank, The Eadington Companies. Biological consultant assisting the formation and wildlife agency approval of a 141-acre San Diego County mitigation bank dominated by riparian and oak woodlands.

San Elijo Hills Open Space Management, San Marcos, CA

Oversaw implementation of habitat management plan for 1000 acres of natural open space in the San Elijo Hills community. Monitored fire fuel management task, invasive weed removal, habitat restoration, and prevention of unauthorized dumping. Included a population census of California gnatcatcher to measure success of the conservation effort. Prepared yearly summary reports.

FEMA/CDF and FEMA/City of San Bernardino Prescribed Burn Program - Prepared Programmatic Biological Assessments for proposed prescribed burns in San Bernardino County.

FEMA/City of San Diego Vegetation Management Program - Sr. Reviewer of Biological Assessment for proposed \$3M vegetation reduction projects in San Diego.

BIOLOGICAL ASSESSMENT/MITIGATION

Department of Defense

SEA for MCAS Miramar Housing Project, U.S. Navy. Sr. Biologist overseeing the biological impact assessment for a SEA document. Provided technical support to ESA Section 7 consultation through the delineation of historically occupied gnatcatcher habitat.

USMC BEQ Housing Siting Studies – NEPA and Operational Constraints, MCB Camp Pendleton. US Navy. Provided senior technical review of biological constraints assessments.

Biological Assessment/EIS of BRAC Actions at MCAS Camp Pendleton, U.S. Navy. Principal Investigator for an intensive behavioral ecology study of potential effects of helicopter overflight activity on the vocalization behavior of the endangered least Bell's vireo. This study also included a statistical analysis of vireo breeding success in relation to CNEL noise contours for the MCAS. Senior Biologist overseeing preparation of NEPA/EIS documents that focused on indirect effects to least Bell's vireo, southwestern willow flycatcher, and California gnatcatcher.

Biological Assessment/EIS of BRAC Actions at NAS Miramar, U.S. Navy. Senior Biologist overseeing biological assessment of realigning NAS Miramar as MCAS Miramar. NEPA/EIS documents that focused on potential adverse effect to vernal pool habitat and associated sensitive species, wetlands, California gnatcatcher, and regional wildlife corridors.

Programmatic EIS for Testing and Operations at Pt. Mugu Air Warfare Center, U.S. Navy. Senior Biologist overseeing biological assessment of testing and operation programs. Emphasis was on associated biological effects on sensitive waterbirds and marine mammals within the 36,000 square mile Sea Test Range in the Southern California bight.

Biological Assessment/EA of Helicopter Outlying Landing Field, MCB Camp Pendleton, U.S. Navy. Senior Biologist overseeing preparation of NEPA/ESA documents for proposed HOLF facility. Biological issues included potential impacts to vernal pool habitat and associated sensitive species, Stephen's kangaroo rat, arroyo southwestern toad, and indirect effects to California gnatcatcher and least Bells' vireo.

Construction Biological Monitoring Program for VertRep Project, Camp Pendleton, Stronghold Electric/U.S. Navy. Project manager for implementation of construction monitoring and environmental awareness program for contractor staff for a construction of a helicopter landing facility at a coastal bluff site. Sensitive resources protected included vernal pools, coastal sage scrub, and California gnatcatcher.

Homeporting Project EIS, San Diego Bay, U.S. Navy. Senior Biologist assessing impacts on wildlife associated with dredging and site improvements for the homeporting of two aircraft carriers in San Diego Bay.

San Nicolas Island Barge Landing EA, U.S. Navy. Principal biologist for the biological assessment of existing barge landing activities and evaluation of alternative landing sites on the island. EA focused on potential impacts to marine mammals, snowy plover, seabird colonies and sensitive plants.

Preconstruction Survey for Micronesian Megapode at the Saipan Radar Installation, Commonwealth of the Northern Marian Islands, U.S. Air Force. Principal investigator that conducted focused surveys for the sensitive Micronesian megapode and recommended mitigation to minimize impacts to this species.

Transportation Projects

Mammoth Lakes Airport Expansion EIS, FAA. Senior biologists overseeing the biological assessment of new commercial service at regional airport. Issues included indirect impacts to breeding grounds of sage grouse.

Port of San Diego/Airport Authority Demolition EIR, San Diego, CA. Biology Task Manager for the EIR for the proposed demolition of existing aviation manufacturing facilities located on North harbor Drive in San Diego, CA. Wildlife agency coordination, and least tern nesting BMP measures are key issues.

Natural Environment Study, Interstate 805 Widening Project, SANDAG. Task Manager overseeing NES assessment, vegetation mapping, and T&E species surveys for 25-mile freeway widening project. Species included least Bell's vireo, San Diego fairy shrimp, and California gnatcatcher.

Coastal Rail Trail EIR/CE, San Diego, California. Biology Task Manager for an EIR/CE for a proposed trail that would start near Del Mar and run south to connect to the existing Rose Canyon bike path. Three proposed Class I bike path areas are the focus: Sorrento Valley Road between Carmel Valley Road and Carmel Mountain Road, Roselle Street to Eastgate, and Genesee (Nobel Drive) to Gillman Drive. The project includes multiple agency review including Caltrans/FHWA, City of San Diego and others.

Carmel Valley Road Improvement Project EIR, City of San Diego. Biology task manager.

Construction Monitoring and Burrowing Owl Removal Program for SR 7, El Centro, Caltrans. Project Manager.

Exotic Predator Removal Program, San Mateo Creek and Lagoon, Caltrans. Project Manager for an exotic predator control program at San Mateo Creek in San Diego County. Removed exotic species including bullfrogs, crayfish, and mosquito fish using gigs and seines to benefit native rare tidewater gobies and arroyo toads.

Natural Environment Study (NES) of SR 11, East Otay Mesa Border Crossing, Caltrans. Project manager for biological assessment of a 1,000-acre study area.

Endangered Species Surveys for Interstate 5 Widening Project, Caltrans.

I-5/SR-56 Interchange Improvement Project EIR/EIS, Caltrans and City of San Diego. Project manager for biological assessment and CEQA process.

Biological Surveys for SR 52 Widening Project, Caltrans. Project manager for biological assessment.

Construction Monitoring for SR 73 Water Quality Facilities Upgrade Project, Caltrans.

Biological Assessment, Cajon Pass Triple Track Project, BNSF Railroad

Construction Monitoring and Burrowing Owl Mitigation Program for Union Pacific Track Removal Project, Union Pacific Railroad.

Wetland Mitigation Planning and Permitting Assistance for Light Rail Transit (LRT) Projects in San Diego County, Metropolitan and North County Transit Development Boards. Project manager responsible for impact assessment, mitigation planning, and permitting assistance for several proposed commuter rail projects whose alignments must cross wetland habitat.

North County Light Rail Transit Project EIR, North County Transit Development Board. Principal wildlife biologist assessing potential biological impacts associated with a light rail transit line between Oceanside and Escondido.

Biological Assessments of Four Road Widening Projects, County of San Diego. Senior biologist overseeing the biological assessment of four road-widening projects in southeastern San Diego County. Sensitive species included least Bell's vireo and California gnatcatcher.

Biological Assessments of Proposed Widening and Extension of San Elijo Road, Twin Oaks Valley Road, Rancho Santa Fe Road, and Melrose Drive, City of San Marcos. Senior biologist and author of biological assessments for four critical regional road projects in San Marcos. Key biological issues included California gnatcatcher and regional wildlife corridors.

Biological Assessment and EIR for Scripps-Poway Parkway, City of Poway. Senior biologist for this major roadway project through the undeveloped portion of south Poway that provides a regional linkage between SR 167 and I-15. Major issues included California gnatcatcher, wildlife corridors, and potential conflicts with the City's habitat conservation plan.

Sorrento Valley Road Improvement Project EIR, City of San Diego. Senior biologist providing biological assessment for road project directly adjacent to Los Peñasquitos Lagoon. Sensitive resources included saltmarsh and riparian wetlands, clapper rail, Belding's Savannah sparrow, and California gnatcatcher and two regional wildlife corridors.

Construction Monitoring and Burrowing Owl Mitigation Program for Union Pacific Track Removal Project, Union Pacific Railroad. Project manager for implementation of biological monitoring program for track removal between Holtville and El Centro, Imperial County, California.

Las Pilitas Bridge Replacement Project, County of San Luis Obispo. Senior biologist providing technical review of Natural Environment Study documents.

Rigel Street Bridge Replacement Project, City of San Diego. Provided biological assessment and assistance in processing streambed alteration agreement.

Atchinson Avenue Bridge Replacement Project, City of Roseville. Senior biologist overseeing the preparation of Natural Environment Study document and

wetlands delineation for wetlands permitting process. Sensitive species include Coho salmon, steelhead, and valley oak

Ford Avenue Bridge Replacement Project, Alameda Corridor Project Team. Provided wetlands permitting assistance.

Energy Projects

Wind Implementation Monitoring Program (WIMP IV), County of Riverside Planning Department. Biology Task Manager and lead consultant for the Planning Department to evaluate the ongoing and potential future impacts of Wind Farm Development within the San Gregorio Wind Resource Area. Document assessed visual, noise assessment, air quality, communication systems, navigation element study, fire protection, police services, retrofit and biological resources elements of an ongoing monitoring program.

Phase I Avian Risk Assessment of Wind Energy Projects in Brisco County TX, RES America Developments. Provided technical peer-review of consultant siting assessment for risk to avian mortality.

Horizon Wind Energy Project, Barstow CA. Biology task manager overseeing biological surveys for rare plants and desert tortoise within a 43,000-acre study area.

CHEVRONTEXACO de MEXICO Onshore LNG Receiving Terminal, Baja California. Senior biologist overseeing biological assessment of an offshore LNG terminal located near the Coronado Islands, Baja California, Mexico. Key issues included assessment of potential impacts to seabirds.

Kinder Morgan California-to-Nevada Pipeline. Biology Task Manager for 233-mile fuel pipeline project from Colton, CA to Las Vegas, NV. Task includes vegetation, jurisdictional waters, and sensitive species surveys and impact assessments.

Niland Proposed Power Plant, Small Power Plant Exemption (SPPE), Imperial County, CA. Imperial Irrigation District Peaker Development Project. Biological Construction Monitoring Task Manager for a 30-acre generating station, Imperial County.

Starwood Midway Peaker Power Plant AFC. Senior biologist overseeing biological assessment and ESA permitting of power plant project in Kern County.

Panoche Peaker Power Plant AFC. Senior biologist assisting in biological assessment and ESA permitting of power plant project in Kern County.

Ausra Solar Thermal Energy Project AFC. Senior biologist overseeing biological assessment and ESA permitting of solar thermal power plant project in San Luis Obispo County. Project involved intensive surveys for blunt-nosed leopard lizard on a 1000-acre project area.

SES Solar One Energy Project AFC. Senior biologist overseeing biological assessment and ESA permitting of power plant project in San Bernardino County. Project involved intensive surveys for desert tortoise and Mohave ground squirrel on a 16,000-acre project site and 100-mile transmission line.

SES Solar Two Energy Project AFC. Senior biologist overseeing biological

assessment and ESA permitting of power plant project in Imperial County. Project involved intensive surveys for desert tortoise and Mohave ground squirrel on a 8,000-acre project site and 8-mile transmission line.

Bethel Solar Thermal Hybrid Power Project, Niland, Imperial Co. CA. Senior biologist overseeing biological assessment of solar thermal and biofuels hybrid power plant project.

San Joaquin Solar Hybrid, Coalinga CA AFC. Senior biologist overseeing biological assessment of solar thermal and biofuels hybrid power plant project.

CalEnergy Salton Sea Unit 6 Geothermal Power Plant AFC. Project manager overseeing AFC document preparation. The California Energy Commission processed the licensing for construction and operation of the Salton Sea Unit 6 Geothermal Power Project, a proposed 185 net megawatt power plant in Imperial County, near the southern extent of the Salton Sea. Geothermal projects from the Salton Sea Known Geothermal Resource Area rarely come to the commission for action as most of these are much smaller, ranging from 10 to 45 megawatts, not requiring Energy Commission licensing. The Salton Sea Unit 6 project was unique based upon the size of the proposed plant, the location of the project near environmentally sensitive habitat, and the Sonny Bono Salton Sea National Wildlife Refuge. In addition, Imperial County has unique socioeconomic and geographic conditions. These factors provide the complex context within which this project was evaluated. Most CEC technical staff were not initially familiar with the area, or the unique aspects of a geothermal power facility deriving steam flashed directly from produced hot brine. The AFC document prepared by URS for the project provided an excellent platform for the CEC analysis, clearly presenting the necessary technical information. The complex information was presented in a format and context that highlighted the unique aspects of geothermal power production, and the environmental and socioeconomic conditions of the project area and this region. Notably, the CEC deemed the AFC “data adequate” within nine months of initial project application.

Meadow Valley Generating Plant EIS, Southern Nevada. Biology Task Manager overseeing desert tortoise and rare plant surveys and biological assessment for a 1,000 MW gas-fired combined cycle power plant proposed north of Las Vegas.

Larkspur Power Facility AFC Amendment, San Diego County, CA. Sr. Biologist for the Post-Certification Amendment to modify the Existing Larkspur Energy Facility in Otay Mesa, San Diego, to add a third generator.

Infrastructure Facility Projects

Big Tujunga Dam Seismic Rehabilitation and Spillway Modification Project. Senior Biologist assisting FEMA and Los Angeles County Department of Public Works in the CEQA/NEPA compliance for the proposed seismic retrofit of Big Tujunga Dam, near Sunland, Los Angeles County. URS is conducting biological surveys of the project area and is preparing CEQA/NEPA and Section 7 documents. Key issues include construction and dam operational impacts to Santa Ana Sucker and Arroyo Toad Designated Critical Habitat.

Miramar General Development Plan EIR/EIS, City of San Diego Waste Management Department. Participant in the evaluation of plan proposing a variety of landfill-associated facilities. Sensitive species, habitat, and wildlife

corridors were issues of concern.

Biological Assessment of Proposed International Airport at Maj Po Mash, Shenzhen, China, City of Shenzhen. Principal investigator that evaluated potential impacts to biological resources at wetlands and bay adjacent to a proposed airport site.

Emergency Water Storage Project, San Diego County Water Authority. Principal author of Biological Assessment that included detailed estimation and justification of incidental take and habitat values of endangered species and their habitats expected to be impacted by the proposed reservoir project. Assessment was used in ACOE 404 permitting and ESA Section 7 consultation with the wildlife agencies. This project received an AEP planning award.

Evaluation of Biological and Water Quality Monitoring Program of the Shanghai River, China, Shanghai Sewerage Authority. Principal investigator responsible for assessment and recommendations for biological and water quality monitoring program for the Shanghai Sewerage System.

Alvarado Water Filtration Plant Project, City of San Diego. Senior biologist overseeing construction monitoring impacts to coastal sage scrub and California gnatcatchers. The gnatcatcher population within the project vicinity was monitored for 3 breeding seasons during project environmental review and implementation.

Chandler Landfill Water Recharge Basin Demonstration Project, Rolling Hills, CA, Water Replenishment District of Southern California. Senior biologist overseeing wetlands delineation and permitting assistance.

Gilroy Landslide Remediation Evaluation, Santa Clara Valley Water District. Senior biologist overseeing biological assessment and permitting for remediation of a landslide threatening a major water aqueduct. Sensitive species include red-legged frog, California tiger salamander, San Joaquin kit fox, and valley oak.

SMUSD Administration Office Complex, San Marcos Unified School District. Senior biologist overseeing biological assessment of vernal pool site proposed for a school district office complex.

Nursery Products Composting Facility Initial Study (IS)/Mitigated Negative Declaration (MND)/Environmental Impact Assessment (EIR), San Bernardino, CA. Biology Task Project for the CEQA assessment development of a 160-acre biosolids/green waste composting facility near Hinckley, San Bernardino County.

Mountain Pass Mine Expansion Project, Molycorp, Inc. Senior biologist overseeing biological assessment and wetland delineation for the 30-year expansion plan for an existing rare earth element mine in San Bernardino County. Sensitive species included desert tortoise and three rare deserts plant species.

Residential Development Projects

EIR/Mitigation Monitoring Program for San Elijo Ranch Development, City of San Marcos. EIR biologist and project manager for development and implementation of a mitigation monitoring program for the approved 2,100-acre San Elijo Ranch development. Tasks included evaluating potential impacts to sensitive plant and animal species and negotiating mitigation measures deemed acceptable to all concerned parties. Sensitive plant and animal surveys were conducted and format mitigation plans were prepared. Habitat restoration plans and 404/1603

permit applications for impacts to wetlands, coastal sage scrub, and native grassland were prepared.

Biological Assessment and Mitigation Planning, Calavera Heights Development, Carlsbad, Lyon Communities. Project manager overseeing assessment of biological impacts and development and implementation of mitigation monitoring program. Also provided permitting assistance and resource agency liaison services.

Otay Ranch Programmatic EIR, City of Chula Vista/County of San Diego. Participated in biological assessment of proposed development and preserve design of 23,000-acre Otay Ranch in southern San Diego County. Major issues included potential impacts to wildlife corridors and a multitude of sensitive wildlife species and their habitats.

On-call Consulting Services for Otay Land Company, Otay Land Co., LLC. Senior biologist overseeing on-call environmental consulting services contract for 4,800-acre ownership within Otay Ranch planning area. Projects are listed below

- **OLC Otay River Parcel C EUC Soil Storage Project**
- **OLC Otay River Parcel C Development Project**
- **OLC Otay River Parcel B Development Project**
- **OLC Proctor Valley Parcel D Sensitive Resource Surveys**

Skeet Range Redevelopment Project, Flat Rock Land Company, Chula Vista, CA - Project manager for the biological assessment and ESA Phase I reports.

Otay River Parcel A Development, Flat Rock Land Company, Chula Vista, CA. Project manager for the biological assessment report.

University Commons EIR and Mitigation Plan, City of San Marcos. Biological assessment of a residential/commercial development and preparation and implementation of a biological mitigation monitoring program. Services included resource agency liaison and permitting assistance.

Salt Creek Ranch EIR, City of Chula Vista. Principal wildlife biologist assessing residential/commercial development and preparation of a biological mitigation monitoring program. Services included resource agency liaison and permitting assistance.

Fanita Ranch EIR, City of Santee. Participated in the biological assessment of a 5,600-acre specific plan area. Impacts to sensitive habitats, species and wildlife corridors were the primary issues of concern.

Development Constraints Assessment for Tom Dyke Ranch, Saint Vincent De Paul Society. Project manager overseeing detailed development constraints assessment for a proposed children's camp and conference center facility.

San Marcos Highlands Biological Assessment, City of San Marcos. Project manager overseeing assessment of biological impacts for a proposed residential development on a 250-acre site.

Hampton Heights Project EIR, County of San Bernardino. Provided assessment of biological impacts for a proposed residential and golf course development on a 470-acre site near Redlands, California.

Willows Development Project, Temecula, Willows Investment Group. Senior

biologist for wetlands delineation and permitting program for a 32-acre residential development.

Vista Palisades Estates Project, Capital Pacific Homes. Senior biologist for assessment of biological impacts for a proposed residential development on a 390-acre site near Vista, California.

Benicia Specific Plan EIR, City of Benicia. Principal wildlife biologist assessing a residential/commercial development within a 2,500-acre specific plan area. Impacts to sensitive habitats, species, and wildlife corridors were the primary issues of concern.

East Otay Mesa Biological Assessment, County of San Diego. Participated in the biological assessment of a 5,300-acre specific plan area. Impacts to sensitive habitats, species and wildlife corridors were the primary issues of concern.

Santa Fe Valley/4S Ranch Biological Assessment, County of San Diego. Participated in the biological assessment of two specific plans areas encompassing about 6,000 acres. Developed a habitat evaluation model to aid in the relative valuation of habitat areas.

Coastal Development, Recreation Projects

ESPN X-Games, Mission Bay San Diego, ESPN. Biological consultant providing technical support of California Coastal Commission permitting process. Provided biological assessment and proposed mitigation program for potential impacts to California least tern breeding colony.

Mission Bay Park Shoreline Stabilization and Restoration Project and Natural Resource Management Plan EIR, City of San Diego. Principal wildlife biologist in the biological evaluation of methods proposed for shoreline stabilization/restoration and the proposed long-term maintenance/enhancement plan for natural resources. Primary issues of concern included impacts to wetlands, least tern foraging habitat, and shorebird foraging habitat.

The Headlands, Dana Point, Headlands Reserve, LLC. Assisting with the processing of the development plan and California Coastal Commission coastal permit process for this 121-acre coastal property that supports California gnatcatcher, Pacific pocket mouse and several rare plants.

Convair Lagoon Remediation Project EIR, San Diego Port Authority. Principal biologist assessing impacts of hazardous waste remediation project on waterbird species using the lagoon.

National City Marine Terminal Wharf Expansion Project EIR, San Diego Port Authority. Principal biologist assessing impacts of wharf expansion project on mariner resources, including waterbird species.

Biological Resource Inventory and Environmental Assessment of Proposed Marina at Ballona Lagoon, Marina del Rey, California, Silver Strand Marina Association. Principal investigator for a comprehensive assessment of potential impacts to biological resources from a proposed marina at a 13-acre lagoon. Studies included documentation of California least tern and shorebird use of the lagoon.

Biological Assessment of the Ormond Beach Area Concept Plan, City of Oxnard. Principal investigator for an evaluation of proposed resource management and development plan for coastal dune and wetland habitats of Ormond Beach.

Biological Assessment of Elsinore Lake Management Plan, Lake Elsinore, California, Elsinore Water Authority. Project biologist that evaluated impacts to biological resources of Elsinore Lake from a proposed water-level control facility.

Poway Amphitheater EIR, City of Poway. Principal biologist assessing impacts of proposed amphitheater. Impacts to sensitive plants, California gnatcatcher and a regional wildlife corridor were key issues addressed in the EIR.

Habitat Restoration

Dr. Mock has produced habitat restoration plans and overseen the monitoring of plan implementation and maintenance for several projects, including Dana Point Headlands, San Elijo Hills, San Elijo Road, Twin Oaks Valley Road, Mira Sorrento Place, San Marcos Universal Boot, MCAS Miramar erosion control.

Other Relevant Experience

California Department of Fish and Game Biologist. Prepared bird and mammal sections of the Department's biannual report to the State Legislature on the status of California's endangered wildlife; Conducted surveys for wintering bald eagles and riparian birds.

Teaching

Principles of Ecology for Natural Resource Management, University of California, San Diego. Dr. Mock taught a course for three years on ecology that emphasizes the application of ecological knowledge toward solving problems in conservation biology and regional land use planning.

Wildlife Management, University of California, San Diego. Dr. Mock taught a course for three years on wildlife ecology/management that emphasizes techniques for conservation of wildlife population and their habitats.

Biological Assessment, University of San Diego. Dr. Mock taught a course on Biological Assessment that emphasized the requirements of CEQA, NEPA and ESA. Project case histories were used to provide students with real world examples of the types of environmental issues, which typically need to be addressed in a biological assessment.

Masters Thesis Committee Member, Geography Department, San Diego State University. Dr. Mock served as an adjunct member of a thesis committee of a biogeography graduate student, who evaluated the umbrella species concept as it applied to the conservation of the California gnatcatcher. Dr. Mock advised the student on habitat reserve design and population viability analysis.

Teaching Fellow, Biology Department, University of California, Los Angeles. Dr. Mock taught laboratory sessions for various biology courses while a graduate student. Courses included ornithology, comparative physiology, cell physiology, animal behavior, and introductory biology.

	<u>Technical Reviewer</u> Dr Mock provided peer review for manuscripts submitted to Conservation Biology, The Auk, Ecology, Condor, Ecological Monographs, Western Birds, <i>Ornis Scandinavica</i>, • Proceedings of Symposium on Wildlife Habitat Restoration and Management • Proceedings of a Symposium on Wildlife Habitat Restoration • Proceedings of the Wildland Interface II Symposium • Reviewer of Partners-in-Flight conservation plan for Southern California shrubland habitats • Natural Communities Conservation Planning (NCCP) Core Group Reviewer of the Research Agenda • Reviewer for selected sections and species accounts of <i>San Diego Bird Atlas</i> • Reviewer of draft CDFG report on Bird Species of Special Concern
Professional Societies	Ecological Society of America The Wildlife Society Pacific Seabird Group, past Southern California Representative Society for Conservation Biology Association of Field Ornithologists California Native Plant Society
Publications	At the Crossroads 1980: A report on California's endangered and rare fish and wildlife. California Department of Fish and Game report to the California Legislature. 1982. Dr. Mock contributed sections pertaining to endangered birds and mammals. Christmas bird counts as indices of population status of brown pelicans and three gull species in Florida. <i>American Birds</i> 41: 1334-1339, 1987. R.W. Schreiber co-author. Eastern brown pelicans: what does sixty years of banding tell us? <i>Journal of Field Ornithology</i> 59: 171-182, 1988. R.W. Schreiber co-author. Energetics of growth and maturation in sympatric passerines that fledge at different ages. <i>The Auk</i> 108: 34-41, 1991. M. Khubesian and D.M. Larcheveque co-authors. Daily allocation of time and energy by adult western bluebirds feeding nestlings. <i>Condor</i> 93: 598-611, 1991. Energetic constraints to the distribution and abundance of the California gnatcatcher. <i>Western Birds</i> 29:413-420. California gnatcatcher territorial behavior. <i>Western Birds</i> 29:242-257. K. Preston, M. Grishaver, E. Bailey, and D. King co-authors. California gnatcatcher vocalization behavior. <i>Western Birds</i> 29:258-268. K. Preston and M. Grishaver co-authors. Dispersal capabilities of the coastal California gnatcatcher: a landscape analysis of distribution data. <i>Western Birds</i> 29:351-360. E. Bailey co-author. Is the California gnatcatcher a good umbrella species for habitat reserve design? <i>Western Birds</i> 29:453-467. S. Fleury and J. O'Leary co-authors. Breeding behavior of the California gnatcatcher in the vicinity of Rancho San Diego, California. <i>Western Birds</i> 29:299-322. M. Grishaver and K. Preston,

co-authors.

California Gnatcatcher – Dr. Mock contributed the species account in Partners-in-Flight conservation plan for Southern California shrubland habitats.

California Gnatcatcher – Dr. Mock contributed the species account in the *San Diego Bird Atlas*, authored by Phil Unitt in 2004.

Areas of Expertise	Listed Species Surveys, Monitoring, Habitat Assessment and Research Wildlife Corridor Assessment Biological Impact Assessment ESA/Wetlands Permitting Vegetation Mapping and Botanical Surveys NEPA/CEQA Permitting and Environmental Analysis FEMA/NISTAC Hazard Mitigation Program NEPA Analysis Risk Assessment and Hazard Mitigation Planning Task Management
Total Years of Experience	10.5
URS	8.5
Other Firms	2
Education	BA/1999/Biology/University of San Diego
Supplemental Training	Flat-tailed horned lizard Identification Training by BLM (2007) Blunt-nosed leopard lizard Identification Training by The Wildlife Society (2007) California Fairy Shrimp Identification Class by Mary Belk (2006) Federal Wetland/Waters Regulatory Policy Training by Wetland Training Institute (2006) SW Willow Flycatcher Training By Mary J. Whitfield, Kern River Preserve, CA (2002) Desert Tortoise Survey and Handling Workshop by HDR (2001) Wetland Delineation Training by Richard Chan (2001)
Registration/Certification	U.S. Fish and Wildlife Service Recovery/Permit No. TE-135968-1 • California Gnatcatcher (Presence/Absence Surveys) • California Fairy Shrimp Blunt-nosed leopard lizard - Level II Surveyor
Overview	Ms. Theresa Miller is a USFWS-permitted wildlife biologist with more than 8 years of experience and expertise in California sensitive species, especially in San Diego County. She conducts biological surveys with a focus on birds, reptiles and amphibians, and mammals, and develops technical reports and planning documents. Specializing in environmental projects, she has participated in and managed many aspects of focused wildlife and habitat surveys and written many biological resources evaluations for NEPA/CEQA documents. Her project experience has involved task management, agency coordination, GIS/GPS analyses, GIS modeling, database development, and risk assessments for hazard mitigation planning for numerous public and private agencies.
Project Experience	<u>BIOLOGY/ ENVIRONMENTAL PLANNING PROJECTS</u> Ausra, Inc. 180MW Solar Power Plant AFC, San Luis Obispo County, CA. Biology Task Manager for biological surveys in support of Application for Certification for an 180MW solar power generating facility located within San Luis Obispo County. Coordinated and led field team of over 14 biologists from several offices to conduct surveys for blunt-nosed leopard lizard and san Joaquin antelope squirrel, rare plant surveys and vegetation mapping of the 1,300 acre site. Wetland/Waters of the U.S. delineation and coordination with the ACOE to obtain a 404 Permit, and coordinated directly with Agencies to obtain ESA Section 7 and CDFG Incidental Take Permits.

Solar One Energy Facility AFC and EIS, San Bernardino County, CA. Biologist/team leader on survey team in support of an Application for Certification for an 800MW thermal generating facility located within San Bernardino County. The project will cover 15,000 acres and will include over 36,000 solar dishes. Desert tortoise, Mohave ground squirrel, Mojave fringe-toed lizard, vegetation mapping, and rare plant surveys were conducted over majority of project area.

Solar Two Energy Facility AFC and EIS, Imperial County, CA. Biologist/team leader for biological surveys in support of an Application for Certification for an 800MW thermal generating facility located within Imperial County. The project will cover 7,000 acres and will include 12,000 – 36,000 solar dishes. Project included flat-tailed horned lizard focused surveys, vegetation mapping, and rare plant surveys.

Kinder Morgan California-to-Nevada Pipeline. Biologist and task/team leader for pipeline project from Colton, CA to Las Vegas, NV. Tasks include vegetation, jurisdictional waters, and sensitive species surveys and impact assessments. Coordinated and led over 25 biologists in desert tortoise, Mohave ground squirrel, vegetation mapping and jurisdictional delineations along a 500-and 1000-foot buffer of 234 miles of pipeline ROW.

Solar Power Plant Fatal Flaw Studies, LightSource Renewables, California/Arizona. Task Manager for Fatal Flaw studies relative to five sites that were previously chosen (3 in CA, 2 in AZ). A complete GIS analysis and subsequent desktop review by a variety of specialists (including water, geotechnical engineering/geology, cultural resources, biological resources, and land use) were performed. A write-up of potential fatal flaws and conclusions by each resource area, in addition to the environmental constraints map generated by the GIS system were included in the deliverables.

SANDAG On-Call Environmental Services/I-805 Widening Project, San Diego County, CA. 2005-ongoing. Conducted wildlife and sensitive species surveys (including least Bell's vireo, California gnatcatcher) and wetland delineations along a 1000-foot buffer of the alignment for expansion of I-805 from the Mexican Border to the 805/I-5 merge. Co-coordinated team effort for sensitive species surveys and wetland delineations, and prepared wetland delineation report and mapping of delineated jurisdictional waters. Also conducted least Bell's vireo surveys.

Cavallo Farms Wildlife Corridor Study, City of San Diego, CA. 2006. –Field team leader for a wildlife corridor assessment of an 8-acre horse farm/training property located within an existing MSCP wildlife corridor linkage in Del Mar, California. Checked and maintained 24 passive tracking stations and 5 camera stations within and surrounding the property for 8 weeks in August and September 2006 to identify tracks and scat of large mammal species, including mountain lion, bobcat, coyote, and southern mule deer. Conducted California gnatcatcher protocol surveys and identified territories throughout study area.

Canyon Crest, City of Brea, California. 2002. - Field Coordinator for field

surveys with a particular emphasis on identification of the local movement patterns of large mammals (*i.e.*, coyote, mule deer, gray fox, bobcat, and mountain lion). Field activities included construction and maintenance of tracking stations and identification of mammal scat, tracks, and game trails. Prepared wildlife corridor assessment.

CSS Monitoring Program, City of San Diego, CA - Coordinated team effort and performed protocol sensitive species surveys for the coastal California gnatcatcher MSCP Reserve Habitat Monitoring project. Supplied City of San Diego with updated sensitive species location data to use in updating the MSCP.

Colorado River Aqueduct Operations and Management Habitat Conservation Plan, MWD of Southern California 2004-2006. - GIS Specialist, field coordinator and field biologist on team performing 2 seasons of desert tortoise and rare plant surveys along the length of the Colorado River Aqueduct from western Riverside County, California to Parker, Arizona. Created GIS field maps and species locations maps for use in determining conservation areas for the HCP within MWD ownership. Field coordinator for 12 biologists and subcontractors from several offices during second year of surveys which focused on rare plant surveys for 41 sites. Observed tortoise and identified tortoise burrows and sign. Compiled and analyzed several years of data collection including 2 years of survey data, and prepared HCP document and appendices.

Otay Mountain/Kuchamaa Cooperative Planning Area Biological Monitoring Plan, GIS Database Development, and Cultural Resources Study, BLM. URS prepared a complete GIS Database, Biological Monitoring Plan, and Cultural Resources Study for the Otay/Kuchamaa Cooperative Planning Area managed by the Bureau of Land Management in San Diego County, Ca. The objective of this task order was the development of the baseline database – developed as GIS data layers – needed to conduct the planning process and EIS analysis, including development of a reasonable range of land management alternatives. The focus of the baseline conditions was related directly to the biological and cultural resources for the management area. This project received a Merit Award from the San Diego AEP.

Metropolitan Water District, Upper Feeder-Santa Ana River Embankment Protection. 2006. Biology task leader to assist FEMA with CEQA/NEPA compliance. Conducted least Bell's vireo surveys along the Santa Ana River in Riverside County to determine impacts from project implementation as part of FEMA HMGP mitigation/restoration project.

Whitewater Mutual Water Company, Irrigation Water Intake / Storage Structure Repair. 2006. Biology task leader to assist FEMA with CEQA/NEPA compliance. Conducted arroyo southwestern toad and southwestern willow flycatcher surveys to determine biological impacts of restoring the irrigation water intake and water storage facilities to pre-disaster condition. Part of FEMA HMGP program.

State Route 56/Interstate 5 Interconnections, City of San Diego, California. 2005-ongoing. Conducted least Bell's vireo surveys and vegetation mapping of study site for the "connectors" project for Interstate 5 and State Route 56. Prepared

biotechnical report. Connections from southbound Interstate 5 to eastbound State Route 56 as well as the connection from westbound State Route 56 to northbound Interstate 5 were not completed as part of the initial State Route 56 project.

Oak Valley Substation & Transmission Line Project, Southern California Edison, Riverside County, California. 2006. Conducted sensitive species surveys (including least Bell's vireo and southwestern willow flycatcher) of project area for the installation of a new substation, re-conductoring of several transmission lines and new installation of several transmission lines in Riverside County (including the cities of Beaumont, Banning, and Calimesa).

Mira Sorrento Place Road Extension, City of San Diego, California. 2005. Conducted biological construction monitoring of during implementation of road extension.

Professional Associations

Association of Environmental Professionals, Member, (2000–Present)
Women's Environmental Council, Member, (2002 - Present)
Ecological Society of America Member, (2002-Present)
Wildlife Society Member, (2001 – Present)
Desert Tortoise Council Member, (2002-Present)

Areas of Expertise	Habitat Restoration and Mitigation Monitoring Sensitive Species Surveys and Habitat Assessment Vegetation Mapping and Botanical Surveys Biological Assessments Technical Report Writing
Total Years of Experience	5
URS	1
Other Firms	4
Education	BS/1998/Ecology, Behavior, and Evolution/University of California, San Diego
Supplemental Education/Training	Wetland Delineation Workshop by Wetland Training Institute (2008) Flat-tailed horned lizard Identification Training by the BLM (2008) Desert Tortoise Handling Workshop by Desert Tortoise Council (2007)
Registration/Certification	California Department of Fish and Game (CDFG) Scientific Collectors Permit #SC-009178 CDFG Rare, Threatened, and Endangered Plant Voucher Collecting Permit #09012.
Overview	Sundeep Amin is a biologist/restoration ecologist with over four years of professional experience working as a biologist, restoration ecologist, project manager, and/or project crew supervisor on an assortment of projects throughout Southern California, including projects in Nevada and Arizona. His main areas of expertise include habitat restoration, mitigation monitoring, botanical surveys, biological constraints analyses, and sensitive species surveys (floral and faunal). Mr. Amin is also experienced in technical report writing, client/agency interaction, and project management. He has worked on projects for a variety of clients including all branches of the military, private developers, utility companies, and local, State, and Federal agencies. He is familiar with State and Federal regulations such as the California Environmental Quality Act (CEQA), National Environmental Policy Act (NEPA), Federal and California Endangered Species Acts (FESA and CESA), Migratory Bird Treaty Act (MBTA), and Natural Community Conservation Plans (NCCP).
Select Project Experience	Habitat Restoration and Mitigation Monitoring Gregory Canyon Landfill, Pala, CA. Restoration ecologist assisting with the preparation of a Habitat Resource and Restoration Management Plan for a 1,700 acre project site in northern San Diego County. (2008-Present) San Onofre Nuclear Generating Station (SONGS) Steam Generator Replacement Project, San Onofre, CA. Restoration ecologist responsible for the preparation of a Revegetation Plan as mitigation for impacts created by the transport of replacement steam generators along the northern San Diego County coastline on Marine Corps Base Camp Pendleton and San Onofre State Park property. (2008-Present) City of San Marcos, U-Boot Parcel, San Marcos, CA. Restoration ecologist responsible for preparing a Riparian Habitat Enhancement and Creation Plan

consisting of the creation/enhancement of eight total acres of riparian and wetland habitat. **(2008-Present)**

Marine Corps Air Station at Miramar, San Diego, CA. Restoration ecologist responsible for annual and semi-annual monitoring and annual monitoring report preparation for an erosion control and revegetation project at two sites located within Marine Corps Air Station Miramar grounds. Also responsible for client and landscape subcontractor coordination. **(2008-Present)**

Lakeside Land Development Co., Lakeside, CA. Restoration ecologist responsible for conducting qualitative and quantitative monitoring visits and preparing annual monitoring reports for a San Diego River Improvement Project consisting of a major floodplain restoration project on the San Diego River. **(2008-Present)**

Dana Point Headlands, Dana Point, CA. Restoration ecologist responsible for conducting qualitative and quantitative monitoring and reporting. Project consists of coastal sage scrub restoration along several coastal bluffs above Dana Point Harbor. Coastal California gnatcatchers have already been observed throughout the restoration/enhancement areas. **(2008-present)**

City of San Diego, Mira Sorrento Parkway, San Diego, CA. Restoration ecologist responsible for annual and semi-annual monitoring and reporting. This project involves the revegetation of several acres of coastal sage scrub along a newly created road on property managed by the City of San Diego. **(2008-Present)**

San Elijo Hills/County Dip, San Marcos, CA. Restoration ecologist responsible for annual and semi-annual monitoring and reporting. This project involves the restoration of several acres of newly created habitat (coastal sage scrub and riparian) that serves as partial mitigation for the construction of a new master planned community. **(2008-Present)**

Twin Oaks Valley Road, San Marcos, CA. Restoration ecologist responsible for annual and semi-annual monitoring and reporting. This project involves the restoration of cut slopes resulting from the widening and expansion of Twin Oaks Valley road. This project also includes the restoration of two off-site areas including wetland and coastal sage scrub habitat. **(2008-Present)**

San Diego Unified School District, Throughout the City of San Diego, CA. Restoration ecologist responsible for annual monitoring and reporting for several SDUSD sites throughout San Diego. Projects are typically mitigation for the construction of school facilities and consist of coastal sage scrub and ephemeral riparian restoration. **(2008-present)**

Caltrans, State Route 73, Costa Mesa, CA. Restoration ecologist responsible for monthly monitoring and reporting of the performance of bioretention basin. Project was water quality mitigation for the construction of SR-73. **(2008-Present)**

Ryland Homes, Oak Valley Gateway, Beaumont, CA. Restoration ecologist/project manager responsible for annual and semi-annual monitoring and

reporting. Other duties included client-agency easement coordination and landscape contractor oversight. Project involved the creation of two mitigation wetland/riparian water treatment swales to biologically hold up and treat run-off from the site associated housing development. Design included the creation of two swales each with a wetland, riparian, and ephemeral zone. **(2006-2008)**

Palmer Investments, Los Valles Country Club, Hasley Canyon, CA.

Restoration ecologist/project manager involved from submission of proposal to implementation of mitigation. This project covers ~200 acres in the Santa Clarita area and involves the building of an Arnold Palmer Golf Course and associated housing pads. Mitigation requirements include nesting bird surveys, reptile relocation surveys, oak tree surveys and mitigation plan creation, and oversight of ephemeral riparian mitigation creation along Hasley Canyon Creek. **(2006-2008)**

Centex Homes, Sycamore Heights, Chino Hills, CA. Restoration ecologist/project manager responsible for annual monitoring and reporting, and agency coordination for permit compliance. Mitigation site consisted of a water quality wetland basin and a riparian scrub area that provided challenges due to the lack of appropriate soils and hydrology of the chosen restoration site. **(2006-2008)**

City of Lake Forest, Concourse Park, Lake Forest, CA. Restoration ecologist/project manager responsible for annual and semi-annual monitoring and reporting. This project was nearing completion and involved extensive correspondence with the USFWS, CDFG, and ACOE to facilitate site sign-off. **(2006-2008)**

HART Unified School District, Hasley Canyon, CA. Restoration ecologist/project manager providing consultation regarding appropriate site mitigation requirements. Duties included re-assessing the project site, preparing a conceptual habitat mitigation and monitoring plan, and inspecting and assessing several potential mitigation sites in northern Los Angeles County. **(2006-2008)**

Centex Homes, Hawks Pointe, La Mirada, CA. Restoration ecologist responsible for annual and semi-annual monitoring and reporting. Other tasks performed included site maintenance coordination with the landscape contractor and California gnatcatcher mapping throughout the restoration area. This project involved the creation of CSS in and around a housing development within an urban area. California gnatcatchers were routinely heard throughout the restoration site. **(2006-2008)**

KB Homes, The Cove, Hemet, CA. Restoration ecologist/assistant project manager responsible for oversight of vernal pool restoration on a housing development currently constructing homes. Other tasks included applying for assorted agency permits regarding the installation of water supply pipelines, and Native American artifact issues. **(2006-2008)**

K. Hovnanian Homes, Four Seasons, Murrieta, CA. Restoration ecologist conducting annual mitigation monitoring and annual report preparation. Mitigation sites included a wetland detention basing and two vegetated water quality swales/drainages. **(2006-2007)**

Riverwalk, Agoura Hills, CA. Restoration ecologist assisting with annual mitigation monitoring and preparation of the annual report. Site included oak woodland and native grassland restoration sites which presented opportunities for a variety of interesting restoration techniques. (2007)

D.R. Horton, Montrose, Wildomar, CA. Restoration ecologist providing vegetation mapping, biological assessment surveys, and a conceptual habitat mitigation plan for a disturbed parcel of land in Riverside County. (2006-2007)

Boulder Springs, Moreno Valley, CA. Biologist providing construction monitoring in order to assure digging for soil samples did not infringe upon jurisdictional waters. (2007)

Lennar Communities, Crowne Hill, Temecula, CA. Restoration ecologist conducting annual mitigation monitoring, including the preparation of annual reports for several mitigation sites resulting from the construction of a tract home development. (2006)

Vista Unified School District Rancho Guajome Wetlands Creation, Vista, CA. Restoration ecologist responsible for mitigation implementation and monitoring. The project involved the creation of an approximately five acre wetland complex to mitigate for the building of a nearby elementary school. (2005-2006)

MCAS Miramar Coastal Sage Scrub Restoration, San Diego, CA. Restoration ecologist in charge of crew supervision and monitoring. Work consisted of exotic species control and vegetation monitoring of over 150 transects in support of coastal sage scrub on MCAS Miramar. (2004-2006)

Fort Irwin Army Base Revegetation and Erosion Control, Fort Irwin, CA. Project biologist responsible for routine monitoring and plant/erosion control assessment. The project involved the revegetation of off-road areas on Fort Irwin Army base. A large portion of the project involved developing erosion control strategies using vegetation and other erosion control strategies. (2005-2006)

Organ Pipe National Monument Border Fence Installation Plant Salvage and Restoration, Lukeville, AZ. Restoration ecologist and assistant project manager responsible for quarterly monitoring of restoration sites along the US-Mexico border. Duties included Sonoran Desert plant species seed collection and dispersal, exotic plant control, inspection of salvaged plants, and creation of status reports. (2004-2006)

San Diego Gas and Electric (SDGE) Naval Weapons Station Restoration, Fallbrook, CA. Restoration ecologist/project manager in charge of quarterly monitoring and reporting. Project consisted of the restoration of sites impacted due to the installation of power poles on military land. (2004-2006)

Del Mar Bluffs Erosion Control and Revegetation, Del Mar, CA. Restoration ecologist/crew supervisor in charge of exotic plant removal, hydroseeding, planting, and routine monitoring of revegetation sites along an Amtrak right of way. (2004-

2006)

Las Vegas Valley Water District Native Plant Salvage, Pahrump and Las Vegas NV. Restoration ecologist and crew supervisor overseeing the salvage of western honey mesquite trees and several thousand native shrubs for transplant into the Las Vegas Springs Preserve. Over one hundred mesquite trees ranging from a few feet to over fifteen feet were successfully boxed and moved. Salvaged native shrubs included creosote bush, burrow brush, ephedra, and several cacti and yucca species. (2005-2006)

San Diego Metropolitan Waste Water District Mt. Elbrus Canyon Revegetation and Erosion Control Study, San Diego, CA. Restoration ecologist responsible for the revegetation/monitoring of a canyon impacted by the installation and subsequent inspection of sewer lines in the canyon bottom. Revegetation activities included hydroseeding the entire trail and quarterly inspection. (2004-2006)

Bureau of Land Management Las Vegas Buckwheat Salvage, Las Vegas, NV. Restoration ecologist and crew leader in charge of the salvage of one thousand sensitive Las Vegas buckwheat (*Eriogonum corymbosum*) shrubs. Salvage of shrubs was initiated in order to preserve a large population of Las Vegas Buckwheat that would otherwise have been lost to development. (2005-2006)

Seal Beach Naval Weapons Station Native Plant Windrow Installation and Monitoring, Seal Beach, CA. Restoration ecologist responsible for quarterly inspection of native species used to create a windrow on military lands leased to agriculture. (2005-2006)

Sempra Energy Riversidean Sage Scrub Restoration Line 6900, Paloma Valley, CA. Restoration ecologist responsible for crew supervision, monitoring and report writing. Project consisted of the restoration of a two acre previously agricultural site to Riversidean sage scrub as mitigation for the impacts created by the installation of an underground gas line. (2005)

Tamarack State Beach Bluff Restoration and Erosion Control, Carlsbad, CA. Restoration ecologist/supervisor in charge of seed collection, exotics removal, hydroseeding and planting and follow-up monitoring. Project consisted of the restoration of coastal bluff habitat, which had become over-run with exotic plant species. (2005)

SDGE NCCP Power Pole Revegetation, San Diego County, CA. Restoration ecologist and project manager responsible for assessing and restoring over one hundred power pole sites throughout San Diego county as part of permit compliance for emergency repairs due to fires. Duties also included reporting and maintain an online database to document progress. (2005)

Beale Air Force Base Dry Creek Restoration Plan, Lincoln, CA. Restoration ecologist responsible for creating a restoration plan to restore and stabilize a section of Dry Creek on Beale AFB. Topics covered included methods to stabilize the eroding bank, oak woodland restoration, and the utilization of volunteers to

assist in project implementation. (2005)

Sempra Energy Tocalota Creek Mitigation Sites, Temecula, CA. Restoration ecologist responsible for the monitoring of a variety mitigation sites, ranging from scrub to riparian habitat in the Temecula area. Duties included monitoring of vegetation, exotic species control, and reporting to the USFWS. (2005)

San Diego Metropolitan Waste Water District Chocolate Canyon Revegetation and Erosion Control Study, San Diego, CA. Restoration ecologist in charge of monthly maintenance oversight and monitoring. Project consisted of several experimental plots designed to determine the best method of revegetating a canyon after impacts caused by improvements to sewer lines in the canyon bottoms. (2004-2005)

City of San Diego Group 1 Canyon Access, San Diego, CA. Restoration ecologist/crew lead in charge of installation of erosion control measures to prevent erosion of trails due to work on sewer lines along the canyon bottom. (2005)

Sensitive Species Surveys and Habitat Assessments

Kinder Morgan California-to-Nevada (Cal-Nev) Pipeline, Mojave Desert of California and Nevada. Field biologist conducting desert tortoise presence/absence and rare plant surveys over several different sections of a 233-mile fuel pipeline project from Colton, CA to Las Vegas, NV. Other duties included leading desert tortoise survey crews, assisting with least Bell's vireo surveys, assisting with jurisdictional delineations, and assisting with preparation of associated technical documents. (2008)

Ausra Solar Thermal Energy Project AFC, San Luis Obispo County, CA. Field biologist/crew leader conducting focused presence/absence surveys for adult and juvenile blunt-nosed leopard lizards over roughly two (2) square miles of fallow agricultural land near the Carrizo Plains. Surveys are in support of an Application for Certification for an 180MW thermal generating facility located within San Luis Obispo County. (2008)

San Joaquin Solar Hybrid AFC, Coalinga CA. Field biologist/crew leader conducting focused presence/absence surveys for adult and juvenile blunt-nosed leopard lizards over three miles of a proposed transmission line route in support of an Application for Certification for a solar thermal and bio-fuels hybrid power plant project in Fresno County. (2008)

Solar Power Plant AFC, Imperial County, CA. Field biologist conducting rare plant and flat-tailed horned lizard surveys in support of an Application for Certification for an 800MW thermal generating facility covering 7,000 acres in Imperial County. (2008)

Boulder Ridge – Moreno Valley, CA. Biologist assisting with vegetation mapping, Phase I, II, and III Burrowing Owl (BUOW) surveys, and production of a MSHCP Phase I and II BUOW report for an approximately 220-acre project site in Western Riverside County. Also assisted with the completion of a Jurisdictional

Delineation. (2007)

City of Lake Forest, Lake Forest, CA. Biologist, conducting sensitive plant surveys, and performing California gnatcatcher surveys with a permitted biologist. Project included documenting natural resources on a parcel of land owned by the City proposed to be turned into a sports park. (2007)

Richland Communities, Avanti, Lancaster, CA. Biologist working as part of a team to conduct Phase III BUOW and clearance surveys on a 350-acre parcel of abandoned agricultural land. (2006-2007)

Lewis Operating Corporation, Apple Valley, CA. Biologist conducting Phase III burrowing owl surveys on an undeveloped parcel of land containing disturbed creosote bush scrub habitat. (2007)

California City, California City, CA. Biologist performing desert tortoise presence/absence and zones of influence surveys on three sections of land in the California City area. Other work included habitat assessments for rare plants that may potentially occur on-site and blooming season rare plant surveys. (2006)

Beazer Homes, French Valley, Murrieta, CA. Biologist conducting 30-day pre-construction BUOW surveys and preparing associated report per Western Riverside Multiple Species Habitat Conservation Plan (MSHCP) guidelines. (2006)

Vegetation Mapping and Botanical Surveys

Lytle Creek RAFSS and AFSS Analysis, Los Angeles, San Bernardino, Riverside, Orange, and San Diego Counties. Biologist responsible for the assessment of remaining Riversidean and regular Alluvial fan Sage Scrub (RAFSS and AFSS) along every major river and waterway alluvial fans complexes in search of potential off-site mitigation. Duties included searching for areas potentially containing alluvial fan scrub habitat, assessing potential areas (including extensive vegetation mapping), and creating a table describing areas that are both still hydrologically active and potentially purchasable. (2006-2008)

Lytle Creek Mitigation Surveys, San Bernardino, CA. Biologist providing support to the project small mammal biologist with regards to conducting vegetation surveys over k-rat mitigation islands in Lytle Creek Wash. Duties included performing modified point-intercept transects, keeping track of data by grid, and overlaying data on a map of the islands to be used in conjunction with small mammal trapping data to determine in any correlation exists between certain vegetation and k-rat abundance. (2006-2007)

Mammoth Mountain, Mammoth Lakes, CA. Biologist assisting with re-assessment of vegetation and potentially jurisdictional areas on Mammoth Mountain Ski resort. Work involved vegetation mapping of high altitude plant communities from Montane to alpine climate zones. (2007)

San Manuel General Plan, San Manuel, AZ. Biologist working as part of a team

to map the vegetation of over 25,000 acres of various Sonoran Desert habitat, including the identification of potentially jurisdictional water features for later assessment. Other duties included writing sections of a long-term river management plan to address issues with the x mile portion of the San Manuel River that crosses the site. The work was commissioned by BHP Billiton in anticipation of the closing of the local copper mine, and subsequent sale of land to expand the town of San Manuel, Arizona. **(2007)**

Canyon Crest, Chino hills, CA. Biologist conducting a series of sensitive plant surveys in chaparral and coastal sage scrub habitats during the various blooming periods of potentially occurring sensitive plant species. **(2007)**

Ortega PBR, Santa Ana Mountains, CA. Biologist assisting with sensitive plant surveys in dense chaparral and riparian communities over two seasons for a water pipeline project. **(2006-2007)**

Lennar Communities, Lytle Creek, San Bernardino, CA. Biologist responsible for focused scalebroom (*Lepidospartum squamatum*) surveys, scalebroom removal oversight, removal monitoring, and letter report preparation. Location and appropriate removal of scalebroom is essential prior to building homes due to the ability of scalebroom to grow into and crack foundations. **(2006)**

Camp Bloomfield, Malibu, CA. Biologist performing vegetation mapping, specifically mapping of all trees on the project site in order to determine potential impacts and appropriate mitigation. **(2006)**

West Valley Water District, San Bernardino, CA. Biologist assisting with the vegetation mapping and resource assessment of land needed for the installation of a water treatment plant, water reservoir, and associate pipelines near Lytle Creek Wash. **(2006)**

Biological Assessments

Hasley Canyon, Hasley Canyon, CA. Project manager/biologist/restoration ecologist responsible for writing winning proposal and subsequent supplemental proposals for a CEQA-level biological assessment, formal jurisdictional determination/delineation, oak tree survey, and full suite of sensitive species surveys (least Bell's vireo, southwestern willow flycatcher, arroyo toad, and California gnatcatcher) on a 275-acre relatively undisturbed project site in northern Los Angeles County. Biological work included assessing land, preparing the biological assessment, assisting with the oak tree survey, assisting with the jurisdictional determination, and survey coordination. Project management tasks included routine meetings with the client and other professionals hired to perform the due diligence work required to apply for the appropriate permits that would be required. **(2006-2008)**

Rancho Vistoso Xero-Riparian Habitat Assessment, Oro Valley/Tucson, AZ. Biologist providing a habitat assessment and technical report for a parcel of land owned by the client in order to determine the boundaries of various levels of xero-riparian habitat in accordance with city code to allow maximum use of the land.

(2007)

690 Laguna Beach, Laguna Beach, CA. Biologist providing a biological assessment and accompanying technical report for the permitting of a private home. Specific issues included dealing with stringent and time consuming reporting standards while still providing cost effective service. (2007)

RMC Lancaster, Lancaster, CA. Biologist responsible for the vegetation mapping along a proposed natural gas pipeline through developed and undeveloped areas. Duties also included identifying potential constraints, and the preparation of a biological constraints analysis. (2007)

Murrieta 180, Murrieta, CA. Biologist assisting with the implementation of the California Rapid Assessment Method (CRAM) analysis of an impacted disturbed wetland and potential vernal pool mitigation site. Application of the CRAM analysis results in each analyzed feature being assessed over a number of different criteria, with the ultimate goal of outputting a score, which can be compared to any other feature regardless of differences. (2006)

Technical Report Writing

SES Solar One Energy Project AFC, Barstow, CA. Biologist assisting with data analysis and report preparation in support of an Application for Certification for a solar power plant project in San Bernardino County. Project involved intensive surveys for desert tortoise, Mohave ground squirrel, and rare plants on a 16,000-acre project site and 100-mile transmission line. (2008)

Pacific Century Homes, Peppertree II, Hemet, CA. Biologist responsible for vegetation mapping and assisting with a jurisdictional determination/delineation. Other duties included preparing a Narrow Endemic Plant Species (NEPS) report in accordance with the Western Riverside MSHCP. (2007)

Robinson Ridge, Rancho Santa Margarita, CA. Biologist assisting with a jurisdictional determination/delineation and eventual report preparation of a 113-acre property that is currently a nursery. Specific issues involved the correct reporting of several potential jurisdictional features that have been lost and created due to long-term use of the site as a plant nursery. (2007)

Lake Matthews Golf and Country Club, Riverside, CA. Restoration ecologist responsible for preparing a conceptual habitat mitigation and monitoring plan for a 375-acre residential and golf course development. Specific issues addressed include suggested mitigation for impacts to jurisdictional waters and wetlands. (2007)

La Paz Park, City of Laguna Nigel, Laguna Nigel, CA. Restoration ecologist performing the analysis and preparation of an annual monitoring report for riparian and wetland mitigation. (2007)

Borel Road Improvement, Murrieta, CA. Biologist preparing a NEPS habitat assessment report per Western Riverside MSHCP guidelines. (2007)

Professional Associations	Big Bear Lake Civic Center, Big Bear, CA. Assisted fellow biologists by analyzing field data and completing a formal jurisdictional delineation report and accompanying data sheets. (2007) NPS Carlson, Santa Monica Mountains, CA. Biologist providing support by writing up biotic report with regards to a sensitive plant habitat assessment/survey conducted by a fellow biologist. (2007) Jurupa Valley Spectrum, Riverside, CA. Assisted in the completion of the biological section of an Initial Study in support of planning staff. (2007) Santa Ana Woollystar Report, San Bernardino, CA. Biologist assisting with the write-up of an un-submitted scientific paper detailing the findings of the subspecies of Santa Ana River Woollystar (<i>Eriastrum densifolium</i> ssp. <i>sanctorum</i>) found on a project site near Lytle Creek Wash. (2007) Richland Communities, Hathaway, Palmdale, CA. Biologist providing support by writing up a biological constraints report with data collected by a fellow biologist. (2006) California Native Plant Society, Member Society for Ecological Restoration, California, Member Wildlife Society, Member
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Areas of Expertise	Endangered Species Surveys Construction Monitoring Biological Assessment
Total Years of Experience	19
URS	7
Other Firms	12
Education	BA / 1984 / Biological Sciences / California State University California Teaching Credential / 1986 / Life Science / California State University
Publications	Dispersal Capability of the California Gnatcatcher: A Landscape Analysis of Distribution Data. Western Birds 29:351-360, 1998. (P. Mock, coauthor). California Gnatcatcher Territorial Behavior. Western Birds 29:242-257, 1998. (M. Grishaver, K. Preston, P. Mock, and D. King, coauthors).
Endangered Species Recovery Permit	U.S. Fish and Wildlife Service Recovery Permit Number TE-101151-1. California Gnatcatcher; Presence/Absence Surveys, and Nest Monitoring.
Overview	Mr. Bailey has over 19 years of experience as an environmental biologist. His responsibilities include focused surveys for California gnatcatcher, least Bell's vireo, arroyo southwestern toad, and desert tortoise; vegetation mapping; and technical report preparation in conformance with CEQA, NEPA, and ESA.
Project Experience	Endangered/Sensitive Species Surveys Kinder Morgan Energy Partners Arroyo Toad Exclusion, Camp Pendleton, California Conducted surveys for arroyo toad in and around pipeline construction area over a two-year period. Maintained pit traps and exclusion fencing to prevent take of arroyo toad. Conducted bullfrog removal from portions of San Mateo Creek. Wylie Construction Sewage Treatment Facility, Camp Pendleton, California Conducted focused surveys for arroyo toad in and around construction site. Maintained pit traps and exclusion fencing to prevent take of arroyo toad. Solar I Desert Tortoise Surveys, Barstow, California Conducted focused surveys for desert tortoise. Recorded tortoise locations, health indicators, and scat/burrow locations for the project. San Mateo Lagoon Exotic Predator Control, San Clemente, California Conducted surveys for arroyo toad, southwestern pond turtle, and tidewater goby. Managed field task to remove non-native predators from the lagoon. Species removed include bullfrog, crayfish, and catfish. Prepared summary report for the project. State Route 73 Water Quality Basins, Orange County, California Conducted focused surveys for California gnatcatcher and monitored nest sites. Communicated with construction supervisors to avoid impacts to active nests. Prepared summary report for the project. Multiple Species Conservation Plan (MSCP) California Gnatcatcher Population Census, San Diego, California Conducted focused surveys for California gnatcatcher at conservation areas throughout San Diego County. Prepared final report of gnatcatcher population with discussion of the relative quality of the conservation areas. Solar II Flat-tailed Horned Lizard Surveys, El Centro, California Conducted focused surveys for flat-tailed horned lizard and desert horned lizard. Recorded horned lizard locations and scat locations for the project.

Saint Michael's School Construction, Poway, California

Conducted focused surveys for California gnatcatcher and delineated territorial boundaries relative to construction. Prepared project report detailing conservation efforts on-site.

Federal Emergency Management Agency (FEMA) Fire Fuel Control, San Bernardino and Glendale, California

Conducted focused surveys for California gnatcatcher at proposed fire fuel management sites. Prepared final report for the project.

Emergency Storage Project, San Diego County Water Authority, San Diego, California

Conducted focused surveys for California gnatcatcher and arroyo southwestern toad. Survey area included vicinity of Lake Hodges and San Vicente Reservoir. Prepared portions of the Environmental Impact Report for the project.

Effects of Aircraft Noise on Least Bell's Vireo at Marine Corps Air Station Camp Pendleton, U.S. Department of the Navy, San Diego, California

Recorded behavioral data of least Bell's vireo biweekly over five months. Behavioral data was compared to onsite noise data to test for possible effects on the species by aircraft noise.

Rancho San Diego California Gnatcatcher Study, Home Capital Corporation

Collected behavioral field data on California gnatcatchers throughout the breeding and non-breeding seasons. Assisted in mist netting and color banding of approximately 114 individuals. Analyzed territory size data for a gnatcatcher population of approximately 25 pairs.

Miramar Landfill General Development Plan, City of San Diego, California

Conducted focused surveys for California gnatcatcher, San Diego fairy shrimp, San Diego mesa mint, San Diego button celery, and willow monardella. Contributed to the biological technical report and environmental impact statement for the proposed facilities.

South County Landfills, City and County of San Diego, California

Conducted comprehensive field surveys for sensitive species and focused surveys for California gnatcatcher and arroyo southwestern toad in six proposed landfill sites. Prepared constraints level report for each site.

Construction Monitoring

San Elijo Hills Open Space Management, San Marcos, CA

Implemented and managed conservation plan for natural areas of San Elijo Hills. Monitored fire fuel management task, invasive weed removal, habitat restoration, and prevention of unauthorized dumping. Conducted yearly on-site population census of California gnatcatcher to measure success of the conservation effort. Prepared yearly summary report.

Biological Construction Monitoring for Olivenhain Reservoir

Project biologist monitoring California gnatcatcher nesting locations in relation to construction activity. This information allowed client to avoid impacts to Federally-listed Threatened California gnatcatcher.

Biological Construction Monitoring for Dana Point Headlands

Project biologist monitoring California gnatcatcher nesting locations in relation to construction activity, public use areas, and conserved habitat. This information allowed client to avoid impacts to Federally-listed Threatened California gnatcatcher, and to measure the success of the project conservation effort.

Biological Construction Monitoring for VertRep Facility, U.S. Navy/Stronghold Electric

Project biologist monitoring construction of a helicopter landing facility. Vernal pools, coastal sage scrub, and California gnatcatchers were the resources being protected.

Biological Construction Monitoring of San Elijo Hills, San Elijo Hills, LCC

Implemented monitoring of wetlands permit conditions.

California Gnatcatcher Study, Skyline Wesleyan Lutheran Church

Collected field data to assess construction noise impacts on the species over three years. Mist netted and color banded gnatcatchers within the study area. Delineated territories on site and recorded breeding behavior, nesting success, and dispersal of young. Prepared a letter report detailing the breeding home range of each pair onsite prior to construction.

Kramer-Victor Powerline, Southern California Edison

Conducted surveys for desert tortoise, Mojave ground squirrel, and rare plants along the Kramer-Victor power corridor. Additionally, monitored construction crews to prevent take of desert tortoise.

Biological Assessment

Escondido Parks Master Plan, City of Escondido, Escondido, California

Conducted field surveys for sensitive biological resources in proposed park sites and conservation areas.

Upham San Marcos Project, Chester R. Upham, San Marcos, California

Participated in biological resources survey of 35-acre site. Collected vernal pool soil samples for a fairy shrimp re-hydration study. Contributed to biological technical report.

Biological Resource Inventory, City of Poway, California

Conducted focused surveys for California gnatcatcher throughout the city and sphere of influence. Mapped habitats and sensitive resources.

South Santa Fe Avenue Widening and Realignment, San Diego County Department of Public Works, San Diego, California

Conducted field surveys to determine the presence or absence of least Bell's vireo in the project area. Recorded faunal species list and provided photographic documentation of habitat quality.

Rancho Del Rey, City of Chula Vista, California

Participated in a vernal pool study that included floral inventory and soil sample collection for a fairy shrimp re-hydration study.

First San Diego River Improvement Plan, City of San Diego, California

Managed field task to collect data on a 20-acre revegetation site. Data used to determine whether the project met required standards for success.

Areas of Expertise

Wetland Delineations
Construction Monitoring
Flora/Fauna Surveys
Mapping Services
HAZWOPER Trained

Years of Experience

With URS: 1 Year
With Other Firms: 11 Years

Education

BS/Biological Sciences/1994/
University of California, Irvine

Registration/Certification

1997/U.S. Army Corp of Engineers
Wetland Delineation Certification
Program
1997/Lead Related Construction
Supervisor (#S2112) and Project
Monitor (#M2112), California
Department of Health Services
1995/Asbestos Certified Site
Surveillance Technician, #95-1831,
California Department of
Occupational Safety and Health

Chronology

06/06-present: URS Corporation,
Santa Maria, CA
10/02-06/06: (sd)² ecology, Grover
Beach, CA
06/95-09/02: LFR, Inc., Irvine and
Santa Maria, CA

Contact Information

URS Corporation
2625 South Miller Street, Suite 104
Santa Maria, CA 93455
Tel: 805.349.7000
Fax: 805. 739.1135
wayne_vogler@urscorp.com

J. Wayne Vogler

Biologist

Overview

Mr. Vogler is a biologist with a well balanced understanding of biological resources and project planning. Wayne has proved to be an asset in the planning of complex field efforts; developing strategies for performing surveys and collecting data while maintaining critical data acquisition targets. Wayne's project experience has included working with federal, state, and local agencies to find consensus among several parties, often with conflicting interests, toward the successful completion of the project. Wayne developed and instituted monitoring protocols, developed restoration plans, and monitored one of the largest hydrocarbon remediation projects along the U.S. Western Coast. Wayne has maintained compliance with Health and Safety training requirements, including some specialized training, since 1996; he is fully-versed and indoctrinated in the health and safety culture.

Project Specific Experience

Sensitive Species Survey Experience

California Red-legged Frog (*Rana aurora draytonii*)

- San Luis Obispo and Santa Barbara County – Conducted presence/absence surveys for California red-legged frogs and mapped habitats. 1999 through present.
- Chevron Guadalupe Restoration Project - Permitted to survey, capture, handle, and relocate California red-legged frogs. Includes pit-tagging and radio-tracking of individuals to monitor relocation efforts. Survey efforts for tadpoles, including dip-netting and use of minnow traps. 1999 through present.

Desert Tortoise (*Gopherus agassizii*)

- Mojave Desert – Completion of the Desert Tortoise Council Annual Surveying, Monitoring, and Handling Techniques Workshop. Training included survey techniques for individuals and their sign, assessment of habitat, handling techniques, and burrow construction. 2003.
- Mojave Desert – Habitat evaluation and presence surveys within several thousand acres for potential solar energy site, including several miles of transmission line corridors. Identified signs of desert tortoise habitation including locating live tortoises, scat, and former burrow sites. 2006.

Wetland Delineations and Restorations

- Performed the initial survey and subsequent update surveys to identify and delineate wetlands according to federal definitions at the 2,800-acre Guadalupe Restoration Project. Employed both routine and comprehensive survey methods with findings reviewed by ACOE and NRCS. 1997 and 2004.
- A contributing author and editor to an encompassing wetland restoration and mitigation plan at the Guadalupe Restoration Project.



Plan elements included the satisfaction of both federal and state resource agencies. Designed wetland habitat elements for the enhancement of both California red-legged frogs and La Graciosa thistle. Plan was approved by several federal and state resource agencies with accommodation by the U.S. Army Corp of Engineers describing the Plan as an example for future plans to ascribe toward. 2004 through 2006.

- Guadalupe-Nipomo Dunes – Conduct an identification survey of wetland habitats throughout the entire dunes complex. Developed identification and screening criteria, classification and descriptive identifiers, and survey methodology. Employed aerial photography interpretation for initial target identification. Mapped wetland habitats with sub-meter GPS unit for data to be incorporated into an existing GIS project. 2004 to present.
- Administrative Hearing with the Army Corp of Engineers for the Santa Maria Airport District. Presented to Hearing Officer in support of District's opinion that wetlands unfairly identified by ACOE personnel. Hearing resulted in no action taken by ACOE against District.

General Vegetation Surveys, Wildlife Surveys, and Habitat Assessment

- Conducted regimented surveys and mapping efforts for La Graciosa thistle (*Cirsium loncholepsis*), surf thistle (*Cirsium routhopilum*), and beach spectacle-pod (*Dithyrea maritima*). Initial survey and mapping of presence. Annual censusing of populations. Monitoring of construction activities to ensure avoidance of disturbance to individuals and habitat. Summer 1998 to present.
- Habitat Inventory and Ecological Database (HIED) development for the 2,800-acre Guadalupe Restoration Project. Scope included the initial mapping of sensitive flora, sensitive fauna, weed infestation, habitat quality, and several other parameters. Data developed from aerial photograph interpretation, qualitative and quantitative surveys, and specific presence/absence surveys per species. Updated annually. 2002 to present.

Specialized Training

- Annually/8-Hour HAZWOPER Annual Refresher
- 2006/Loss Prevention System Training, a Behavior Based Safety Program
- 2006/Smith System Advanced Driving Traffic Safety
- 2003/PADI Certified Open Water Diver
- 2001/Stormwater Pollution Prevention on Construction Sites, California State Water Resources Control Board
- 1999/Certified Beer Master, Anheuser-Busch, Inc.
- 1996/40-Hour Hazardous Waste Workers' and 24-Hour First Responder Health and Safety Training

Areas of Expertise	Biological Resources
Total Years of Experience	< 1
URS	< 1
Other Firms	0
Education	B.S./2007/Animal Science and Wildlife Conservation/University of Delaware
Registration/Certification	N/A
Overview	Brittany Benson is a biologist for URS in the San Diego office. While an undergrad, she participated in field projects in Costa Rica and Tanzania, Africa. She has a strong educational background in wildlife conservation.
Project Experience	Study Abroad, Tanzania. 2007 Witnessed the unique challenges facing African Wildlife from the encroaching ecotourism and development of the land. Lived with various hunter-gatherer and pastoral societies to get a first-hand experience of how the aboriginal people conserve the wildlife and their vital natural resources. Biological data was collected and recorded on a daily basis. AmeriCorps Community Service Program, Newark, Delaware. 2005 A Delaware State Parks field biologist that primarily assisted with the identification and eradication of invasive plant species in order to re-establish an old growth forest. Also aided with the restoration of the diamondback terrapin population. Study Abroad, Costa Rica. 2005 Prior to the trip, formulated a hypothesis based on the species richness vs. the evapotranspiration index. Quantified and compared the field analyses data of the tropical biodiversity (specifically, mammals) for a cloud forest, rain forest, tropical forest, and deciduous forest and formulated a technical report.



Alyssa J. Berry

Staff Biologist

Areas of Expertise

Monitoring Threatened and
Endangered Amphibians of California
Wildlife Surveys
Habitat Restoration GPS and GIS
mapping

Years of Experience

With URS: < 1 Year
With Other Firms: 2 Year

Education

BA/Earth and Environmental
Science/2004/Wesleyan University, CT

Overview

Mrs. Berry is a field biologist with over two years of experience monitoring California Threatened and Endangered species and restoring native habitat. Alyssa's survey work has covered areas of the central coast and northern high desert region of California, focusing on California red-legged frogs and arroyo toads in the Los Padres National Forest, and the Northern spotted owl in the Klamath National Forest. More recently, her conservation efforts have included ecological restoration, concentrating on the re-vegetation of disturbed habitat with genetically local, native plant species. Alyssa has propagated site specific grassland, chaparral, riparian and coastal dune species for ecological restoration. She has aided in the design and installation of several small-scale restoration sites.

Sensitive Species Experience

Blunt-nosed leopard lizard (*Gambelia sila*)

- California Valley, CA – Surveyed for Blunt-nosed leopard lizards using the CA Department of Fish and Game Protocol.

Desert Tortoise (*Gopherus agassizii*)

- Attended the Desert Tortoise Council's *Introduction to surveying, monitoring and handling techniques workshop*.

California Red-legged Frog (*Rana aurora draytonii*)

Over 20 positive contact hours

- Santa Maria, CA- Morning eye-shine surveys to clear soil remediation site.
- Guadalupe, CA- Evening eye-shine surveys to monitor presence/absence of CRLF in newly created wetlands within the Guadalupe Soil Remediation site.
- Los Padres National Forest - Surveyed for California red-legged frog egg masses, tadpoles, sub-adults and adults. Captured all life stages to measure morphological characteristics. Used Garmin GPS waypoints to map locations of individuals and areas of critical, potential and unsuitable habitat. Performed night surveys to monitor for breeding individuals, using eye-shine techniques.

Arroyo Toad (*Bufo californicus*)

Over 30 positive contact hours

- Los Padres National Forest - Surveyed for Arroyo toad egg strings, tadpoles, sub-adults and adults. Captured all life stages to measure morphological characteristics. Used Garmin GPS



waypoints to map locations of individuals and areas of critical, potential and unsuitable habitat. Performed night surveys to monitor for breeding individuals, using eye-shine techniques.

Northern Goshawk (*Accipiter gentilis*)

5 positive contact hours

- Klamath National Forest - Performed transect surveys while playing recorded vocalizations to solicit a response from Northern goshawks. Performed nest searches.

Swainson's Hawk (*Buteo swainsonii*)

20 positive contact hours

- Macdoel, CA – Performed nest searches to locate Swainson's hawk fledglings and pairs. Banded individuals and recorded band numbers of previously banded individuals.

Habitat Restoration Experience

- Composed annual restoration monitoring reports for the Santa Barbara Airport wetland restoration. Analysis included percent native a non-native cover, percent survival and percent cover by species.
- Assisted in the restoration of tidal wetlands at the Santa Barbara Airport by collecting local, California native plant seed and propagating native plants for re-vegetation.
- Assisted in restoration of disturbed coastal dunes by collecting genetically local, native plant seed.
- Assisted in the bluff's restoration at Nicholas Canyon State Park, Malibu by in-planting 2,000 native plants.
- Assisted in restoration of the Santa Barbara County landfill by installing irrigation systems, planning and planting 1,000 California native plants.
- Removed invasive weeds, including tamarisk, yellow/purple star-thistle and pampas grass from the Los Padres National Forest.

Vegetation Survey Experience

- Orcutt, CA- Conducted rare plant surveys throughout the Careaga oil field lease to document sensitive plant species within the property. Generated a report including maps of the observed species and recommendations for avoidance and conservation of identified species.
- San Bernardino NF, CA- Conducted vegetation surveys to map the presence/absence of the invasive weed: arrundo along river channels.



- Los Padres NF, Santa Barbara District, CA- Conducted vegetation surveys to map the presence/absence of yellow star thistle.
- Los Padres NF, Santa Barbara District, CA-Conducted rare plant presence/absence surveys for the Santa Ynez false-lupine (*Thermopsis macrophylla* var. *angina*), Late-flowered mariposa lily (*Calochortus weedii* var. *vestus*) and the Refugio Manzanita (*Arctostaphylos refugioensis*).

Contact Information

URS Corporation
2625 S. Miller St., Suite 104
Santa Maria, CA 93455
Tel-Santa Maria: 805.361-1114
Cell: 617.913-3136
Alyssa_Boinay@URSCorp.com



Timothy R. Witman

Ecologist

Overview

Mr. Witman serves as an Ecologist for the URS Salt Lake City Office. His work experience includes wetland delineations, overview and compliance of construction activities, and federal and state permitting. He is experienced with federal agencies such as U.S. Army Corps of Engineers (ACOE), and the EPA National Pollutant Discharge Elimination System (NPDES) permitting program. Mr. Witman has applied these skills to a wide range of projects including, residential and commercial developments, transportation projects and utility projects.

Mr. Witman has prior experience conducting wetland delineations and permitting under the Massachusetts Wetlands Protection Act and local regulations. He routinely works with Global Positioning System (GPS) data collection units, and is familiar with GPS associated software such as Pathfinder Office©. Mr. Witman also incorporates GPS data into AutoCAD© in order to create plans and maps.

Areas of Expertise

Wetland Delineations
Erosion and Sediment Control
Construction Monitoring

Years of Experience

With URS: Less than 1 Year
With Other Firms: 3 Years

Education

BS/2003/Environmental
Studies/Geology
St. Lawrence University

Registration/Certification

2007/Certified Professional in
Erosion and Sediment Control

Project Specific Experience

Temple Mountain Energy/Ames Construction, Vernal, Utah: Mr. Witman assisted with conducting a baseline ecology survey at the Asphalt Ridge #1 tar sands mine site. The baseline survey included vegetation transects, wildlife survey, a review for threatened and endangered species, soil sampling and a delineation of waters of the United States. Upon the completion of field work he prepared a baseline report for submittal to UDOGM in order to complete a NOI filing and to compile a post-mining reclamation plan.

William Gas Pipeline, La Plata County Colorado: Mr. Witman assisted with completing and submitting Jurisdictional Determination forms to the United States Army Corps of Engineers for the maintenance and repair of a gas pipeline. These forms were based on the Corps Arid West Supplement and were used to determine the jurisdiction of streams and wetlands impacted by the project. He took existing field data, interpreted aerial photos and topographic maps in order to determine if the sites along the pipeline would or would not be jurisdictional. The work resulted in the Corps issuing a Nationwide Permit 12 for this pipeline project.

National Grid/Massachusetts Electric Company, Salem, Massachusetts: Mr. Witman performed coastal wetland resource area delineation and conducted research for existing Massachusetts Chapter 91 Licenses and plans. He assisted with the preparation of the Massachusetts Chapter 91 License Application and Notice of Intent as well as the Army Corps of Engineer Section 10 and Section 404 permit applications for the implementation of insitu bio-remediation projects within the coastal beach, tidelands and waters of Collins Cove, Salem.

Weymouth Naval Air Station, Weymouth, Massachusetts: The Phase I redevelopment project was the first phase for the construction of a mix use development project at the former Weymouth Naval Air Station. Mr. Witman was responsible for conducting wetland resource area delineation and reviewing previously delineated wetland areas within the site. In addition, he prepared wetland permits and documentation which included the Notice of Intent, Invasive Species Control Plan, and Wetland Replication Monitoring Plan.

National Grid, A53 & B54 Refurbishment Project Worcester, Massachusetts: Mr. Witman was the task lead responsible for organizing wetland delineation teams and conducting the delineation along a 10 mile stretch of electrical transmission line. He collected and managed GPS data in order to prepare and modify National Grid Plans. Mr. Witman prepared the Watershed Determination of Applicability Permit Application and coordinated with state agencies for approval. He also coordinated with National Grid Engineers and contractors to assist with the preparation of construction documents.

NEEWS, Transmission Line Reinforcement Project, Massachusetts to Rhode Island: Mr. Witman was responsible for leading and coordinating vernal pool and wetland delineation teams along a 17 mile section of electrical transmission right of way. Mr. Witman prepared background information packages of the route including aerial photos, topographic maps, wetland maps, soil maps, and Natural Heritage and Endangered Species maps. He managed and organized GPS data, wetland datasheets, wetland summary forms, and photographs for future preparation of permit applications.

Olin Chemical, Wilmington, Massachusetts: This is a contaminated site with ongoing remediation activities. Mr. Witman would visit the site each month to visually monitor changes in runoff, stream flow and water quality from the site to bordering vegetated wetlands. Weekly reports, prepared by Olin, were reviewed and Mr. Witman prepared a monthly letter report to the state and EPA. Mr. Witman also prepared a vegetation analysis report within the wetland mitigation areas and assisted with the preparation of a watershed analysis. This analysis proved under the Massachusetts Wetlands Protection Act that the stream was not a perennial stream.

Central Artery/Tunnel Project, Boston, MA: Mr. Witman was responsible for preparation of permit packages in order to receive Certificates of Compliance for Orders of Conditions from the Cities of Boston, Cambridge, and Revere; and Waterways Licenses from the Department of Environmental Protection. Additional responsibilities included providing permit support to the South Boston and East Boston permit manager and acquiring street numbers from the City for new structures.

Coastal Zone Management Statewide Chapter 91 Jurisdictional Mapping Project, Massachusetts:

The project goal was to map the historical shoreline of Massachusetts in order to create a presumptive historic shoreline as it relates to Chapter 91 jurisdiction in Massachusetts. Mr. Witman organized and conducted research in local municipal offices, libraries, The State House, state agencies and various private repositories. Relevant historical materials were obtained and digitized.

Route 3 Roadway Widening & Culvert Extension, Burlington, Massachusetts:

Mr. Witman was responsible for construction monitoring and oversight of the wetland mitigation while work occurred within and adjacent to wetland resource areas. Violations to the Order of Conditions by the contractor, prior to Mr. Witman's involvement, nearly resulted in an Enforcement Order. Mr. Witman provided mitigation measures and weekly reports to the local agency in order to allow the work to continue.

Preparation of EPA NPDES SWPPPs for Multiple Development Projects, Massachusetts:

Mr. Witman has prepared numerous Notice of Intents and Storm Water Pollution Prevention Plans for a variety of commercial and residential construction projects. This work included coordinating with engineers to prepare Erosion and Sediment Control Plans and conducting weekly site inspections to ensure that the contractors are adhering to the plan or to modify the plan if necessary.

Professional Societies/Affiliates

Society of Wetland Scientists

Training

U.S. Army Corps of Engineers Arid West Supplement, Wetland Training Institute, Boise, ID

OSHA 10-Hour Construction Safety

U.S. Army Corps of Engineers Wetland Delineator 40-Hour Course, University of New Hampshire, Durham, New Hampshire

Wetlands Ecology, University of Massachusetts Lowell, Massachusetts

U.S. Army Corps of Engineers Highway Methodology, New Hampshire

Delineating Hydric Soils in Human Disturbed Sites, University of New Hampshire, Durham, New Hampshire

Chronology

08/2007 – Present: URS Corporation, Salt Lake City, Utah

10/2003 – 6/2007: Environmental Planner, BSC Group Inc., Boston, Massachusetts



Areas of Expertise

Wildlife Biology, Biological Monitoring, Biological Resource Assessment, Desert Tortoise Surveys, and Flora and Fauna Identification

Years of Experience

With URS < 1 Year

Education

MS Biology - California State University Long Beach (CSULB)

BS Ecology and Environmental Biology – CSULB

AA - Los Angeles Harbor College

Dennis Miller

Staff Biologist

Overview

Mr. Miller professional expertise includes: biological resource assessments (e.g., identification of flora and fauna, vegetation mapping, etc.) and biological monitoring.

AUSRA Blunt-nosed Leopard Lizard Presence/Absence Surveys, San Luis Obispo County, CA.

Conducted focused surveys for blunt-nosed leopard lizard over a roughly two (2) square mile fallow agricultural area in the Chorizo Plains.

Solar I Desert Tortoise Presence/Absence Surveys, San Bernardino County, CA.

Conducted a 15,000 acre desert tortoise survey for a proposed solar/thermal generating facility. Performed protocol desert tortoise surveys, vegetation community mapping, rare plant surveys, and an assessment of special aquatic resource areas.

Solar II Flat-Tailed Horned Focused Surveys, Imperial County, CA.

Conducted a 7000 acre Flat tail horned lizard survey for a proposed solar/thermal generating facility. Performed protocol Flat tail horned lizard surveys, vegetation community mapping, rare plant surveys, and an assessment of special aquatic resource areas.

References

Dr. Patrick Mock

URS San Diego Natural Resources Group Leader
1615 Murray Canyon Road, Suite 1000
San Diego, CA 92108
619-294-9400

Lenny Malo M.S.

URS Santa Ana Natural Resources Group Leader
2020 East 1st Street, Suite 400
Santa Ana, Ca 92705
714-648-2762

Lincoln Hulse

URS Santa Ana Senior Biologist
2020 East 1st Street, Suite 400



Santa Ana, Ca 92705

714-648-2824

CURTIS UPTAIN
Senior Associate Wildlife Biologist

Mr. Uptain specializes in conducting biological resource inventories and studies in the southwestern United States. He has over 20 years experience working with federally- and state-listed endangered species and over 5 years of experience with restoration of arid lands. Mr. Uptain has been involved in a wide variety of projects that include housing developments, pipeline and transmission line corridors, cogeneration plants, solar and geothermal installations, mining and waste treatment facilities, and restoration and management of retired farmlands. Mr. Uptain has been responsible for documenting the results of research and surveys in numerous technical reports such as Environmental Assessments (EA's), Environmental Impact Reports (EIR's), Environmental Impact Statements (EIS's), Biological Opinions, Mitigation and Monitoring Plans, Habitat Management Plans, and Habitat Conservation Plans (HCP's).

Education

California State University, Fresno
B.A. in Biological Sciences - 1978
M.A. in Zoology - 1983

Certifications/Registrations

Certified Associate Wildlife Biologist by The Wildlife Society, 1983
Certified in Habitat Evaluation Procedures by the USFWS, 1986
Certified instructor – Human Impact Evaluation Procedures for the Mojave Ground Squirrel by the California Department of Fish and Game, 1992
NEPA certification, UC Davis, 1998
CEQA certification, UC Davis, 1999
Certified in fairy shrimp identification by the USFWS, 2001

Areas of Expertise

Endangered Species Surveys and Research
Environmental / Biological Documentation
State and Federal ESA Consultations
Restoration of Arid Lands

Professional Employment

2005 – Present	Senior Associate Wildlife Biologist, Quad Knopf
1997 – 2005	Assistant Director and Project Coordinator, California State University Stanislaus, Endangered Species Recovery Program
1983 – 1997	Sole proprietor and Lead Biologist, Consultants in Wildlife and Environmental Services Agency

Endangered Species Research Projects

Endangered Species Recovery Program. Mr Uptain assisted in conducting a long-term demographic study of blunt-nosed leopard lizards at Pixley National Wildlife Refuge and on the Elkhorn Plains, CA.

Endangered Species Recovery Program. Mr Uptain assisted in conducting a long-term demographic study of giant kangaroo rats on the Elkhorn Plains, CA.

Endangered Species Recovery Program. Mr. Uptain assisted in conducting a long-term demographic study of Tipton kangaroo rats at Pixley National Wildlife Refuge, CA.

Endangered Species Recovery Program. Mr. Uptain coordinated trapping studies to determine the distribution and abundance of Tipton kangaroo rats on Kern National Wildlife Refuge, Kern County, CA.

Endangered Species Recovery Program. Mr. Uptain conducted a 6-year population monitoring study of the Doyen's dune weevil at the only known locality for this species and searched for additional populations. Kings County, CA.

United States Fish and Wildlife Service. Mr. Uptain conducted research and studies to determine the absolute and relative density of the blunt-nosed leopard lizard on six sites at the Pixley National Wildlife Refuge located in Tulare County, CA.

California Department of Fish and Game. Mr. Uptain researched and documented the distribution and relative abundance of the Stephens' kangaroo rat throughout its range.

Wetlands Projects

United States Bureau of Reclamation and The Foothill Conservancy Vernal Pool Surveys, Mr. Uptain was Project Coordinator for Vernal Pool Surveys on the 2,730 acre Blasingame Property, south of Friant in Fresno County, California. The surveys consisted of locating , mapping, and characterizing vernal pools, sampling pools for the presence of vernal pool branchiopods, California tiger salamanders, and spadefoot toads. Fresno County, CA.

United States Bureau of Reclamation Vernal Pool Surveys - Mr. Uptain was the Project Coordinator for the vernal pool surveys of the Friant Kern Canal. Surveys consisted of locating and mapping vernal pools and sampling pools for the presence of vernal pool branchiopods, California tiger salamanders, spadefoot toads, and other sensitive species located within the Canal right-of-way. Fresno, Madera, and Tulare counties, CA.

United States Bureau of Reclamation Annual Census’- Mr. Uptain was Project Coordinator for 5 years of annual census’ of California red-legged frogs and monitoring of construction activities at San Justo Reservoir near Hollister, San Benito County, CA.

Endangered Species Recovery Program and the Smithsonian Institution. Mr. Uptain coordinated trapping studies throughout the southern San Joaquin Valley to collect tissue samples of the endangered Buena Vista Lake shrew for a genetics analysis of the species.

Endangered Species Recovery Program and Ducks Unlimited. Mr. Uptain coordinated a trapping survey for Buena Vista Lake shrews at Goose Lake to determine impacts associated with wetlands enhancement on the site. Kern and Tulare counties, CA.

Restoration and Habitat Management Projects

Endangered Species Recovery Program, Land Retirement Demonstration Project. Mr. Uptain coordinated a five-year research project on wildlife use of retired and restored farmlands and the development of restoration technologies. Wildlife was monitored on 20, 10 acre plots that were subjected to various restoration prescriptions. Wildlife monitoring included invertebrates (annual pitfall and sweep surveys), amphibians and reptiles (transect surveys, pitfall trapping, coverboard surveys), birds (quarterly point counts and transect surveys), and small mammals (quarterly trapping). He also conducted quarterly night spotlighting and track station surveys and annual raptor census’. Selenium in plants and wildlife (invertebrates, small mammals) were monitored over the five-year period. Mr. Uptain also was responsible for coordinating the installation and management of a 4-acre native plant nursery which was used to amplify local stock of native plant seed, conduct research on native plant propagation and harvest techniques. He installed and managed the operation of a 1600 sq. ft. facility that was devoted to seed cleaning, processing, and storage. He coordinated data entry, statistical analysis, preparation of annual reports and a final five-year report for multiple research studies that were conducted to develop restoration techniques that could be applied to large scale restoration projects and presented findings at numerous professional conferences. Fresno and Tulare counties, CA.

California State Farmer’s Fair Riverside County. Mr. Uptain assisted in a habitat restoration study for the Stephens’ kangaroo rat on mitigation land for the Farmer’s Fair in Riverside County, CA.

Endangered Species Recovery Program and the Department of the Navy. Mr. Uptain assisted with a habitat management (effects of fire and grazing) and demographic study for Tipton kangaroo rats at Lemoore Naval Air Station, Tulare County, CA. He prepared the final report for the study and made recommendations for appropriate land management.

California Department of Fish and Game, Region 4. Mr. Uptain coordinated field work and reviewed and edited text for Habitat Management Plans for the Buttonwillow Ecological Reserve

(Kern County), Big Table Mountain Ecological Reserve (Fresno County), and Hog Wallow Ecological Reserve (Tulare County).

California Department of Fish and Game, Region 4. Mr. Uptain coordinated, reviewed, and edited Land Acquisition Evaluations for three sites (Buena Vista Lake, Bena Landfill, and Comanche Point) and a Conceptual Area Plan for one site (?).

Habitat Conservation Planning Projects

Tulare County Habitat Conservation Plan. Mr. Uptain assembled information on sensitive species distribution and densities, developed a field survey protocol, and reviewed the conservation strategy for sensitive small- to medium-sized mammals.

California Department of Corrections North Kern Prison Site. Mr. Uptain was responsible for performing the initial surveys for sensitive biological resources on the North Kern Prison site at Delano, Kern County. Mr. Uptain was involved in developing/implementing the habitat conservation plan, a Tipton kangaroo rat relocation program, and a habitat restoration plan. He completed a five-year monitoring effort to determine the effects of habitat manipulations on Tipton kangaroo rat, blunt-nosed leopard lizard, and San Joaquin kit fox populations. Tulare County, CA.

San Joaquin Division of the California Aqueduct, Habitat Conservation Plan. Mr. Uptain compiled and analyzed field data collected by California Department of Water Resources and California Department of Fish and Game biologists and presented this data in the Habitat Conservation Plan for the San Joaquin Division of the California Aqueduct.

Fresno County, Pleasant Valley Habitat Conservation Plan. Mr. Uptain assisted with the preparation of the Pleasant Valley Habitat Conservation Plan by organizing and conducting field investigations for sensitive species, analyzing field data, and preparing the biological portions.

Kern County Blackwells Corner Habitat Conservation Plan. Sensitive species surveys and a draft report was prepared by Mr. Uptain for a Habitat Conservation Plan for the water filtration system near Blackwells Corner, Kern County, CA.

Cogeneration, Hydroelectric, and Electrical Transmission Line Projects

La Paloma Generating Plant- As lead Biologist, Mr. Uptain conducted initial and focused surveys for sensitive plant and wildlife species for the La Paloma Cogeneration Plant and associated transmission lines and pipelines. He prepared the biological assessment and assisted with preparation of the environmental impact statement (EIS), application for certification to the California Energy Commission, California Department of Fish and Game 2081 Agreement, and the biological resources mitigation and implementation of the monitoring plan. He was the

coordinating biologist for the construction monitoring and employee training programs. Kern County, CA.

US Generating Company's Fellows Cogeneration. Mr. Uptain conducted field surveys, prepared progress reports, assisted in preparing an application for certification to the California Energy Commission. Mr. Uptain also supervised construction monitoring for the US Generating Company's Fellows Cogeneration which included a 17 acre power generation site, approximately 80 miles of transmission line, and associated water and natural gas pipelines in Kern County, CA.

South Belridge Cogeneration Project Application for Certification. Mr. Uptain performed habitat evaluations and density estimations of the San Joaquin antelope ground squirrel, and the Tipton kangaroo rat. He also performed relative density estimations and the distribution/abundance of the San Joaquin kit fox and their prey base, and the blunt-nosed leopard lizard that was needed for the application for certification for the California Energy Commission in Kern County, CA.

Haas-Kings Hydroelectric Project. Mr. Uptain assisted in a wintering deer survey and a recreation traffic survey for the Haas-Kings Hydroelectric Project in Fresno County, CA.

SCE Devers - Paloverde Transmission Line II. Mr. Uptain recovered sensitive biological species for mitigation and described the distribution of sensitive flora and fauna along the SCE Devers – Paloverde Transmission Line II in Riverside County, CA.

LADWP Sylmar Transmission Line. Mr. Uptain described the distribution of sensitive flora and fauna along the LADWP Sylmar Transmission Line in Kern, Inyo, and Mono counties, CA.

LADWP IPP 500 Kv Transmission Line. Mr. Uptain recovered sensitive biological species and monitored construction activities for mitigation of the LADWP IPP 500 Kv Transmission Line in Utah, Nevada and California.

SCE Victorville-Kramer Junction Transmission Line. Mr. Uptain determined the presence and abundance of the Mohave ground squirrels along the SCE Victorville-Kramer Junction transmission line in San Bernadino County, CA.

SCE Valley Substation-Serrano Transmission Line. Mr. Uptain determined the distribution of Stephens' kangaroo rat along the SCE Valley Substation-Serrano Transmission Line in Riverside County, CA.

LADWP McCollough-Victorville/Adelanto Transmission Line. Mr. Uptain performed habitat surveys and determined the distribution of sensitive flora and fauna along the LADWP McCollough-Victorville/Adelanto Transmission Line located in Riverside County, CA and Clark County, Nv.

Kings River Conservation District's Hydroelectric Development/Construction Projects.

Collected baseline population data on fish in Dinky Creek and in Kings River, and monitored stream turbidity on Kings River below Pine Flat Dam in relation to hydroelectric development/construction projects in Fresno County, CA.

Gas, Oil, and Water Delivery System Projects

Mobil Oil Company, Kern and Monterey County, CA. Mr. Uptain was responsible for conducting field surveys that included a 30 mile long pipeline, 4 miles of oil delivery pipeline at their San Ardo facility in Monterey County, and preparing appropriate reports for project permitting through CDFG and USFWS. Mr. Uptain also performed construction monitoring/employee training for approximately 80 miles of oil pipeline in Kern County.

Unocal Platform Irene Project, Environmental Quality Assurance Program. Mr. Uptain performed biological monitoring for implementation of the Environmental Quality Assurance Program for the Unocal Platform Irene Project in Santa Barbara County, CA.

Mojave Pipeline, Tulare County, CA. Mr. Uptain performed verification trapping for Tipton kangaroo rats along the Mojave Pipeline northern expansion route in Tulare County, CA.

Mojave Pipeline Surveys for the Biological Opinion and Environmental Impact Report(EIR). Mr. Uptain was project manager for biological surveys for threatened and endangered species on approximately 400 miles of the Mojave Pipeline that were needed for the biological opinion report and the environmental impact report (EIR). Threatened and endangered species that were surveyed included the Mohave ground squirrel, desert tortoise, blunt-nosed leopard lizard, San Joaquin kit fox, San Joaquin antelope ground squirrel, giant kangaroo rat, Tehachapi slender salamander, and the Tipton kangaroo rat. Mr. Uptain then assisted with preparation of the project's reports and he prepared the RFP for protection of biological resources during construction.

Mobil Oil Company, Kern County, CA. Mr. Uptain performed surveys for sensitive species, and conducted construction monitoring for a proposed 17 mile long pipeline for Mobil Oil Company in Kern County, CA.

Elk Hills Naval Petroleum Preserve #2. Mr. Uptain conducted field surveys to determine the impact of various levels of oil and gas development on the blunt-nosed leopard lizard and the San Joaquin kit fox at Elk Hills Naval Petroleum Preserve #2 located in Kern County, CA.

California Aqueduct, Fresno, Kings and Kern Counties. Mr. Uptain performed surveys for sensitive species along the San Joaquin Field Division of the California Aqueduct to determine impacts from canal dredging operations and assisted with the preparation of the biological assessment.

Solar and Geothermal Projects

LUZ Solar Energy Facility, Kern County, CA. Mr. Uptain performed CHIEF surveys for Mohave ground squirrel habitat for the LUZ solar energy facility in Kern County, CA.

Harper Lake Solar Cogeneration Facility's Application for Certification. Mr. Uptain performed habitat evaluations and density estimates for the desert tortoise and Mohave ground squirrel that were to be included in the application for certification to the California Energy Commission. Kern County, CA.

Kramer Junction Solar Cogeneration Facility's Application for Certification. Mr. Uptain performed habitat evaluations and density estimates of the desert tortoise that were to be included in the application for certification to the California Energy Commission. Kern County, CA.

Solar Energy Production Facility, San Diego County, CA. Mr. Uptain determined factors influencing the distribution and abundance of Stephens' kangaroo rat in Warner Springs Valley in relation to the development of a solar energy production facility in San Diego County, CA.

Beowawe Geothermal Area. Mr. Uptain assisted in a small mammal inventory of five habitat types in the Beowawe Geothermal Area in Lander and Eureka counties located in North Central NV.

Mining Projects

Shumake Mine Expansion Project, Kern County, CA. Mr. Uptain was responsible for performing the habitat evaluation and relative abundance study of Mohave ground squirrels for the Shumake Mine expansion project in Kern County, CA.

Queenstake Mine project, Inyo County, CA. Mr. Uptain was responsible for performing the habitat evaluations and relative abundance study of Mohave ground squirrels for the proposed Queenstake Mine project located in Inyo County, CA.

Sonora Mining Corporation's Jamestown Goldmine, Tuolumne County, CA. Mr. Uptain performed quarterly sampling over a 5 year period for an aquatic and riparian survey of Woods Creek in relation to the Sonora Mining Corporation's Jamestown Goldmine, Tuolumne County, CA.

Urban Development Projects

Riverside County Surveys. Mr. Uptain performed 10 surveys ranging in size from 1 to 7300 acres, some including live trapping, for Stephens' kangaroo rats in Riverside County for various development projects.

Off-Road Vehicle Park Project in Kern County, CA. Mr. Uptain determined the relative abundance of desert tortoise in relation to a proposed off-road vehicle park that will be located in Kern County, CA.

Kern County Planning Department Zone Changes. Mr. Uptain was responsible for describing sensitive flora and fauna at North Edwards and Inyokern locations in Kern County, CA for use in evaluating zoning changes.

1280 Acre Housing Development at Rosamond, Kern County, CA. Mr. Uptain performed a biological survey for sensitive plants and wildlife at Rosamond for a proposed 1280 acre housing development located in Kern County, CA.

Business Park Surveys. Mr. Uptain surveyed for the presence of San Joaquin kit fox at a proposed business park near Tracy, CA.

Spice Processing Plant Surveys. Mr. Uptain surveyed for the presence of threatened and endangered wildlife at a proposed spice processing plant in Tulare County, CA.

Other Projects

Endangered Species Recovery Program and State Parks and Recreation. Mr. Uptain coordinated surveys for a vegetation mapping effort, sensitive plant surveys, and herpetological surveys of the Millerton Lake State Recreation Area, Fresno County, CA.

Endangered Species Recovery Program. Mr. Uptain assisted with extensive small mammal trapping on the Madera Ranch to determine presence of Fresno kangaroo rats for a proposed water banking project, Madera County, CA.

Endangered Species Recovery Program and California Department of Transportation. Mr. Uptain coordinated field surveys, assisted with biological surveys, and prepared the final report for the Highway 165 Natural Environmental Study Report, Fresno and Mariposa counties, CA.

Endangered Species Recovery Program and California Department of Transportation. Mr. Uptain coordinated field surveys, assisted with biological surveys, and prepared the final report for the Highway 41 Natural Environmental Study Report, Fresno County, CA.

Endangered Species Recovery Program and California Department of Transportation. Mr. Uptain coordinated field surveys, assisted with surveys, and prepared reports for monitoring of

kit foxes and kit fox use of highway crossing structures along Highway 152, Merced County, CA.

Chemical Waste Management, Inc., Environmental Surveys. Mr. Uptain conducted various environmental surveys and conducted the mitigation procedures training for the Kettleman Hills Toxic Waste Facility. He also conducted a five-year monitoring study at their Bakersfield Facility.

Edwards Air Force Base Endangered Species Research. Mr. Uptain researched and studied the relative abundance of Mohave ground squirrels on Edwards Air Force Base in relation to impacts from a gravity wave detector.

Bakersfield Cellular Telephone Endangered Species Survey. Mr. Uptain performed a survey for the San Joaquin kit fox on cellular telephone tower sites located in Kern County, CA.

Harris Ranch Expansion Project Endangered Species Survey. Mr. Uptain conducted a San Joaquin kit fox survey and habitat assessment for the proposed Harris Ranch Expansion Project located in Fresno County, CA.

Propeace, Inc. Habitat Surveys. Mr. Uptain performed habitat surveys and assessed sensitive biological resources along I-15 and the IPP Transmission Line in relation to the Propeace Peace March.

Valley Nitrogen Producers, Inc. Biological Assessment. Mr. Uptain assessed the response of birds to an acoustical aversion system and bird mortality in a low pH evaporative waste pond located in Fresno County, CA.

Lori Bono

Biologist

AREAS OF EXPERTISE

- ♦ Small Mammal Trapping and Identification
- ♦ Bat Call Analysis

EDUCATION

- ♦ Bachelors of Science, California State University, Fresno, 2004
- ♦ Associate of Science, College of the Sequoias, 2000

PROFESSIONAL ORGANIZATIONS

- ♦ The Wildlife Society
- ♦ The Nature Conservancy
- ♦ World Wildlife Fund
- ♦ Sierra Club, Kern-Kaweah Chapter

AWARDS / RECOGNITION

- ♦ President's List, California State University, Fresno, 2007
- ♦ Faculty Sponsored Student Research Grant, \$1,250 of the year, 2006
- ♦ Travel Grant, \$1600 of the year, 2006
- ♦ Faculty Sponsored Student Research Grant, \$940 of the year, 2005

CONTINUING EDUCATION

- ♦ Biology, California State University, Fresno, Master's Degree, 2007

Summary Paragraph – Lori Bono has been responsible for conducting wildlife surveys and assessments to determine the presence of Threatened and Endangered (T&E) species, special status species and their habitat. She has also participated in controlled burns, and botanical surveys. Lori is currently finishing her master's degree at California State University, Fresno and currently holds a bachelor's degree in biology with a minor in agricultural business from California State University, Fresno. She brings to us five years of experience in the field. Prior to joining us she served as a Field Biologist for the Ecology and Parasitology Laboratories at California State University, Fresno in Fresno, California and has volunteered with the Endangered Species Recovery Program and the Sequoia Riverlands Trust, James K. Herbert Prairie Wetland Preserve in Tulare, California.

PROFESSIONAL EMPLOYMENT

2007 – Present	Quad Knopf
Biologist/Assistant Planner	
2005 – 2007	California State University, Fresno,
Graduate Student Researcher	
2005 – 2007	California State University, Fresno,
Teaching Associate	
2004 – 2005	California State University, Fresno,
Research Assistant-Project Director	

PROJECT EXPERIENCE

Yokohl Valley Ranch Project — Tulare County, California

Biologist. Scheduled and coordinated field research efforts among crew leaders and project staff. Performed Spring floristic surveys for special status plant species, vernal pool mapping, Swainson's hawk surveys, bat surveys and bat call analysis (via Sonobat), dry season fairy shrimp sampling, small mammal trapping and identification, valley elderberry longhorn beetle surveys, California tiger salamander spotlighting, and stream electro-shocking to determine presence/absence of native California lamprey and California roach.

Reedley Waste Water Treatment Plant-Fresno County, California

Biologist. Performed preconstruction surveys for nesting raptors and surveyed project and surrounding areas for valley elderberry longhorn beetles (*Desmocerus californicus dimorphus*). Responsible for construction crew supervision

and training, worker education and construction monitoring.

Dunmore Communities- Kings County, California

Biologist. Conducted preconstruction surveys for blunt-nosed leopard lizards, San Joaquin kit foxes and burrowing owls.

Sugar Plum Homes — Kings County, California

Biologist. Performed protocol level surveys for the San Joaquin kit fox. Included nightly monitoring of spotlighting routes and track stations.

NSF-EID Grant: Identifying the Flow and Control of Pathogens from the Land to the Sea: Tracking Toxoplasma from Cats to Sea Otters — California State University, Fresno, CA. *Graduate Student Researcher—Parasitology Laboratory.* Field assistant in entomological research of *Toxoplasma gondii*. Responsible for the collection of ectoparasites and blood samples, via retro-orbital bleeds, from rodent populations in Morro Bay, California.

Soil Moisture, Gap Analysis Experiment — California State University, Fresno, CA. *Graduate Research Assistant—Ecology Laboratory.* Assist in the installation and location of Gap plots and transects in the Sequoia National Forest. Responsible for collecting soil moisture measurements, taking hemispherical photos, and maintaining accurate data records. Involved extensive off-trail hiking carrying heavy loads.

Seed Rain Experiment at California State University Fresno — California State University, Fresno, CA. *Research Assistant Project Director—Ecology Laboratory.* Head assistant running experiment monitoring seed rain in the Sierra National Forest at the Teakettle Research Station. Involved organizing a team of researchers, locating plots with compass and topographic maps, emptying seed traps, counting, identifying and recording seed species, and analyzing seed data. Required intense off-trail hiking and maintenance and repair of seed traps.

Sequoia Riverlands Trust — James K. Herbert Prairie Wetland Preserve in Tulare, California. On May 5th, 2004 volunteered for a bird point survey, under the supervision of Bobby Kamansky, in which I walked transects and recorded point counts, which reflected frequency and species of birds observed. On August 3rd and 4th, 2004 volunteered for a prescribed burn, under the supervision of Bobby Kamansky, in which flares were used to ignite 83 acres of preserved habitat in an effort to assist native grass restoration.

SMALL MAMMAL TRAPPING REPORT

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Summary Report of Small Mammal Trapping along Two Proposed Transmission Line Corridors for the San Joaquin Solar 1 and 2 Project



Submitted by:

Curtis Uptain
Senior Biologist
Quad Knopf, Inc.
5110 West Cypress Ave.
Visalia, California 93278

Submitted to:

Theresa Miller
Senior Biologist
URS Corporation
1615 Murray Canyon Rd
Suite 1000
San Diego, CA 92109

22 December 2008

Summary Report of Small Mammal Trapping along Two Proposed Transmission Line Corridors for the San Joaquin Solar 1 and 2 Project

1.0 Introduction

A solar energy generating facility is currently proposed for construction along Jayne Avenue, west of Interstate 5, near Coalinga, California (Figure 1). The project site currently is a disked field that contains virtually no biological resources. Two transmission lines are associated with this facility, which would transfer power to a site east of Interstate 5 (Figure 2). Various biological surveys have been conducted along the two proposed transmission lines. Most of the transmission line corridors are composed of agricultural fields including permanent orchards and row crops, but there are some expanses of Non-native Grassland, Atriplex Shrubland, and fallow agricultural lands along these alignments. This report summarizes the results of small mammal trapping conducted along those routes.

2.0 Methods

Nocturnal trapping for small mammals was conducted within the Non-native Grassland, Atriplex Scrubland, and fallow agricultural lands along the northern and southern transmission line routes. Four trapping lines were established along the northern route (trap lines 1 through 4), consisting of 20 traps, 100 traps, 80 traps, and 100 traps, respectively (Figure 3). Four trapping lines were established along the southern transmission line, consisting of 50 traps each. Traps were placed at intervals of approximately 15 meters along the trap lines.

Each line was trapped for four consecutive nights; trap lines 1 through 4 were trapped from 1 December 2008 to 4 December 2008 and trap lines 5 through 8 were operated from 7 December to 10 December 2008. A combination of standard 9-inch and 13-inch kangaroo rat special Sherman live traps were used. The 9-inch traps were modified to reduce tail injuries to kangaroo rats as approved by the California Department of Fish and Game. Traps were baited with mixed bird seed and opened prior to dusk each night. One trap check each night was conducted, commencing at approximately 2300 hours and concluding between 0200 and 0430 the following morning. Traps were closed when checked. A total of 1200 trap nights were conducted along the northern transmission line route and 800 trap nights were conducted along the southern transmission line route.

Each animal captured was identified to species, its age, sex, and sexual condition was noted, its weight was taken, it was marked by clipping a patch of fur on its right rump, and released at its point of capture. Notes on previous injuries or other anomalies were recorded. Curtis Uptain and Sundeep Amin conducted trapping along the northern route

and Curtis Uptain and Rick Bailey conducted trapping along the southern transmission line route.

2.0 Results

Heermans kangaroo rats (*Dipodomys heermanni*) and deer mice (*Peromyscus maniculatus*) were the only two species captured along both the northern and southern transmission line routes (Table 1). *D. heermanni* were captured more frequently than *P. maniculatus*, with 313 individual kangaroo rats captured a total of 552 times versus 80 deer mice being captured a total of 126 times. The majority of captures of both species (93% of *D. heermanni* and 75% of *P. maniculatus*) were captured along the northern transmission line (plots 1 through 4). This is not unexpected because there was more habitat available, the habitat was less disturbed, and there was a greater sampling effort (1,200 trap nights in the northern trapping areas versus 800 trap nights in the southern trapping areas). When adjusted for unequal sampling effort, the northern trapping areas remained superior to the southern trapping areas.

Table 1. Results of small mammal trapping along transmission line routes, San Joaquin Solar 1 and 2. D.H. = *Dipodomys heermanni*, P.M. = *Peromyscus maniculatus*. The number of each sex and age class is only provided for “new” captures, not recaptured animals.

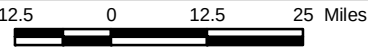
Plot/species	# of recaptures	# of new captures	# of Males	# of Females	# of Adults	# of Juveniles
Plot 1						
D.H.	10	10	7	3	10	0
P.M.	8	10	5	5	10	0
Plot 2						
D.H.	46	52	26	26	52	0
P.M.	23	24	18	5	21	2
Plot 3						
D.H.	43	81	42	39	81	0
P.M.	3	9	5	4	7	2
Plot 4						
D.H.	127	102	48	54	102	0
P.M.	10	17	7	10	14	3
Plot 5						
D.H.	1	1	0	1	1	0
P.M.	0	0	0	0	0	0
Plot 6						
D.H.	0	1	0	1	1	0
P.M.	1	2	1	1	2	0
Plot 7						
D.H.	8	11	7	4	11	0
P.M.	1	5	3	2	4	1

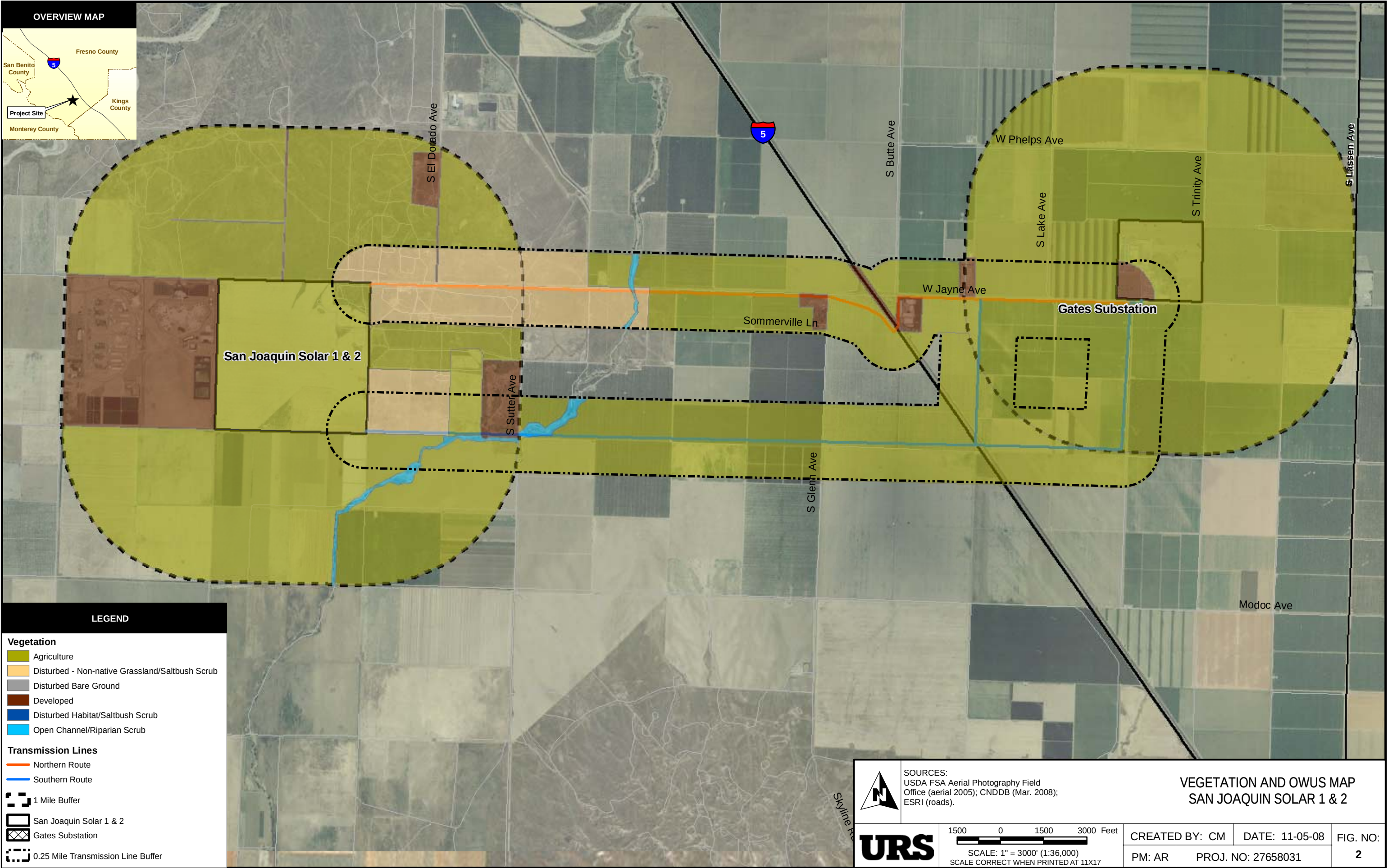
Plot 8						
D.H.	4	9	6	3	9	0
P.M.	0	13	6	7	9	4
Total						
D.H.	239	313	136	131	313	0
P.M.	46	80	50	30	68	12

The majority of all animals captured were adults (100% of *D. heermanni* and 85% of *P. maniculatus*). The ratio of males to females was nearly equal among *D. heermanni* and males accounted for approximately 63% of *P. maniculatus*. Most of the males of both species were reproductively active. The majority of male kangaroo rats were slightly post-reproductive as evidenced by a withering testicular sac with ascending testicles. Although most of the female kangaroo rats were classified as non-reproductive, most were suspected of being in very early pregnancy (some females exhibited copulatory plugs, others exhibited turgid vulva, but most exhibited no definitive sign of pregnancy but seemed to have a slightly swollen abdomen).

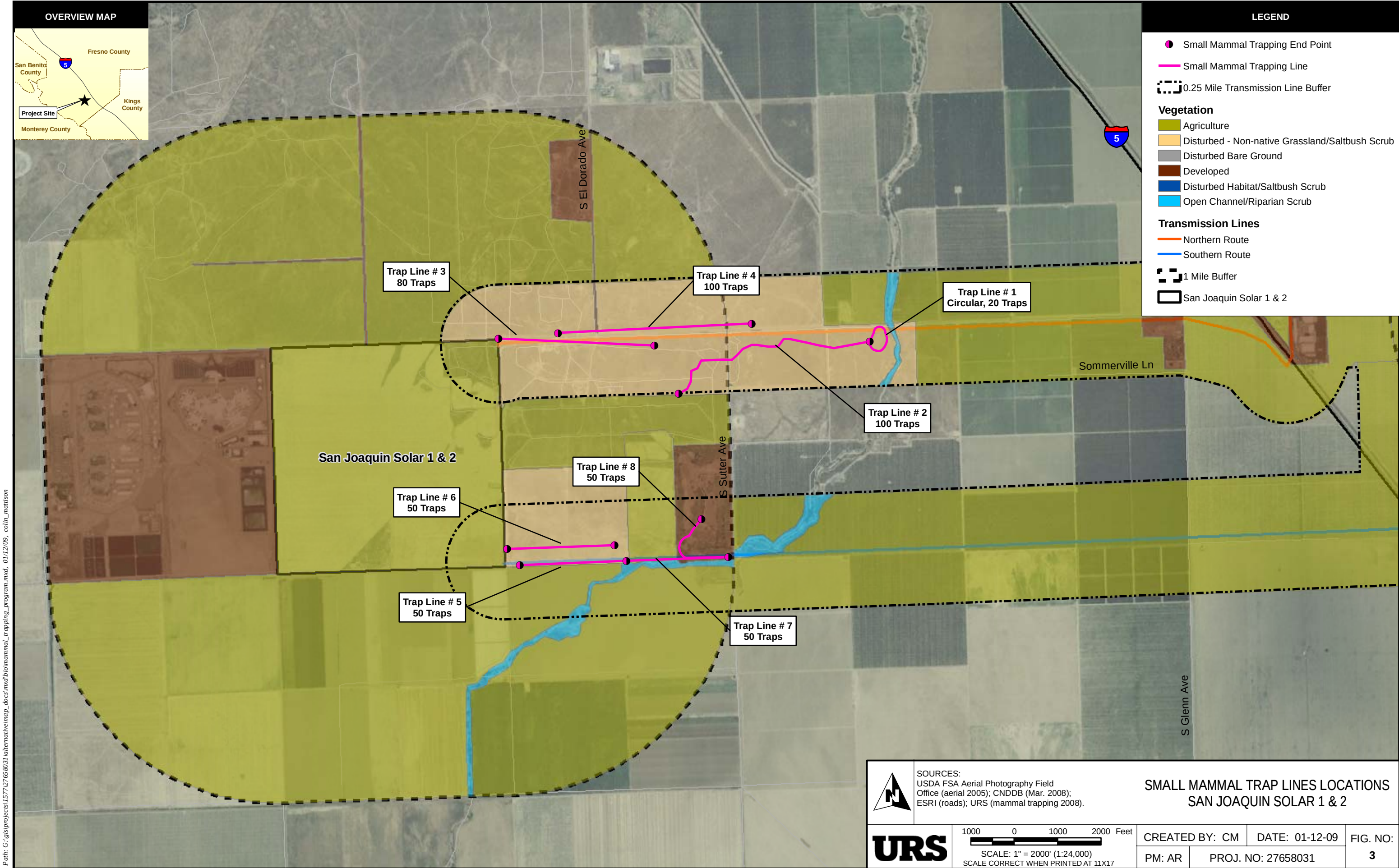
Other species of small mammals known from the trapping sites include the pocket gopher (*Thomomys bottae*), cottontail (*Sylvilagus audubonii*), and black-tailed jackrabbit (*Lepus californicus*). Other small mammal species known from the vicinity of the project sites include the California pocket mouse (*Chaetodipus californicus*), San Joaquin pocket mouse (*Perognathus inornatus*), Tulare grasshopper mouse (*Onychomys torridus*), short-nosed kangaroo rat (*Dipodomys nitratoides brevinasus*), and San Joaquin antelope ground squirrel (*Ammospermophilus nelsoni*). There was no evidence collected during the trapping efforts that confirms the presence of these species on the project site. However, the San Joaquin antelope ground squirrel is a crepuscular species that was not targeted by this trapping effort. Although no sign of this species was observed either during these trapping efforts or during other biological surveys of the project sites, it is recommended that focused trapping for the San Joaquin antelope ground squirrel be conducted prior to ground clearing activities.



 	SOURCES: ESRI (background).		REGIONAL MAP SAN JOAQUIN SOLAR 1 & 2		FIG. NO: 1
	 SCALE: 1" = 25 Miles (1:1,584,000) SCALE CORRECT WHEN PRINTED AT 8.5X11				
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Photograph #1

Photograph of small mammal trapping line 1 taken from the northernmost trap facing south.



Photograph #2

Photograph of small mammal trapping line 2 taken from the easternmost trap facing west.



Photograph #3

Photograph of small mammal trapping line 3 taken from the easternmost trap facing west.



Photograph #4

Photograph of small mammal trapping line 4 taken from the easternmost trap facing west.



Photograph #5

Photograph of small mammal trapping line 5 taken from the westernmost trap facing east.



Photograph #6

Photograph of small mammal trapping line 6 taken from the westernmost trap facing east.



Photograph #7

Photograph of small mammal trapping line 7 taken from the westernmost trap facing east.



Photograph #8

Photograph of small mammal trapping lines 7 and 8 taken from the easternmost trap facing west.



Photograph #9

Photograph of small mammal trapping line 8 taken from the westernmost trap facing east.



Photograph #10

This field was “targeted” for small mammal trapping but is not suitable for small mammals. Trapping did not occur in this field. It is located along the south transmission line, easternmost trapping area



Photograph #11

Photograph of a Heermann's kangaroo rat found in a trap.

RV FORM 08

PLOT	DATE			OBS	SEX	SEXUAL CONDITION	Time	Air Temp.	Rel Hum	Be Wind No.	Cloud Cover	Moon			
	DAY	MONTH	YEAR		1 Male 2 Female 9 Unknown	1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown									
II	DD	MM	YY	I			II	IIID	II	II	I	I			
2-3	5-6	7-8	9-10	12	AGE		51-52	54-57	59-60	62-63	65	66			
I	I	12	08	cy	1 Young Yr. 2 Adult 9 Unknown		2330	12	90	0	6	10			

[illegible]

WIND			CLOUD COVER	MOON	NEW (Basic)	NUMBER CONFUSED	ANIMAL NUMBER
Beauf. No.	km.	mi.	0 Clear	0 None	1 New animal	1 Tag lost	8 Dead unmarked animal
00	.5	.5	1 Partly Cloudy	1 Quarter	2 Re-tag	2 Natural amputation	9 Multiple amputation
02	9	6	2 Cloudy	2 Half	NEW (Asses.)	3 Escaped	FIRST DIGIT - EAR CLIP
04	23	14	3 Drizzle	3 3-Quarter	5 New animal	TORPID - DEAD	0 = No Clip
06	40	25	4 Rain	4 Full	RE-CAPTURS	1 Torpid	1 = Right ear Animals
08	60	38	5 Snow		Blank	2 Dead	2 = Left ear straight
10	84	52	6 Fog		TIME	GRID STAKE NUMBER	3 = Both ears cut
12	104	65			Hr. from sunset	9999 - Unusual location	

FIELD DATA SHEET

RV FORM 08

PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION 1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown	Time	Air Temp. °C	Rel Hum	Beauf. No. Wind	Cloud Cover	Moon
	DAY	MONTH	YEAR									
II	DD	MM	YY	I			II	IIID	II	II	I	I
2-3	5-6	7-8	9-10	12			51-52	54-57	59-60	62-63	65	66
1	2	12	08	4/5			2356	10	70-80	0	6	0

SPECIES CODE	ALPHA CODE		NEW	ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gr.)	BRIEF NOTES
	GENUS	SPECIES										
II	AAA	AAA	I	IIII	I	I	I	I	I	IIII	IIID	AAAAAAAAA
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	72-80
	Dip	hee	5			2	4	2		1	70	
	Per	man	R							2		
	Per	man	S			1	1	2		5	17	previously wanted on 2 tanks
	Dip	hee	R							9		
	Per	man	S			2	4	2		11	12	
	Per	man	R							13		
	Per	man	S			1	2	2		16	17	
	Dip	hee	R							17		
	Per	man	S			2	4	2		18	15	
	Dip	hee	S			1	2	2		19	82	
	Dip	hee	S			2	4	2		20	39	

WIND			CLOUD COVER		MOON		NEW (Basic)		NUMBER CONFUSED		ANIMAL NUMBER	
Beauf. No.	km.	mi.	0	Clear	0	None	1	New animal	1	Tag lost	8	Dead unmarked animal
00	.5	.5	1	Partly Cloudy	1	Quarter	2	Re-tag	2	Natural amputation	9	Multiple amputation
02	9	6	2	Cloudy	2	Half	NEW (Asses.)	3	Escaped	FIRST DIGIT - EAR CLIP		
04	23	14	3	Drizzle	3	3-Quarter	5	New animal	TORPID - DEAD		0 = No Clip	
06	40	25	4	Rain	4	Full	RE-CAPTURS	1	Torpid	1 = Right ear Animals		
08	60	38	5	Snow			Blank	2	Dead	2 = Left ear straight		
10	84	52	6	Fog			TIME	GRID STAKE NUMBER		3 = Both ears cut		
12	104	65					Hr. from sunset	9999 - Unusual location				

RV FORM 68

PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION 1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown	Time	Air Temp.	Rel Hum	Beauf. No.	Cloud Cover	Moon				
	DAY	MONTH	YEAR													
II	DD	MM	YY	I			II	IIID	II	II	I	I				
2-3	5-6	7-8	9-10	12			51-52	54-57	59-60	62-63	65	66				
1	3	12	68	9/5			2311	10	60-70	6-2	6	0				

SPECIES CODE	ALPHA CODE		NEW	ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND.	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gr.)	BRIEF NOTES	
	GENUS	SPECIES											
II	AAA	AAA	I	IIII	I	I	I	I	I	IIII	IIID	AAAAAAAA	
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	72-80	
	Per	man	5			2	4	2		2	21		1
	Per	man	R							3			2
	Per	man	5			1	1	2		5	18		3
	Dip	hee	5			2	4	2		8	67		4
	Per	man	5			1	2	2		13	21		5
	Dip	hee	5			1	3	2		17	78		6
	Per	man	5			2	4	2		18	23		7
	Dip	hee	R							19			8
	Pip	ha	R							20			9
													10
													11
													12
													13
													14
													15
													16
													17
													18
													19
													20
													21
													22
													23
													24
													25

END 23:32

WIND			CLOUD COVER		MOON		NEW (Basic)		NUMBER CONFUSED		ANIMAL NUMBER	
Beauf. No.	km.	mi.	0 Clear	1 Partly Cloudy	0 None	1 Quarter	1 New animal	2 Re-tag	1 Tag lost	2 Natural amputation	8 Dead unmarked animal	9 Multiple amputation
00	.5	.5	2 Cloudy	3 Drizzle	2 Half	3 3-Quarter	NEW (Asses.)	3 Escaped	TORPID - DEAD	FIRST DIGIT - EAR CLIP	0 = No Clip	1 = Right ear Animals
02	9	.6	4 Rain	5 Snow	4 Full	RE-CAPTURS	Blank	2 Dead	GRID STAKE NUMBER	2 = Left ear straight	3 = Both ears cut	
04	23	14	6 Fog			TIME	Hr. from sunset	9999 - Unusual location				

FIELD DATA SHEET																
PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION					Time	Air Temp.	Rel Hum	Beowind No.	Cloud Cover	Moon
	DAY	MONTH	YEAR			1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown	MALE	FEMALE								
II	DD	MM	YY	I												
2-3	5-6	7-8	9-10	12	AGE 1 Young Yr. 2 Adult 9 Unknown											
1	4	12	08	W/A R/W												
SPECIES CODE	ALPHA CODE		NEW	ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gr.)	BRIEF NOTES				
GENUS	SPECIES															
II	AAA	AAA	I	IIIII	I	I	I	I	I	IIII	IIID	AAAAAAAAA				
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	72-80				
Dip	hee	R								1						
Per	man	R								2						
Per	man	R								3						
Per	man	R								6						
Dip	hee	R								8						
Per	man	R								13						
Dip	hee	S				1	3	2		15	84					
Dip	hee	R								16						
Dip	hee	R								17						
Per	man	R								18						
Dip	hee	R								19						
Dip	hee	R								20						

WIND			CLOUD COVER	MOON	NEW (Basic)	NUMBER CONFUSED	ANIMAL NUMBER
Beauf. No.	km.	mi.	0 Clear	0 None	1 New animal	1 Tag lost	8 Dead unmarked animal
00	.5	.5	1 Partly Cloudy	1 Quarter	2 Re-tag	2 Natural amputation	9 Multiple amputation
02	9	6	2 Cloudy	2 Half	NEW (Asses.)	3 Escaped	FIRST DIGIT - EAR CLIP
04	23	14	3 Drizzle	3 3-Quarter	5 New animal	TORPID - DEAD	0 = No Clip
06	40	25	4 Rain	4 Full	RE-CAPTURS	1 Torpid	1 = Right ear Animals
08	60	38	5 Snow		Blank	2 Dead	2 = Left ear straight
10	84	52	6 Fog		TIME	GRID STAKE NUMBER	3 = Both ears cut
12	104	65			Hr. from sunset	9999 = Unusual location	

RV FORM 08

PLOT	DATE			OBS	SEX			SEXUAL CONDITION			Time	Air Temp.	Rel Hum	Beauf. No.	Cloud Cover	Moon		
	DAY	MONTH	YEAR		1 Male	2 Female	9 Unknown	1 Testes Abdominal	2 Testes scrotal Up	3 Testes scrotal Dwn.								
II	DD	MM	YY	I							II	IIID	II	II	I	I		
	5-6	7-8	9-10	12	AGE						51-52	54-57	59-60	62-63	65	66		
2	1	12	08	04	1 Young Yr. 2 Adult 9 Unknown						2410	02	90	0	6			

SPECIES CODE	ALPHA CODE		NEW	ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND.	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gr.)	BRIEF NOTES
	GENUS	SPECIES										
II	AAA	AAA	I	IIII	I	I	I	I	I	IIII	IIID	AAAAAAAAA
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	72-80
	Dip	her	5			1	2	2		2	82	close all
	Per	man	5			2	4	2		3	15	↓
	Dip	her	5			2	4	2		4	79	
	Per	man	5			2	4	2		6	16	
	Dip	her	5			2	5	2		10	76	
	Dip	her	5			2	4	2		12	58	
	Dip	her	5			2	4	2		13	59	
	Per	man	5			1	1	1		19	14	
	Dip	her	5			2	4	2		35	38	
	Per	man	5			2	4	2		47	19	
	Dip	her	5			2	3	2		51	84	
	Dip	her	5			1	3	2		55	80	
	Dip	her	5			1	2	2		58	80	
	Dip	her	5			2	4	2		59	62	
	Dip	her	5			1	3	2		61	80	most ♂ in between
	Dip	her	5			1	2	2		66	80	post descent but
	Dip	her	5			1	3	2		78	72	pl plating
	Dip	her	5			2	4	2		84	54	
	Dip	her	5			1	2	2		86	84	
	Dip	her	5			2	4	2		87	74	
	Per	man	5			1	1	2		89	18	
	Per	man	5							90		to escape!
	Dip	her	5			2	4	2		91	73	
	Dip	her	5			2	4	2		95	59	♀ look early preg but no signs
end 296 1:46												

WIND			CLOUD COVER	MOON	NEW (Basic)	NUMBER CONFUSED	ANIMAL NUMBER
Beauf. No.	km.	mi.	0 Clear	0 None	1 New animal	1 Tag lost	8 Dead unmarked animal
00	.5	.5	1 Partly Cloudy	1 Quarter	2 Re-tag	2 Natural amputation	9 Multiple amputation
	9	6	2 Cloudy	2 Half	NEW (Asses.)	3 Escaped	FIRST DIGIT - EAR CLIP
04	23	14	3 Drizzle	3 3-Quarter	5 New animal	TORPID - DEAD	0 = No Clip
06	40	25	4 Rain	4 Full	RE-CAPTURS	1 Torpid	1 = Right ear Animals
08	60	38	5 Snow		Blank	2 Dead	2 = Left ear straight
10	84	52	6 Fog		TIME	GRID STAKE NUMBER	3 = Both ears cut
12	104	65			Hr. from sunset	9999 - Unusual location	

FIELD DATA SHEET

RV FORM 08

PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION 1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown	Time	Air Temp.	Rel Hum	Baro Wind No. & Dir.	Cloud Cover	Moon
	DAY	MONTH	YEAR									
II	DD	MM	YY	I			II	IIID	II	II	I	I
2-3	5-6	7-8	9-10	12	AGE 1 Young Yr. 2 Adult 9 Unknown		51-52	54-57	59-60	62-63	65	66
2	2	12	08	W/A			2100	10	200	0	0	0

SPECIES CODE	ALPHA CODE		NEW	ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND.	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gr.)	BRIEF NOTES
	GENUS	SPECIES										
II	AAA	AAA	I	IIII	I	I	I	I	I	IIII	IIID	AAAAAAAAA
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	72-80
	Per	man	R							3		1
	Dip	hec	R							4		2
	Per	man	S			1	1	2		7	16	3
	Dip	hec	S			2	4	2		9	63	4
	Dip	hec	S			1	2	2		10	88	5
	Per	man	S			1	1	2		11	16	6
	Dip	hec	R							13		7
	Dip	hec	S			1	3	2		15	64	8
	Per	man	S			1	2	2		17	18	9
	Per	man	S			1	3	2		18	17	10
	Per	man	R							21		11
	Per	man	S			1	1	2		23	19	12
	Per	man	S			1	1	2		27	16	13
	Per	man	S			1	2	2		31	20	14
	Dip	hec	R							35		15
	Dip	hec	S			2	4	2		38	38	16
	Per	hec	S			2	4	1		49	12	17
	Per	hec	R							50		18
	Dip	hec	S			1	2	2		51	98	19
	Dip	hec	S			2	6	2		52	68 58	20
	Per	man	S			2	4	2		53	31	21
	Dip	hec	S			1	3	2		54	70	22
	Per	man	S			1	2	2		55	17	23
	Dip	hec	R							57		24
	Dip	hec	R							59		25

WIND			CLOUD COVER		MOON		NEW (Basic)		NUMBER CONFUSED		ANIMAL NUMBER	
Beauf. No.	km.	mi.	0	Clear	0	None	1	New animal	1	Tag lost	8	Dead unmarked animal
00	.5	.5	1	Partly Cloudy	1	Quarter	2	Re-tag	2	Natural amputation	9	Multiple amputation
02	9	6	2	Cloudy	2	Half	NEW (Asses.)	3	Escaped	FIRST DIGIT - EAR CLIP		
04	23	14	3	Drizzle	3	3-Quarter	5	New animal	TORPID - DEAD		0 = No Clip	
06	40	25	4	Rain	4	Full	RE-CAPTURS	1	Torpid	1 = Right ear Animals		
08	60	38	5	Snow			Blank	2	Dead	2 = Left ear straight		
10	84	52	6	Fog			TIME	GRID STAKE NUMBER		3 = Both ears cut		
12	104	65					Hr. from sunset	9999 - Unusual location				

FIELD DATA SHEET

PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION					Time	Air Temp. °C	Rel Hum	Wind Beauf. No.	Cloud Cover	Moon		
	DAY	MONTH	YEAR			1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Down 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown	MALE	FEMALE										
II	DD	MM	YY	I							II	IIID	II	II	I	I		
2-3	5-6	7-8	9-10	12	AGE 1 Young Yr. 2 Adult 9 Unknown						51-52	54-57	59-60	62-63	65	66		
2	3	12	08	cy/sa							2334	16	60-70	0	6	0		
SPECIES CODE	ALPHA CODE			ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND.	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gr.)	BRIEF NOTES						
	GENUS	SPECIES	NEW															
II	AAA	AAA	I	IIII	I	I	I	I	I	IIII	IIID	AAAAAAAA						
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	72-80						
	Dip	hee	S			2	7	2		1	79							
	Per	man	R							3								
	Per	man	R							7								
	Dip	hee	S			1	3	2		9	94	seed						
	Dip	hee	S			1	3	2		15	72							
	Per	man	R							18								
	Per	man	R							19								
	Dip	hee	R			2	3	2		20	73	tail dem. left 1st night						
	Per	man	R							27								
	Dip	hee	S			2	3	2		28	90							
	Per	man	S			2	4	2		31	14							
	Dip	hee	S			2	7	2		32	72							
	Dip	hee	R							35								
	Dip	hee	B			2	4	2		49	72							
	Per	man	R							50								
	Per	man	S			1	2	2		51	20							
	Dip	hee	R							52								
	Dip	hee	R			1	3	2		56								
	Dip	hee	R							59								
	Dip	hee	R							60								
	Dip	hee	R							63								
	Dip	hee	S			2	4	2		68	68	44						
	Dip	hee	S			1	3	2		73	82							
	Dip	hee	S			1	3	2		74	78							
	Dip	hee	R							78								

WIND			CLOUD COVER		MOON		NEW (Basic)		NUMBER CONFUSED		ANIMAL NUMBER	
Beauf. No.	km.	mi.	0	Clear	0	None	1	New animal	1	Tag lost	8	Dead unmarked animal
00	.5	.5	1	Partly Cloudy	1	Quarter	2	Re-tag	2	Natural amputation	9	Multiple amputation
02	9	6	2	Cloudy	2	Half	NEW (Asses.)		3	Escaped	FIRST DIGIT - EAR CLIP	
04	23	14	3	Drizzle	3	3-Quarter	5	New animal	TORPID - DEAD		0 = No Clip	
06	40	25	4	Rain	4	Full	RE-CAPTURS		1	Torpid	1	Right ear
08	60	38	5	Snow			Blank		2	Dead	2	Left ear
10	84	52	6	Fog			TIME		GRID STAKE NUMBER		3	Both ears
12	104	65					Hr. from sunset		9999 - Unusual location		cut	

FIELD DATA SHEET

PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION					Time	Air Temp.	Rel Hum	Beauf. Wind No.	Cloud Cover	Moon
	DAY	MONTH	YEAR			1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown	MALE	FEMALE								
II	DD	MM	YY	I							II	IIID	II	II	I	I
2-3	5-6	7-8	9-10	12							51-52	54-57	59-60	62-63	65	66
2	3	12	08	1/2A							2431	10	60-70	02	6	0

SPECIES CODE	ALPHA CODE		NEW	ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND.	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gr.)	BRIEF NOTES
	GENUS	SPECIES										
II	AAA	AAA	I	IIIII	I	I	I	I	I	IIII	IIID	AAAAAAAAA
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	72-80
	Per	man	R							83		
	Per	man	S			1	2	2		84	14	
	Dip	hee	R							86		
	Dip	hee	S			2	4	2		87	68	
	Dip	hee	S			2	4	2		88	63	
	Dip	hee	R							89		
	Per	man								92		escaper
	Dip	hee	R							93		
	Dip	hee	R							94		
	Dip	hee	R							96		
	Dip	hee	S			1	3	2		98	96	
										end 24:47		

WIND			CLOUD COVER		MOON		NEW (Basic)		NUMBER CONFUSED		ANIMAL NUMBER	
Beauf. No.	km.	mi.	0	Clear	0	None	1	New animal	1	Tag lost	8	Dead unmarked animal
00	.5	.5	1	Partly Cloudy	1	Quarter	2	Re-tag	2	Natural amputation	9	Multiple amputation
02	9	6	2	Cloudy	2	Half		NEW (Asses.)	3	Escaped		FIRST DIGIT - EAR CLIP
04	23	14	3	Drizzle	3	3-Quarter	5	New animal		TORPID - DEAD	0	No Clip
06	40	25	4	Rain	4	Full		RE-CAPTURS	1	Torpid	1	= Right ear
08	60	38	5	Snow				Blank	2	Dead	2	= Left ear
10	84	52	6	Fog				TIME		GRID STAKE NUMBER	3	= Both ears
12	104	65						Hr. from sunset		9999 - Unusual location		Animals straight cut

FIELD DATA SHEET

PLOT

DATE

OBS

SEX

1 Male

2 Female

9 Unknown

SEXUAL CONDITION

1 Testes Abdominal

2 Testes scrotal Up

3 Testes scrotal Dwn.

4 Vulva inactive, closed

5 Vulva turgid, enlarged

6 Cop. plug

7 Pregnant

8 Lactating

9 Condition unknown

AGE

1 Young Yr.

2 Adult

9 Unknown

Time

II

51-52

2340

Air Temp.

IIID

54-57

8

Rel Hum

II

59-60

90-100

Beauf. No.

II

62-63

0

Cloud Cover

I

65

0

Moon

I

66

0

II

DD

MM

YY

12

2-3

5-6

7-8

9-10

12

2

4

12

08

WYSA

SPECIES CODE

II

ALPHA CODE

AAA

GENUS

AAA

SPECIES

AAA

NEW

I

ANIMAL NUMBER

IIII

NO. CONFUSED

I

SEX

I

SEXUAL COND.

I

AGE

I

TORPID-DEAD

I

GRID STAKE NUMBER

IIII

BODY WT. (gr.)

IIID

BRIEF NOTES

AAAAAAAAA

II

AAA

AAA

I

IIII

I

I

I

I

IIII

IIID

AAAAAAAAA

14-15

17-19

20-22

24

26-30

32

34

36

38

40

41-44

46-49

72-80

Per

Man

S

3

18

Dip

hee

S

5

76

Per

Man

R

6

Per

Man

R

7

Dip

hee

R

9

Per

Man

R

11

Dip

hee

R

14

Per

Man

R

19

Dip

hee

R

20

Per

Man

R

22

84

Dip

hee

S

26

Dip

hee

R

27

19

Per

Man

S

29

Per

Man

R

31

Per

Man

R

32

20

Dip

hee

R

34

Dip

hee

R

36

Dip

hee

R

37

Dip

hee

S

38

68

Per

Man

R

49

Per

Man

R

50

Dip

hee

R

52

Dip

hee

R

53

Dip

hee

R

54

Per

Man

R

55

WIND

Beauf. No.

km.

mi.

CLOUD COVER

MOON

NEW (Basic)

NUMBER CONFUSED

ANIMAL NUMBER

00

.5

.5

0 Clear

0 None

1 New animal

1 Tag lost

8 Dead unmarked animal

02

9

6

1 Partly Cloudy

1 Quarter

2 Re-tag

2 Natural amputation

9 Multiple amputation

04

23

14

2 Cloudy

2 Half

NEW (Asses.)

3 Escaped

FIRST DIGIT - EAR CLIP

06

40

25

3 Drizzle

3 3-Quarter

5 New animal

TORPID - DEAD

0 = No Clip

08

60

38

4 Rain

4 Full

RE-CAPTURS

1 Torpid

1 = Right ear

10

84

52

5 Snow

Blank

2 Dead

2 = Left ear

12

104

65

6 Fog

TIME

GRID STAKE NUMBER

3 = Both ears

Hr. from sunset

9999 = Unusual location

Animals straight cut

FIELD DATA SHEET																
PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION 1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown	Time	Air Temp.	Rel Hum	Bar. Wind No.	Cloud Cover	Moon				
	DAY	MONTH	YEAR													
II	DD	MM	YY	I			II	IIID	II	II	I	I				
2-3	5-6	7-8	9-10	12	AGE 1 Young Yr. 2 Adult 9 Unknown		51-52	54-57	59-60	62-63	65	66				
2	4	12	08	6/5/88			2425	8	40-50	0	0	0				
SPECIES CODE	ALPHA CODE			NEW	ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND.	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gr.)	BRIEF NOTES			
	GENUS	SPECIES														
II	AAA	AAA	I	IIII	I	I	I	I	I		IIII	IIID	AAAAAAAAA			
14-15	17-19	20-22	24	26-30	32	34	36	38	40		41-44	46-49	72-80			
	Dip	hee	R								59			1		
	Dip	hee	R								60			2		
	Dip	hee	R								61			3		
	Dip	hee	R								68			4		
	Dip	hee	R								70	59		5		
	Dip	hee	S			2	4	2			73			6		
	Dip	hee	R								75	11		7		
	Per	man	S			1	1	1			79			8		
	Dip	hee	R								81	14		9		
	Per	man	S			2	4	2			84			10		
	Per	man	R								85			11		
	Dip	hee	R								92			12		
	Per	man	R								93			13		
	Dip	hee	R								94	61		14		
	Dip	hee	S			1	2	2			97			15		
	Per	man	R								98			16		
	Dip	hee	R											17		
														18		
														19		
														20		
														21		
														22		
														23		
														24		
														25		
														26		
														27		
														28		
														29		
														30		

WIND			CLOUD COVER		MOON		NEW (Basic)		NUMBER CONFUSED		ANIMAL NUMBER			
Beauf. No.	km.	mi.	0 Clear	1 Partly Cloudy	2 Cloudy	3 Drizzle	4 Rain	5 Snow	6 Fog	0 None	1 Quarter	2 Half	3 3-Quarter	4 Full

FIELD DATA SHEET

PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION					Time	Air Temp. °C	Rel Hum	Beauf. No.	Cloud	Cover	Moon
	DAY	MONTH	YEAR			1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown	MALE	FEMALE									
II	DD	MM	YY	1													
2-3	5-6	7-8	9-10	12													
3	4	12	08	12													
SPECIES CODE	ALPHA CODE			ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND.	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (g.)	BRIEF NOTES					
	GENUS	SPECIES	NEW														
II	AAA	AAA	I	IIII	I	I	I	I	I	III	III	AAAAAAAAA					
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	72-80					
	Dip	hee	R							4							
	Dip	hee	R							2							
	Dip	hee	S			2	4	2		3	59						
	Dip	hee	S			2	4	2		7	49						
	Dip	hee	S			2	6	2		9	61						
	Dip	hee	S			2	4	2		10	70						
	Dip	hee	R							16							
	Dip	hee	R							18							
	Dip	hee	R							21							
	Dip	hee	R							24							
	Dip	hee	R							27							
	Dip	hee	R							28							
	Dip	hee	R							30							
	Dip	hee	R							31							
	Dip	hee	R							36							
	Dip	hee	R							37							
	Dip	hee	R							38							
	Dip	hee	R							39							
	Dip	hee	R							40							
	Per	man	R							41	72						
	Dip	hee	S			1	3	2		44							
	Dip	hee	R							45							
	Dip	hee	R							47							
	Dip	hee	R							48							
	Per	man	R							50							
	Dip	hee	R														

WIND			CLOUD COVER		MOON		NEW (Basic)		NUMBER CONFUSED		ANIMAL NUMBER	
Beauf. No.	km.	mi.	0 Clear	1 Partly Cloudy	0 None	1 Quarter	1 New animal	1 Tag lost	8 Dead unmarked animal			
00	.5	.5	2 Cloudy	3 Drizzle	2 Half	2 Re-tag	2 Natural amputation	9 Multiple amputation				
02	9	6	4 Rain	4 Full	3 3-Quarter	3 Escaped						
04	23	14	5 Snow			5 New animal						
06	40	25	6 Fog									
08	60	38										
10	84	52										
12	104	65										

RE-CAPTURS		TORPID - DEAD		GRID STAKE NUMBER	
Blank	TIME	1 Torpid	2 Dead	9999 = Unusual location	
	Hr. from sunset				

FIRST DIGIT - EAR CLIP	
0 = No Clip	1 = Right ear
2 = Left ear	3 = Both ears
	Animals straight cut

FIELD DATA SHEET

RV FORM 08

PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION		Time	Air Temp.	Rel Hum	Beauf. No.	Cloud Cover	Moon
	DAY	MONTH	YEAR			1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown	MALE FEMALE						
II	DD	MM	YY	I				II	IID	II	II	I	I
2-3	5-6	7-8	9-10	12	AGE 1 Young Yr. 2 Adult 9 Unknown			51-52	54-57	59-60	62-63	65	66
3	1	12	08	2/6				155	11	90	0	6	0

SPECIES CODE	ALPHA CODE		NEW	ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND.	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gr.)	BRIEF NOTES
	GENUS	SPECIES										
II	AAA	AAA	I	IIII	I	I	I	I	I	III	IID	AAAAAAAAA
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	72-80
	Dip	her	5			1	2	2		1	86	
	Dip	her	5			1	2	2		3	82	
	Dip	her	5			1	2	2		5	86	
	Dip	her	5			1	3	2		7	76	
	Per	man	5			1	1	2		9	21	
	Dip	her	5			1	3	2		13	81	
	Dip	her	5			2	4	2		15	70	
	Dip	her	5			2	4	2		17	64	
	Dip	her	5			2	4	2		18	63	
	Dip	her	5			2	4	2		19	69	
	Dip	her	5			1	3	2		20	70	
	Dip	her	5			1	3	2		21	87	
	Dip	her	5			2	4	2		23	60	
	Dip	her	5			1	2	2		25	73	
	Dip	her	5			1	2	2		28	88	
	Per	man	5			2	4	2		29	18	
	Dip	her	5			2	4	2		32	49	
	Dip	her	5			2	4	2		33	73	
	Dip	her	5			1	3	2		35	75	
	Dip	her	5			2	6	2		36	52	
	Dip	her	5			1	3	2		37	94	
	Dip	her	5			1	3	2		38	73	Wet nose
	Dip	her	5			2	4	2		39	68	
	Dip	her	5			2	4	2		40	72	
	Per	man	5			2	4	2		41	22	

WIND			CLOUD COVER	MOON	NEW (Basic)	NUMBER CONFUSED	ANIMAL NUMBER	
Beauf. No.	km.	mi.	0 Clear	0 None	1 New animal	1 Tag lost	8 Dead unmarked animal	
00	.5	.5	1 Partly Cloudy	1 Quarter	2 Re-tag	2 Natural amputation	9 Multiple amputation	
02	9	6	2 Cloudy	2 Half	NEW (Asses.)	3 Escaped	FIRST DIGIT - EAR CLIP	
04	23	14	3 Drizzle	3 3-Quarter	5 New animal	TORPID - DEAD	0 = No Clip	
06	40	25	4 Rain	4 Full	RE-CAPTURS	1 Torpid	1 = Right ear	Animals
08	60	38	5 Snow		Blank	2 Dead	2 = Left ear	straight
10	84	52	6 Fog		TIME	GRID STAKE NUMBER	3 = Both ears	cut
12	104	65			Hr. from sunset	9999 - Unusual location		

FIELD DATA SHEET

RV FORM 08

PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION		Time	Air Temp.	Rel Hum	Baro. Wind No. & Dir.	Cloud Cover	Moon
	DAY	MONTH	YEAR			1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown	MALE FEMALE						
II	DD	MM	YY	I				II	IIID	II	II	I	I
2-3	5-6	7-8	9-10	12				51-52	54-57	59-60	62-63	65	66
3	1	12	08	cu/sx									
SPECIES CODE	ALPHA CODE		NEW	ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND.	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gr.)	BRIEF NOTES	
	GENUS	SPECIES											
II	AAA	AAA	I	IIII	I	I	I	I	I	IIII	IIID	AAAAAAAAA	
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	72-80	
	Dip	her	5			1	2	2		43	80		
	Per	man	5			1	2	2		44	20		
	Dip	her	5			1	2	2		46	72	damaged tail	
	Dip	her	5			1	2	2		50		no weight	
	Dip	her	5			2	4	2		51	68		
	Dip	her	5			2	4	2		52	65		
	Dip	her	5			1	2	2		53	60		
	Dip	her	5			2	4	2		54	78		
	Dip	her	5			2	4	2		56	68		
	Dip	her	5			1	3	2		57	85		
	Dip	her	5			2	5	2		59	58	slight tail damage	
	Dip	her	5			2	4	2		61	78		
	Dip	her	5			2	4	2		63	76		
	Dip	her	5			2	6	2		65	70		
	Dip	her	5			2	4	2		69	60		
	Dip	her	5			1	2	2		71	68		
	Dip	her	5			1	2	2		73	70		
	Dip	her	5			2	4	2		75	42		
										en 2 76 3:43			

WIND	CLOUD COVER	MOON	NEW (Basic)	NUMBER CONFUSED	ANIMAL NUMBER
Beauf. No.	0 Clear	0 None	1 New animal	1 Tag lost	8 Dead unmarked animal
00 .5	1 Partly Cloudy	1 Quarter	2 Re-tag	2 Natural amputation	9 Multiple amputation
02 9	2 Cloudy	2 Half	NEW (Asses.)	3 Escaped	FIRST DIGIT - EAR CLIP
04 23	3 Drizzle	3 3-Quarter	5 New animal	TORPID - DEAD	0 = No Clip
06 40	4 Rain	4 Full	RE-CAPTURS	1 Torpid	1 = Right ear Animals
08 60	5 Snow		Blank	2 Dead	2 = Left ear straight
10 84	6 Fog		TIME	GRID STAKE NUMBER	3 = Both ears cut
12 104			Hr. from sunset	9999 - Unusual location	

FIELD DATA SHEET

RV FORM 08

PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION 1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown	Time	Air Temp.	Rel Hum	Bees Wind No.	Cloud Cover	Moon
	DAY	MONTH	YEAR									
II	DD	MM	YY	I			II	IID	II	II	I	I
2-3	5-6	7-8	9-10	12			51-52	54-57	59-60	62-63	65	66
3	2	12	08	12			210	10	70	0	6	0

SPECIES CODE	ALPHA CODE		NEW	ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gr.)	BRIEF NOTES
	GENUS	SPECIES										
II	AAA	AAA	I	IIII	I	I	I	I	I	IIII	IIID	AAAAAAAAA
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	72-80
	Dip	hec	5			1	3	2		1	85	
	Dip	hec	5			1	2	2		2	81	
	Per	mun	5			1	2	2		3	18	
	Dip	hec	5			1	3	2		6	90	own tail damage
	Dip	hec	5			2	6	2		7	80	
	Per	mun	5			2	4	2		9	20	
	Dip	hec	5			1	2	2		12	81	
	Dip	hec	5			2	4	2		13	60	bloody nose
	Dip	hec	5			1	2	2		22	80	
	Dip	hec	R							23		
	Dip	hec	R							24		
	Dip	hec	R							26		tail damage
	Dip	hec	5			1	3	2		30	82	
	Dip	hec	R							31		
	Dip	hec	5			2	4	2		32	74	
	Dip	hec	5			1	2	2		35	88	
	Dip	hec	R							36		
	Dip	hec	5			1	2	2		37	84	
	Dip	hec	5			2	4	2		38	80	
	Dip	hec	5			1	2	2		39	58	
	Dip	hec	5			2	4	2		40	58	
	Dip	hec	5			1	2	2		43	84	
	Per	mun	5			1	2	2		44	18	
	Dip	hec	5			1	2	2		45	62	
	Per	mun	5			2	4	1		48	16	

WIND			CLOUD COVER		MOON		NEW (Basic)		NUMBER CONFUSED		ANIMAL NUMBER	
Beauf. No.	km.	mi.	0	1	0	1	1	2	1	2	8	9
00	.5	.5	0	1	0	1	1	2	1	2	8	9
02	9	6	1	2	1	2	NEW (Asses.)	3	Escaped	FIRST DIGIT - EAR CLIP		
04	23	14	3	3	3	3-Quarter	5	New animal	TORPID - DEAD		0 = No Clip	
06	40	25	4	4	4	Full	RE-CAPTURS	1	Torpid	1 = Right ear		Animals
08	60	38	5	5	5		Blank	2	Dead	2 = Left ear		straight
10	84	52	6	6	6		TIME	GRID STAKE NUMBER		3 = Both ears		cut
12	104	65					Hr. from sunset	9999 - Unusual location				

FIELD DATA SHEET

RV FORM 08

PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION 1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown	Time	Air Temp.	Rel Hum	Wind Beauf. No.	Cloud Cover	Moon
	DAY	MONTH	YEAR									
II	DD	MM	YY	I			II	IID	II	II	I	I
2-3	5-6	7-8	9-10	12	AGE 1 Young Yr. 2 Adult 9 Unknown		51-52	54-57	59-60	62-63	65	66
3	2	12	08	12			304					

SPECIES CODE	ALPHA CODE		NEW	ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gr.)	BRIEF NOTES
	GENUS	SPECIES										
II	AAA	AAA	I	IIII	I	I	I	I	I	III	IID	AAAAAAAAA
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	72-80
	Per	man	S			1	2	1		52	12	
	Dip	hec	S			2	4	2		53	70	tail damage
	Dip	hec	R							54		
	Dip	hec	S			1	2	2		55	74	
	Dip	hec	S			1	3	2		56	94	
	Dip	hec	R							57		
	Dip	hec	R							59		tail damage
	Dip	hec	S			1	3	2		61	88	
	Dip	hec	S			1	3	2		63	82	
	Dip	hec	S			1	2	2		64	62	
	Dip	hec	R							65		
	Dip	hec	R							67		tail damage
	Dip	hec	S			2	4	2		68	68	tail damage
	Dip	hec	S			1	2	2		71	75	
	Dip	hec	S			2	3	2		73	80	
	Dip	hec	S			2	5	2		75	58	
	Dip	hec	R							76		tail damage
										end 329		

WIND			CLOUD COVER	MOON	NEW (Basic)	NUMBER CONFUSED	ANIMAL NUMBER
Beauf. No.	km.	mi.	0 Clear	0 None	1 New animal	1 Tag lost	8 Dead unmarked animal
00	.5	.5	1 Partly Cloudy	1 Quarter	2 Re-tag	2 Natural amputation	9 Multiple amputation
02	9	.6	2 Cloudy	2 Half	NEW (Asses.)	3 Escaped	FIRST DIGIT - EAR CLIP
04	23	14	3 Drizzle	3 3-Quarter	5 New animal	TORPID - DEAD	0 = No Clip
06	40	25	4 Rain	4 Full	RE-CAPTURS	1 Torpid	1 = Right ear Animals
08	60	38	5 Snow		Blank	2 Dead	2 = Left ear straight
10	84	52	6 Fog		TIME	GRID STAKE NUMBER	3 = Both ears cut
12	104	65			Hr. from sunset	9999 - Unusual location	

FIELD DATA SHEET

PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION					Time	Air Temp. °C	Rel Hum	Beauf. Wind No.	Cloud Cover	Moon
	DAY	MONTH	YEAR			1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown	MALE	FEMALE								
II	DD	MM	YY	1												
2-3	5-6	7-8	9-10	12	AGE 1 Young Yr. 2 Adult 9 Unknown						51-52	54-57	59-60	62-63	65	66
3	3	12	08	W/S							1:25	10	60-70	0	6	0
SPECIES CODE	ALPHA CODE		NEW	ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND.	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gr.)	BRIEF NOTES				
	GENUS	SPECIES														
II	AAA	AAA	I	IIII	I	I	I	I	I	IIII	IIID	AAAAAAAAA 72-80				
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49					
	Per	man	R							2		1				
	Dip	hee	R							3		2				
	Dip	hee	R							6		3				
	Dip	hee	R							9		4				
	Per	man	R							15	74	5				
	Dip	hee	S			2	6	2		16	63	6				
	Dip	hee	S			2	4	2		18	73	7				
	Dip	hee	S			1	2	2		20	68	8				
	Dip	hee	S			1	3	2		22		9				
	Dip	hee	R							23		10				
	Dip	hee	R							24		11				
	Dip	hee	R							26	70	12				
	Dip	hee	S			2	4	2		28		13				
	Dip	hee	R							30		14				
	Dip	hee	R							31		15				
	Dip	hee	R							32		16				
	Dip	hee	R							36		17				
	Dip	hee	R							38		18				
	Dip	hee	R							40		19				
	Dip	hee	R							45	72	20				
	Dip	hee	S			2	4	2		47	80	21				
	Dip	hee	S			1	2	2		48		22				
	Per	man	R							50	58	23				
	Dip	hee	S			2	4	2		55		24				
	Dip	hee	R							56		25				
	Dip	hee	R									26				

WIND			CLOUD COVER		MOON		NEW (Basic)		NUMBER CONFUSED		ANIMAL NUMBER	
Beauf. No.	km.	mi.	0 Clear	1 Partly Cloudy	0 None	1 Quarter	1 New animal	1 Tag lost	8 Dead unmarked animal			
00	.5	.5	2 Cloudy	3 Drizzle	1 Half	2 3-Quarter	2 Re-tag	2 Natural amputation	9 Multiple amputation			
02	9	6	4 Rain	5 Snow	3 Full	4 Full	NEW (Asses.)	3 Escaped	FIRST DIGIT - EAR CLIP			
04	23	14	6 Fog				5 New animal	TORPID - DEAD	0 = No Clip			
06	40	25					RE-CAPTURS	1 Torpid	1 = Right ear	Animals		
08	60	38					Blank	2 Dead	2 = Left ear	straight		
10	84	52					TIME	GRID STAKE NUMBER	3 = Both ears	cut		
12	104	65					Hr. from sunset	9999 - Unusual location				

FIELD DATA SHEET																	
PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION					Time	Air Temp.	Rel Hum	Beauf. No.	Cloud Cover	Moon	
	DAY	MONTH	YEAR			1 Testes Abdominal	2 Testes scrotal Up	3 Testes scrotal Dwn.	4 Vulva inactive, closed	5 Vulva turgid, enlarged							6 Cop. plug
II	DD	MM	YY	1							II	IIID	II	II	I	I	
2-3	5-6	7-8	9-10	12							51-52	54-57	59-60	62-63	65	66	
3	3	12	08	12							202	100	60-70	0	6	0	
SPECIES CODE	ALPHA CODE		NEW	ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND.	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gr.)	BRIEF NOTES					
	GENUS	SPECIES															
II	AAA	AAA	I	IIII	I	I	I	I	I	III	IIID	AAAAAAAA					
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	72-80					
	Dip	hee	R							57							
	Dip	hee	S			1	3	2		61	80						
	Dip	hee	R							63							
	Dip	hee	R							67							
	Dip	hee	S			2	4	2		71	60						
	Dip	hee	R							73							
	Dip	hee	R							74							
	Dip	hee	R			2	4	2		75	48						
	Dip	hee	S							77							
	Dip	hee	R														
										ENC 216							

WIND			CLOUD COVER		MOON		NEW (Basic)		NUMBER CONFUSED		ANIMAL NUMBER			
Beauf. No.	km.	mi.	0 Clear	1 Partly Cloudy	2 Cloudy	3 Drizzle	4 Rain	5 Snow	6 Fog	0 None	1 Quarter	2 Half	3 3-Quarter	4 Full
00	.5	.5	1	2	3	4	5	6	7	1	2	3	4	5
02	9	6	2	3	4	5	6	7	8	1	2	3	4	5
04	23	14	3	4	5	6	7	8	9	1	2	3	4	5
06	40	25	4	5	6	7	8	9	10	1	2	3	4	5
08	60	38	5	6	7	8	9	10	11	1	2	3	4	5
10	84	52	6	7	8	9	10	11	12	1	2	3	4	5
12	104	65												

NEW (Asses.)		RE-CAPTURS		TIME		GRID STAKE NUMBER	
1 New animal	2 Re-tag	3 Escaped	4 Torpid	5 Dead	6 Unusual location	7	8
1	2	3	4	5	6	7	8
1	2	3	4	5	6	7	8

FIELD DATA SHEET

PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION					Time	Air Temp. °C	Rel Hum	Beauf. No.	Cloud Cover	Moon
	DAY	MONTH	YEAR			1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown	MALE	FEMALE								
II	DD	MM	YY	1												
2-3	5-6	7-8	9-10	12	AGE 1 Young Yr. 2 Adult 9 Unknown						51-52	54-57	59-60	62-63	65	66
3	4	12	08	CH/A							154	6	50	0	0	0

SPECIES CODE	ALPHA CODE		NEW	ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND.	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gr.)	BRIEF NOTES
	GENUS	SPECIES										
II	AAA	AAA	I	IIII	I	I	I	I	I	III	IIID	AAAAAAAAA 72-80
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	
	Dip	hee	5			2	4	2		51	57	1
	Dip	hee	5			1	2	2		53	83	2
	Dip	hee	5			2	4	2		54	46	3
	Dip	hee	R							55		4
	Dip	hee	R							56		5
	Dip	hee	R							57		6
	Dip	hee	R							59		7
	Dip	hee	R							60		8
	Dip	hee	R							64		9
	Dip	hee	R							69		10
	Dip	hee	R							70		11
	Dip	hee	R							71		12
	Dip	hee	R							73		13
	Dip	hee	R							74		14
	Dip	hee	R							75		15
	Dip	hee	R			2	4	2		77	64	16
	Dip	hee	5			2	4	2		78	41	17
	Dip	hee	5							(end 2:12)		18

WIND

Beauf. No.	km.	mi.
00	.5	.5
02	9	6
04	23	14
06	40	25
08	60	38
10	84	52
12	104	65

CLOUD COVER

0 Clear
1 Partly Cloudy
2 Cloudy
3 Drizzle
4 Rain
5 Snow
6 Fog

MOON

0 None
1 Quarter
2 Half
3 3-Quarter
4 Full

NEW (Basic)

1 New animal
2 Re-tag

NEW (Asses.)

5 New animal

RE-CAPTURS

Blank

TIME

Hr. from sunset

NUMBER CONFUSED

1 Tag lost
2 Natural amputation
3 Escaped

TORPID - DEAD

1 Torpid
2 Dead

GRID STAKE NUMBER

9999 = Unusual location

ANIMAL NUMBER

8 Dead unmarked animal
9 Multiple amputation

FIRST DIGIT - EAR CLIP

0 = No Clip
1 = Right ear Animals
2 = Left ear straight
3 = Both ears cut

FIELD DATA SHEET

RV FORM 08

PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION					Time	Air Temp. °C	Rel Hum	Beauf. No.	Cloud Cover	Moon		
	DAY	MONTH	YEAR			1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown	MALE	FEMALE										
II	DD	MM	YY	I														
2-3	5-6	7-8	9-10	12	AGE 1 Young Yr. 2 Adult 9 Unknown						II	IIID	II	II	I	I		
4	1	12	08	6A							400		90	1-2	6	0		

SPECIES CODE	ALPHA CODE		NEW	ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND.	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gr.)	BRIEF NOTES
	GENUS	SPECIES										
II	AAA	AAA	I	IIIII	I	I	I	I	I	IIII	IIID	AAAAAAAAA
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	72-80
	Dip	her	5			2	4	2		1	60	
	Dip	her	5			2	4	2		2	65	
	Dip	her	5			2	4	2		3	72	
	Dip	her	5			2	4	2		4	64	
	Dip	her	5			1	3	2		5	85	
	Dip	her	5			2	4	2		6	78	
	Dip	her	5			1	3	2		7	94	
	Dip	her	5			2	4	2		9	80	bloody nose
	Dip	her	5			1	3	2		10	78	
	Dip	her	5			1	2	2		11	85	
	Dip	her	5			2	4	2		12	75	
	Dip	her	5			1	2	2		13	73	
	Dip	her	5			1	2	2		14	87	
	Dip	her	5			2	4	2		15	72	
	Dip	her	5			1	2	2		17	84	
	Dip	her	5			1	2	2		18	83	lots of seed
	Dip	her	5			2	4	2		19	82	"
	Dip	her	5			2	4	2		21	74	
	Dip	her	5			1	2	2		22	72	
	Dip	her	5			2	4	2		24	76	
	Dip	her	5			2	4	2		26	78	lots of seed
	Dip	her	5			2	4	2		27	70	
	Dip	her	5			1	3	2		28	75	
	Dip	her	5			2	4	2		31	78	
	Dip	her	5			2	4	2		32	65	seed!

WIND			CLOUD COVER		MOON		NEW (Basic)		NUMBER CONFUSED		ANIMAL NUMBER	
Beauf. No.	km.	mi.	0	Clear	0	None	1	New animal	1	Tag lost	8	Dead unmarked animal
00	.5	.5	1	Partly Cloudy	1	Quarter	2	Re-tag	2	Natural amputation	9	Multiple amputation
02	9	6	2	Cloudy	2	Half	NEW (Asses.)	3	Escaped	FIRST DIGIT - EAR CLIP		
04	23	14	3	Drizzle	3	3-Quarter	5	New animal	TORPID - DEAD		0 = No Clip	
06	40	25	4	Rain	4	Full	RE-CAPTURS	1	Torpid	1 = Right ear Animals		
08	60	38	5	Snow			Blank	2	Dead	2 = Left ear straight		
10	84	52	6	Fog			TIME	GRID STAKE NUMBER		3 = Both ears cut		
12	104	65					Hr. from sunset	9999 - Unusual location				

FIELD DATA SHEET

RV FORM 08

PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION 1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown	Time	Air Temp.	Rel Hum	Wind Beauf. No.	Cloud Cover	Moon
	DAY	MONTH	YEAR									
II	DD	MM	YY	I			II	IIID	II	II	I	I
2-3	5-6	7-8	9-10	12			51-52	54-57	59-60	62-63	65	66
4	1	12	88	SD/SA								

SPECIES CODE	ALPHA CODE			ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND.	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gr.)	BRIEF NOTES
	GENUS	SPECIES	NEW									
II	AAA	AAA	I	IIII	I	I	I	I	I	IIII	IIID	AAAAAAAAA
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	72-80
	Dip	her	5			2	5	2		34	70	1
	Dip	her	5			1	2	2		36	87	2
	Dip	her	5			2	4	2		37	59	3
	Dip	her	5			2	4	2		38	69	4
	Dip	her	5			1	2	2		44	77	5
	Dip	her	5			1	2	2		46	70	6
	Dip	her	5			2	4	2		47	74	7
	Dip	her	5			2	4	2		48	72	8
	Per	man	5			2	7	2		49	24	9
	Dip	her	5			2	4	2		50	64	10
	Per	man	5			1	1	2		51	18	11
	Dip	her	5			2	4	2		52	72	12
	Dip	her	5			1	3	2		54	96	13
	Dip	her	5			2	4	2		56	72	14
	Dip	her	5			1	3	2		57	76	15
	Dip	her	5			2	4	2		58	77	16
	Dip	her	5			2	4	2		60	77	17
	Dip	her	5			2	4	2		62	77	18
	Dip	her	5			2	4	2		64	68	19
	Dip	her	5			2	4	2		67	72	20
	Dip	her	5			2	2	2		68	90	21
	Dip	her	5			1	2	2		70	82	22
	Dip	her	5			1	2	2		71	85	23
	Dip	her	5			2	4	2		72	64	24
	Dip	her	5			1	3	2		74	82	25

WIND			CLOUD COVER	MOON	NEW (Basic)	NUMBER CONFUSED	ANIMAL NUMBER
Beauf. No.	km.	mi.	0 Clear	0 None	1 New animal	1 Tag lost	8 Dead unmarked animal
00	.5	.5	1 Partly Cloudy	1 Quarter	2 Re-tag	2 Natural amputation	9 Multiple amputation
02	9	6	2 Cloudy	2 Half	NEW (Asses.)	3 Escaped	FIRST DIGIT - EAR CLIP
04	23	14	3 Drizzle	3 3-Quarter	5 New animal	TORPID - DEAD	0 = No Clip
06	40	25	4 Rain	4 Full	RE-CAPTURS	1 Torpid	1 = Right ear Animals
08	60	38	5 Snow		Blank	2 Dead	2 = Left ear straight
10	84	52	6 Fog		TIME	GRID STAKE NUMBER	3 = Both ears cut
12	104	65			Hr. from sunset	9999 - Unusual location	

FIELD DATA SHEET

RV FORM 08

PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION					Time	Air Temp.	Rel Hum	Beauf. No.	Wind	Cloud Cover	Moon		
	DAY	MONTH	YEAR			1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown	MALE	FEMALE											
II	DD	MM	YY	I							II	III	II	II	I	I			
2-3	5-6	7-8	9-10	12	AGE 1 Young Yr. 2 Adult 9 Unknown						51-52	54-57	59-60	62-63	65	66			
4	1	12	08	2/5/54															

SPECIES CODE	ALPHA CODE		NEW	ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gr.)	BRIEF NOTES
	GENUS	SPECIES										
II	AAA	AAA	I	IIII	I	I	I	I	I	III	III	AAAAAAAAA
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	72-80
	Dip	her	5			1	3	2		76	80	1
	Dip	her	5			1	2	2		79	52	2
	Per	man	5			2	4	1		79 80	16	3
	Per	man	5			1	2	2		80	18	4
	Dip	her	5			2	4	2		83	67	5
	Dip	her	5			1	3	2		84	86	6
	Per	man	5			2	4	2		88	17	7
	Per	man	5			1	2	2		90	18	8
	Per	man	5			2	7	2		95	23	9
	Dip	her	5			2	4	2		97	78	10
	Dip	her	5			1	3	2		99	95	11
	Dip	her	5			2	4	2		100	78	12
									end	550		13
												14
												15
												16
												17
												18
												19
												20
												21
												22
												23
												24
												25

WIND			CLOUD COVER		MOON		NEW (Basic)		NUMBER CONFUSED		ANIMAL NUMBER	
Beauf. No.	km.	mi.	0 Clear		0 None	1 New animal	1 Tag lost	8 Dead unmarked animal				
00	.5	.5	1 Partly Cloudy		1 Quarter	2 Re-tag	2 Natural amputation	9 Multiple amputation				
02	9	6	2 Cloudy		2 Half	NEW (Asses.)	3 Escaped	FIRST DIGIT - EAR CLIP				
04	23	14	3 Drizzle		3 3-Quarter	5 New animal	TORPID - DEAD	0 = No Clip				
06	40	25	4 Rain		4 Full	RE-CAPTURS	1 Torpid	1 = Right ear	Animals			
08	60	38	5 Snow			Blank	2 Dead	2 = Left ear	straight			
10	84	52	6 Fog			TIME	GRID STAKE NUMBER	3 = Both ears	cut			
12	104	65				Hr. from sunset	9999 - Unusual location					

RV FORM 0

PLOT	DATE			OBS	SEX			SEXUAL CONDITION			Time	Air Temp.	Rel Hum	Beauf. No.	Wind	Cloud Cover	Moon		
	DAY	MONTH	YEAR		1 Male	2 Female	9 Unknown	1 Testes Abdominal	2 Testes scrotal Up	3 Testes scrotal Dwn.									
II	DD	MM	YY	I							II	IID	II	II	I	I			
2-3	5-6	7-8	9-10	12							51-52	54-57	59-60	62-63	65	66			
4	2	12	08	cy/sa							342	10	70-80	0	6	0			
SPECIES CODE	ALPHA CODE			NEW	ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND.	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gr.)	BRIEF NOTES						
	GENUS	SPECIES																	
II	AAA	AAA	I	IIII	I	I	I	I	I	IIII	IID	AAAAAAAA							
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	72-80							
Dip	hec	S				1	2	2		1	65		1						
Dip	hec	R								3			2						
Dip	hec	R								4			3						
Per	man	S				1	2	2		5	19		4						
Dip	hec	R								8			5						
Dip	hec	S				2	4	2		9	65		6						
Dip	hec	R								10			7						
Dip	hec	R								11			8						
Dip	hec	S				1	3	2		12	74		9						
Dip	hec	S				2	4	2		13	56		10						
Dip	hec	R								14			11						
Dip	hec	R								15			12						
Dip	hec	S				2	4	2		16	70		13						
Dip	hec	R								17			14						
Dip	hec	R								18			15						
Dip	hec	S				2	5	2		19	74	seed	16						
Dip	hec	R								20			17						
Dip	hec	S				2	4	2		21	68		18						
Dip	hec	R								22			19						
Dip	hec	S				1	2	2		23	75		20						
Dip	hec	S				1	3	2		25	77		21						
Dip	hec	S				1	2	2		27	77		22						
Dip	hec	R								29			23						
Dip	hec	S				2	4	2		30	78		24						
Dip	hec	R								31			25						

WIND			CLOUD COVER		MOON		NEW (Basic)		NUMBER CONFUSED		ANIMAL NUMBER												
Beauf. No.	km.	mi.	0 Clear	1 Partly Cloudy	2 Cloudy	3 Drizzle	4 Rain	5 Snow	6 Fog	0 None	1 Quarter	2 Half	3 3-Quarter	4 Full	1 New animal	2 Re-tag	3 Escaped	4 Dead	5 Torpid	6 Natural amputation	7 Multiple amputation	8 Dead unmarked animal	9 FIRST DIGIT - EAR CLIP
00	.5	.5	1	2	3	4	5	6	7	0	1	2	3	4	1	2	3	4	5	6	7	8	9
02	9	6	2	3	4	5	6	7	8	0	1	2	3	4	1	2	3	4	5	6	7	8	9

FIELD DATA SHEET

RV FORM 08

PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION					Time	Air Temp.	Rel Hum	Beauf. No.	Cloud Cover	Moon		
	DAY	MONTH	YEAR			1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown	MALE	FEMALE										
II	DD	MM	YY	I							II	IIID	II	II	I	I		
2-3	5-6	7-8	9-10	12	AGE 1 Young Yr. 2 Adult 9 Unknown						51-52	54-57	59-60	62-63	65	66		
4	2	12	08	W/S							417							
SPECIES CODE	ALPHA CODE		NEW	ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gr.)	BRIEF NOTES						
	GENUS	SPECIES																
II	AAA	AAA	I	IIII	I	I	I	I	I	IIII	IIID	AAAAAAAAA						
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	72-80						
	Dip	hee	R							32			1					
	Dip	hee	S			1	3	2		33	89		2					
	Dip	hee	R							34			3					
	Dip	hee	S			1	2	2		37	72	bloody nose	4					
	Dip	hee	R							38			5					
	Dip	hee	S			1	3	2		40	92		6					
	Dip	hee								43		lost/escape	7					
	Dip	hee	R							44			8					
	Dip	hee	R							46			9					
	Per	man	R							47			10					
	Per	man	S			2	4	1		49	15		11					
	Dip	hee	S			2	6	2		50	70		12					
	Per	man	S			1	1	1		51	13		13					
	Per	man	S			1	2	2		52	67		14					
	Dip	hee	S			1	2	2		53	75		15					
	Dip	hee	R							54			16					
	Dip	hee	R							55			17					
	Dip	hee	S			2	4	2		57	73		18					
	Dip	hee	R							58			19					
	Dip	hee	S			1	3	2		59	88		20					
	Dip	hee	R							60			21					
	Dip	hee	R							61			22					
	Dip	hee	R							63			23					
	Dip	hee	S			2	4	2		65	78		24					
	Dip	hee	S			1	3	2		67	85		25					
WIND			CLOUD COVER		MOON		NEW (Basic)		NUMBER CONFUSED		ANIMAL NUMBER							
Beauf. No.	km.	mi.	0	Clear	0	None	1	New animal	1	Tag lost	8	Dead unmarked animal						
00	.5	.5	1	Partly Cloudy	1	Quarter	2	Re-tag	2	Natural amputation	9	Multiple amputation						
02	9	6	2	Cloudy	2	Half	NEW (Asses.)		3	Escaped	FIRST DIGIT - EAR CLIP							
04	23	14	3	Drizzle	3	3-Quarter	5	New animal	TORPID - DEAD		0 = No Clip							
06	40	25	4	Rain	4	Full	RE-CAPTURS		1	Torpid	1 = Right ear Animals							
08	60	38	5	Snow			Blank		2	Dead	2 = Left ear straight							
10	84	52	6	Fog			TIME		GRID STAKE NUMBER		3 = Both ears cut							
12	104	65					Hr. from sunset		9999 - Unusual location									

FIELD DATA SHEET

RV FORM 08

PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION 1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown	Time	Air Temp.	Rel Hum	Beauf. No.	Cloud Cover	Moon
	DAY	MONTH	YEAR									
II	DD	MM	YY	I			II	IIID	II	II	I	I
2-3	5-6	7-8	9-10	12	AGE 1 Young Yr. 2 Adult 9 Unknown	MALE FEMALE	51-52	54-57	59-60	62-63	65	66
4	2	12	08	01/2A			450					

SPECIES CODE	ALPHA CODE		NEW	ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND.	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gr.)	BRIEF NOTES
	GENUS	SPECIES										
II	AAA	AAA	I	IIII	I	I	I	I	I	IIII	IIID	AAAAAAAAA
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	72-80
	Dip	hee	R							68		1
	Dip	hee	R							69		2
	Dip	hee	R							70		3
	Dip	hee	R							71		4
	Dip	hee	S			1	3	2		73	82	5
	Dip	hee	R							74		6
	Dip	hee	R							76		7
	Per	man	R							78		8
	Dip	hee	R							79		9
	Dip	hee	R							82		10
	Dip	hee	S			2	4	2		86	71	11
	Per	man	R							93		12
	Dip	hee	S			1	2	2		94	85	13
	Dip	hee	R							97		14
	Per	man	S			2	4	2		98	19	15
	Per	man	S			2	4	2		99	18	16
	Dip	hee	R							100		17
										end 515		18
												19
												20
												21
												22
												23
												24
												25

WIND			CLOUD COVER		MOON		NEW (Basic)		NUMBER CONFUSED		ANIMAL NUMBER	
Beauf. No.	km.	mi.	0	Clear	0	None	1	New animal	1	Tag lost	8	Dead unmarked animal
00	.5	.5	1	Partly Cloudy	1	Quarter	2	Re-tag	2	Natural amputation	9	Multiple amputation
02	9	.6	2	Cloudy	2	Half	NEW (Asses.)		3	Escaped	FIRST DIGIT - EAR CLIP	
04	23	14	3	Drizzle	3	3-Quarter	5	New animal	TORPID - DEAD		0 = No Clip	
06	40	25	4	Rain	4	Full	RE-CAPTURS		1	Torpid	1	= Right ear
08	60	38	5	Snow			Blank		2	Dead	2	= Left ear
10	84	52	6	Fog			TIME		GRID STAKE NUMBER		3	= Both ears
12	104	65					Hr. from sunset		9999 - Unusual location			cut

FIELD DATA SHEET

PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION					Time	Air Temp. °C	Rel Hum %	Beauf. No.	Cloud Cover	Moon																																																
	DAY	MONTH	YEAR			1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown	MALE FEMALE																																																									
II	DD	MM	YY	I																																																												
2-3	5-6	7-8	9-10	12																																																												
4	3	12	08	12																																																												
SPECIES CODE					ALPHA CODE					ANIMAL NUMBER					NO. CONFUSED					SEX					SEXUAL COND					AGE					TORPID-DEAD					GRID STAKE NUMBER					BODY WT. (g.)					BRIEF NOTES														
II					AAA					1					32					34					36					38					40					41-44					46-49					AAAAAAA														
14-15					17-19					20-22					24					26-30																																												
Dip					hee					R																																																						
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FIELD DATA SHEET

PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION					Time	Air Temp. °C	Rel Hum %	Wind Beauf. No.	Cloud Cover	Moon		
	DAY	MONTH	YEAR			1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Down 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown	MALE FEMALE											
II	DD	MM	YY	1							II	IIID	II	II	I	I		
2-3	5-6	7-8	9-10	12							51-52	54-57	59-60	62-63	65	66		
4	3	12	08	12							35	10	60-70	0	6	0		
SPECIES CODE	ALPHA CODE		NEW	ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gr.)	BRIEF NOTES						
	GENUS	SPECIES																
II	AAA	AAA	I	IIII	I	I	I	I	I	IIII	IIID	AAAAAAAAA						
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	72-80						
	Dip	hee	R							34								
	Dip	hee	S				2	4	2	35	70							
	Dip	hee	R							36								
	Dip	hee	R							37								
	Dip	hee	R							38								
	Dip	hee	S			1	3	2		39	80							
	Dip	hee	S			1	3	2		40	74							
	Dip	hee	R							44								
	Dip	hee	R							45								
	Dip	hee	R							47								
	Per	man	R							48	83							
	Dip	hee	S			1	3	2		51								
	Per	man	R							53								
	Dip	hee	R							54								
	Dip	hee	R							55								
	Dip	hee	R							58	16							
	Per	man	S			2	4	2		59	73							
	Dip	hee	S			2	4	2		60								
	Dip	hee	R							62	69							
	Dip	hee	S			1	2	2		63								
	Dip	hee	R							64								
	Dip	hee	R							66								
	Dip	hee	R							67								
	Dip	hee	S			2	6	2		69	80							
	Dip	hee	S			2	4	2		71	52							

WIND			CLOUD COVER	MOON	NEW (Basic)	NUMBER CONFUSED	ANIMAL NUMBER
Beauf. No.	km.	mi.	0 Clear	0 None	1 New animal	1 Tag lost	8 Dead unmarked animal
00	.5	.5	1 Partly Cloudy	1 Quarter	2 Re-tag	2 Natural amputation	9 Multiple amputation
02	9	6	2 Cloudy	2 Half	NEW (Asses.)	3 Escaped	FIRST DIGIT - EAR CLIP
04	23	14	3 Drizzle	3 3-Quarter	5 New animal	TORPID - DEAD	0 = No Clip
06	40	25	4 Rain	4 Full	RE-CAPTURS	1 Torpid	1 = Right ear Animals
08	60	38	5 Snow		Blank	2 Dead	2 = Left ear straight
10	84	52	6 Fog		TIME	GRID STAKE NUMBER	3 = Both ears cut
12	104	65			Hr. from sunset	9999 - Unusual location	

FIELD DATA SHEET															
PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION				Time	Air Temp. °C	Rel Hum	Beauf. No.	Cloud Cover	Moon
	DAY	MONTH	YEAR			1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown									
II	DD	MM	YY	1	AGE 1 Young Yr. 2 Adult 9 Unknown	MALE				51-52	54-57	59-60	62-63	65	66
2-3	5-6	7-8	9-10	12		FEMALE				345	106-70	0	6	0	
4	3	12	08	12											
SPECIES CODE	ALPHA CODE			ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND.	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (g.)	BRIEF NOTES			
	GENUS	SPECIES	NEW												
II	AAA	AAA	I	IIII	I	I	I	I	I	III	IIID	AAAAAAAAA			
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	72-80			
	Dip	hee	S			2	4	2		74	53				
	Dip	hee	R							76					
	Dip	hee	S			1	3	2		78	67				
	Per	man	S			2	4	2		80	14				
	Dip	hee	R							84					
	Dip	hee	R							86					
	Per	man	R							8890					
	Dip	hee	S			1	2	2		91	75				
	Per	man	S			2	4	2		93	20				
	Dip	hee	R							95					
	Dip	hee	R							98					
	Par	man	S			1	2	2		99	16				
	Dip	hee	R							100					
										end 404					

WIND			CLOUD COVER	MOON	NEW (Basic)	NUMBER CONFUSED	ANIMAL NUMBER
Beauf. No.	km.	mi.	0 Clear	0 None	1 New animal	1 Tag lost	8 Dead unmarked animal
00	.5	.5	1 Partly Cloudy	1 Quarter	2 Re-tag	2 Natural amputation	9 Multiple amputation
02	9	6	2 Cloudy	2 Half	NEW (Asses.)	3 Escaped	FIRST DIGIT - EAR CLIP
04	23	14	3 Drizzle	3 3-Quarter	5 New animal	TORPID - DEAD	0 = No Clip
06	40	25	4 Rain	4 Full	RE-CAPTURS	1 Torpid	1 = Right ear Animals
08	60	38	5 Snow		Blank	2 Dead	2 = Left ear straight
10	84	52	6 Fog		TIME	GRID STAKE NUMBER	3 = Both ears cut
12	104	65			Hr. from sunset	9999 = Unusual location	

FIELD DATA SHEET

PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION					Time	Air Temp. °C	Rel Hum	Bar. No. Wind	Cloud Cover	Moon		
	DAY	MONTH	YEAR			1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown	MALE	FEMALE										
II	DD	MM	YY	I														
2-3	5-6	7-8	9-10	12														
4	4	12	68	12														
SPECIES CODE	ALPHA CODE		NEW	ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND.	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gt.)	BRIEF NOTES						
	GENUS	SPECIES																
II	AAA	AAA	I	IIII	I	I	I	I	I	III	III	AAAAAAAAA						
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	72-80						
	Dip	hee	5			1	3	2		1	91							
	Dip	hee	R							4								
	Dip	hee	R							7								
	Dip	hee	R							8								
	Dip	hee	R							10								
	Dip	hee	R							16								
	Dip	hee	R							11								
	Dip	hee	R							12								
	Dip	hee	R							13								
	Dip	hee	R							14								
	Dip	hee	R							15								
	Dip	hee	R							18								
	Dip	hee	R							19								
	Dip	hee	R							20								
	Dip	hee	R							21								
	Dip	hee	R							22								
	Dip	hee	R							23								
	Dip	hee	R							24								
	Dip	hee	R							26								
	Dip	hee	R							28								
	Dip	hee	5			2	4	2		30	48							
	Dip	hee	R							31								
	Dip	hee	R							32								
	Dip	hee	R							34								
	Dip	hee	R							35								
	Dip	hee	R							36								

WIND			CLOUD COVER	MOON	NEW (Basic)	NUMBER CONFUSED	ANIMAL NUMBER
Beauf. No.	km.	mi.	0 Clear	0 None	1 New animal	1 Tag lost	8 Dead unmarked animal
00	.5	.5	1 Partly Cloudy	1 Quarter	2 Re-tag	2 Natural amputation	9 Multiple amputation
02	9	6	2 Cloudy	2 Half	NEW (Asses.)	3 Escaped	FIRST DIGIT - EAR CLIP
04	23	14	3 Drizzle	3 3-Quarter	5 New animal	TORPID - DEAD	0 = No Clip
06	40	25	4 Rain	4 Full	RE-CAPTURS	1 Torpid	1 = Right ear Animals
08	60	38	5 Snow		Blank	2 Dead	2 = Left ear straight
10	84	52	6 Fog		TIME	GRID STAKE NUMBER	3 = Both ears cut
12	104	65			Hr. from sunset	9999 - Unusual location	

FIELD DATA SHEET

PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION					Time	Air Temp. °C	Rel Hum	Bar. Wind No.	Cloud Cover	Moon
	DAY	MONTH	YEAR			1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown	MALE	FEMALE								
II	DD	MM	YY	I												
2-3	5-6	7-8	9-10	12	AGE 1 Young Yr. 2 Adult 9 Unknown						51-52	54-57	59-60	62-63	65	66
4	4	12	08	064							281	6	50	0	0	0

SPECIES CODE	ALPHA CODE		NEW	ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND.	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gr.)	BRIEF NOTES
	GENUS	SPECIES										
II	AAA	AAA	I	IIII	I	I	I	I	I	III	III	AAAAAAAAA
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	72-80
	Dip	hee	R							37		
	Dip	hee	R							38		
	Dip	hee	R							39		
	Dip	hee	R							40		
	Dip	hee	R							41		
	Dip	hee	R							44	43	
	Dip	hee	S			2	4	2		47		torpid
	Per	man	R						1	48		
	Dip	hee	R							50		
	Dip	hee	R							51		
	Per	man	R							52		
	Dip	hee	R							54		
	Dip	hee	R							55	17	
	Per	man	S			1	2	2		56		
	Dip	hee	R							57		
	Dip	hee	R							58		
	Dip	hee	R							60		
	Dip	hee	R							61		
	Dip	hee	R							62		
	Dip	hee	R							63		
	Dip	hee	R							65		
	Dip	hee	R							66		
	Dip	hee	R							69		
	Dip	hee	R							71		
	Dip	hee	R							72		

WIND			CLOUD COVER		MOON		NEW (Basic)		NUMBER CONFUSED		ANIMAL NUMBER	
Beauf. No.	km.	mi.	0 Clear		0 None		1 New animal		1 Tag lost		8 Dead unmarked animal	
00	.5	.5	1 Partly Cloudy		1 Quarter		2 Re-tag		2 Natural amputation		9 Multiple amputation	
02	9	6	2 Cloudy		2 Half		NEW (Asses.)		3 Escaped		FIRST DIGIT - EAR CLIP	
04	23	14	3 Drizzle		3 3-Quarter		5 New animal		TORPID - DEAD		0 = No Clip	
06	40	25	4 Rain		4 Full		RE-CAPTURS		1 Torpid		1 = Right ear	
08	60	38	5 Snow				Blank		2 Dead		2 = Left ear	
10	84	52	6 Fog				TIME		GRID STAKE NUMBER		3 = Both ears	
12	104	65					Hr. from sunset		9999 - Unusual location		Animals straight cut	

FIELD DATA SHEET

PLOT

DATE

DAY

MONTH

YEAR

OBS

SEX

1 Male

2 Female

9 Unknown

SEXUAL CONDITION

1 Testes Abdominal

2 Testes scrotal Up

3 Testes scrotal Dwn.

4 Vulva inactive, closed

5 Vulva turgid, enlarged

6 Cop. plug

7 Pregnant

8 Lactating

9 Condition unknown

AGE

1 Young Yr.

2 Adult

9 Unknown

Time

II

Air Temp.

51-52

Rel Hum

54-57

Beauf. No.

59-60

Cloud Cover

62-63

Moon

65

66

II

2-3

4

DD

5-6

4

MM

7-8

12

YY

9-10

03

1

12

4/5

SEX

1 Male

2 Female

9 Unknown

SEXUAL CONDITION

1 Testes Abdominal

2 Testes scrotal Up

3 Testes scrotal Dwn.

4 Vulva inactive, closed

5 Vulva turgid, enlarged

6 Cop. plug

7 Pregnant

8 Lactating

9 Condition unknown

AGE

1 Young Yr.

2 Adult

9 Unknown

Time

II

Air Temp.

51-52

Rel Hum

54-57

Beauf. No.

59-60

Cloud Cover

62-63

Moon

65

66

SPECIES CODE

II

ALPHA CODE

GENUS

AAA

SPECIES

AAA

NEW

I

ANIMAL NUMBER

IIII

NO. CONFUSED

I

SEX

I

SEXUAL COND

I

AGE

I

TORPID-DEAD

I

GRID STAKE NUMBER

III

BODY WT. (grs.)

IIID

BRIEF NOTES

AAAAAAAAA

14-15

17-19

20-22

24

26-30

32

34

36

38

40

41-44

46-49

72-80

Dip

hee

R

74

Dip

hee

R

80

Dip

hee

R

81

Dip

hee

R

82

Dip

hee

R

86

64

Dip

hee

S

87

Dip

hee

R

89

14

Per

man

S

90

Dip

hee

R

91

Per

man

R

93

Per

man

R

96

83

Dip

hee

S

98

Per

man

R

99

Per

man

R

100

Dip

hee

R

WIND

Beauf. No.

km.

mi.

0 Clear

1 Partly Cloudy

2 Cloudy

3 Drizzle

4 Rain

5 Snow

6 Fog

CLOUD COVER

0 Clear

1 Partly Cloudy

2 Cloudy

3 Drizzle

4 Rain

5 Snow

6 Fog

MOON

0 None

1 Quarter

2 Half

3 3-Quarter

4 Full

NEW (Basic)

1 New animal

2 Re-tag

NEW (Asses.)

5 New animal

RE-CAPTURS

Blank

TIME

Hr. from sunset

NUMBER CONFUSED

1 Tag lost

2 Natural amputation

3 Escaped

TORPID - DEAD

1 Torpid

2 Dead

GRID STAKE NUMBER

9999 = Unusual location

ANIMAL NUMBER

8 Dead unmarked animal

9 Multiple amputation

FIRST DIGIT - EAR CLIP

0 = No Clip

1 = Right ear

2 = Left ear

3 = Both ears

Animals

straight

cut

4a. ...-da. ~~Per~~ man Die her

FIELD DATA SHEET

PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION					Time	Air Temp. °C	Rel Hum	Bar. No. Wind	Cloud Cover	Moon		
	DAY	MONTH	YEAR			1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown	MALE	FEMALE										
II	DD	MM	YY	I														
2-3	5-6	7-8	9-10	12														
5	9	12	2008	CY														
	ALPHA CODE				RB	NO. CONFUSED	SEX	SEXUAL COND.	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gr.)	BRIEF NOTES					
	GENUS	SPECIES	NEW	ANIMAL NUMBER														
II	AAA	AAA	I	IIII	I	I	I	I	I	IIII	IIID	AAAAAAAAA						
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	72-80						
													End at 11:20					

WIND

Beauf. No.	km.	mi.
00	.5	.5
02	9	6
04	23	14
06	40	25
08	60	38
10	84	52
12	104	65

CLOUD COVER

0 Clear
1 Partly Cloudy
2 Cloudy
3 Drizzle
4 Rain
5 Snow
6 Fog

MOON

0 None
1 Quarter
2 Half
3 3-Quarter
4 Full

NEW (Basic)

1 New animal
2 Re-tag

NEW (Asses.)

5 New animal

RE-CAPTURS

Blank

TIME

Hr. from sunset

NUMBER CONFUSED

1 Tag lost
2 Natural amputation
3 Escaped

TORPID - DEAD

1 Torpid
2 Dead

GRID STAKE NUMBER

9999 - Unusual location

ANIMAL NUMBER

8 Dead unmarked animal
9 Multiple amputation

FIRST DIGIT - EAR CLIP

0 = No Clip

1 = Right ear	Animals
2 = Left ear	straight
3 = Both ears	cut

RV FORM 08

PLOT	DATE			OBS	SEX	SEXUAL CONDITION	Time	Air Temp.	Rel Hum	New Wind No.	Cloud Cover	Moon		
	DAY	MONTH	YEAR		1 Male 2 Female 9 Unknown	1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed. 5 Vulva turgid, enlarged								
II	DD	MM	YY	I			II	III D	II	II	I	I		
2-3	5-6	7-8	9-10	12	AGE									
					1 Young Yr. 2 Adult 9 Unknown	6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown								
5	10	8	12 2008	Cy			51-52	54-57	59-60	62-63	65	66		
							11:26	4		5	0	4		

[illegible]

WIND			CLOUD COVER	MOON	NEW (Basic)	NUMBER CONFUSED	ANIMAL NUMBER
Beauf. No.	km.	mi.					
00	.5	.5	1 Clear	0 None	1 New animal	1 Tag lost	8 Dead unmarked animal
02	9	6	2 Partly Cloudy	1 Quarter	2 Re-tag	2 Natural amputation	9 Multiple amputation
04	23	14	3 Drizzle	2 Half	NEW (Asses.)	3 Escaped	FIRST DIGIT - EAR CLIP
06	40	25	4 Rain	3 3-Quarter	5 New animal	TORPID - DEAD	0 = No Clip
08	60	38	5 Snow	4 Full	RE-CAPTURS	1 Torpid	1 = Right ear Animals
10	84	52	6 Fog		Blank	2 Dead	2 = Left ear straight
12	104	65			TIME	GRID STAKE NUMBER	3 = Both ears cut
					Hr. from sunset	9999 - Unusual location	

FIELD DATA SHEET

RV FORM 08

PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION		Time	Air Temp.	Rel Hum	Wind No.	Cloud Cover	Moon		
	DAY	MONTH	YEAR			1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown	MALE FEMALE								
II	DD	MM	YY	I				II	IIID	II	II	I	I		
2-3	5-6	7-8	9-10	12	AGE 1 Young Yr. 2 Adult 9 Unknown			51-52	54-57	59-60	62-63	65	66		
5	11	12	2008	CY				11:09	5		.5	0	4		
SPECIES CODE	ALPHA CODE		NEW	ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gr.)	BRIEF NOTES			
	GENUS	SPECIES													
II	AAA	AAA	I	IIII	I	I	I	I	I	IIII	IIID	AAAAAAAA			
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	72-80			
													1		
													2		
													3		
													4		
													5		
													6		
													7		
													8		
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													22		
													23		
													24		
													25		

WIND			CLOUD COVER	MOON	NEW (Basic)	NUMBER CONFUSED	ANIMAL NUMBER	
Beauf. No.	km.	mi.	0 Clear	0 None	1 New animal	1 Tag lost	8 Dead unmarked animal	
00	.5	.5	1 Partly Cloudy	1 Quarter	2 Re-tag	2 Natural amputation	9 Multiple amputation	
02	9	6	2 Cloudy	2 Half	NEW (Asses.)	3 Escaped	FIRST DIGIT • EAR CLIP	
04	23	14	3 Drizzle	3 3-Quarter	5 New animal	TORPID • DEAD		0 = No Clip
06	40	25	4 Rain	4 Full	RE-CAPTURS	1 Torpid	1 = Right ear	Animals
08	60	38	5 Snow		Blank	2 Dead	2 = Left ear	straight
10	84	52	6 Fog		TIME	GRID STAKE NUMBER	3 = Both ears	cut
12	104	65			Hr. from sunset	9999 • Unusual location		

FIRST DIGIT - EAR CLIP

0 = No Clip

1 = Right ear Animals

2 = Left ear straight

3 = Both ears cut

FIELD DATA SHEET

PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION					Time	Air Temp.	Rel Hum	Beauf. No.	Cloud Cover	Moon
	DAY	MONTH	YEAR			1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown	MALE FEMALE									
II	DD	MM	YY	I							II	IIID	II	II	I	I
2-3	5-6	7-8	9-10	12							51-52	54-57	59-60	62-63	65	66
6	8	12	2008	C4							11:35	10		-5	2	2
SPECIES CODE	ALPHA CODE		NEW	ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gr.)	BRIEF NOTES				
	GENUS	SPECIES														
II	AAA	AAA	I	IIII	I	I	I	I	I	IIII	IIID	AAAAAAAAA				
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	72-80				
	Per	man	1			2	8	2		2	21					
	Dip	her	1			2	4	2		16	78					
	Per	man	1			1	2	2		48	18					
Ended at 11:58																

WIND

Beauf. No.

km.

mi.

CLOUD COVER

0 Clear

1 Partly Cloudy

2 Cloudy

3 Drizzle

4 Rain

5 Snow

6 Fog

MOON

0 None

1 Quarter

2 Half

3 3-Quarter

4 Full

NEW (Basic)

1 New animal

2 Re-tag

NEW (Asses.)

5 New animal

RE-CAPTURS

Blank

TIME

Hr. from sunset

NUMBER CONFUSED

1 Tag lost

2 Natural amputation

3 Escaped

TORPID - DEAD

1 Torpid

2 Dead

GRID STAKE NUMBER

9999 - Unusual location

ANIMAL NUMBER

8 Dead unmarked animal

9 Multiple amputation

FIRST DIGIT - EAR CLIP

0 = No Clip

1 = Right ear Animals

2 = Left ear straight

3 = Both ears cut

FIELD DATA SHEET

RV FORM 08

PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION				Time	Air Temp. °C	Rel Hum %	Beauf. Wind No.	Cloud Cover	Moon		
	DAY	MONTH	YEAR			1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown	MALE	FEMALE									
II	DD	MM	YY	I						II	IIID	II	II	I	I		
2-3	5-6	7-8	9-10	12						51-52	54-57	59-60	62-63	65	66		
6	9	12	2008	Cy						11:21	84		.5	0	3		
SPECIES CODE	ALPHA CODE		NEW	ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND.	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gr.)	BRIEF NOTES					
	GENUS	SPECIES															
II	AAA	AAA	I	IIII	I	I	I	I	I	IIII	IIID	AAAAAAAAA					
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	72-80					
				Ended									1				
				11/86									2				
													3				
													4				
													5				
													6				
													7				
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													24				
													25				

WIND			CLOUD COVER	MOON	NEW (Basic)	NUMBER CONFUSED	ANIMAL NUMBER	
Beauf. No.	km.	mi.	0 Clear	0 None	1 New animal	1 Tag lost	8	Dead unmarked animal
00	.5	.5	1 Partly Cloudy	1 Quarter	2 Re-tag	2 Natural amputation	9	Multiple onputation
02	9	6	2 Cloudy	2 Half	NEW (Asses.)	3 Escaped	FIRST DIGIT - EAR CLIP	
04	23	14	3 Drizzle	3 3-Quarter	5 New animal	TORPID - DEAD		0 = No Clip
06	40	25	4 Rain	4 Full	RE-CAPTURS	1 Torpid	1 = Right ear	Animals
08	60	38	5 Snow		Blank	2 Dead	2 = Left ear	straight
10	84	52	6 Fog		TIME	GRID STAKE NUMBER		3 = Both ears cut
12	104	65			Hr. from sunset	9999 - Unusual location		

FIELD DATA SHEET

RV FORM 08

PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION		Time	Air Temp.	Rel Hum	Beauf. No.	Cloud Cover	Moon		
	DAY	MONTH	YEAR			1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown	MALE FEMALE								
II	DD	MM	YY	I				II	IIID	II	II	I	I		
2-3	5-6	7-8	9-10	12	AGE 1 Young Yr. 2 Adult 9 Unknown			51-52	54-57	59-60	62-63	65	66		
6	10	12	2008	CN				11:45	4		.5	0	4		

SPECIES CODE	ALPHA CODE		NEW	ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gr.)	BRIEF NOTES
	GENUS	SPECIES										
II	AAA	AAA	I	IIII	I	I	I	I	I	IIII	IIID	AAAAAAAAA
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	72-80
												1
												2
												3
												4
												5
												6
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												23
												24
												25

End 11:59

WIND			CLOUD COVER	MOON	NEW (Basic)	NUMBER CONFUSED	ANIMAL NUMBER	
Beauf. No.	km.	mi.	0 Clear	0 None	1 New animal	1 Tag lost	8	Dead unmarked animal
00	.5	.5	1 Partly Cloudy	1 Quarter	2 Re-tag	2 Natural amputation	9	Multiple amputation
02	9	6	2 Cloudy	2 Half	NEW (Asses.)	3 Escaped	FIRST DIGIT • EAR CLIP	
04	23	14	3 Drizzle	3 3-Quarter	5 New animal	TORPID • DEAD	0 = No Clip	
06	40	25	4 Rain	4 Full	RE-CAPTURS	1 Torpid	1 = Right ear	Animals
08	60	38	5 Snow		Blank	2 Dead	2 = Left ear	straight
10	84	52	6 Fog		TIME	GRID STAKE NUMBER	3 = Both ears	cut
12	104	65			Hr. from sunset	9999 • Unusual location		

RV FORM 08

[illegible]

WIND			CLOUD COVER	MOON	NEW (Basic)	NUMBER CONFUSED	ANIMAL NUMBER
Beauf. No.	km.	mi.	0 Clear	0 None	1 New animal	1 Tag lost	8 Dead unmarked animal
00	.5	.5	1 Partly Cloudy	1 Quarter	2 Re-tag	2 Natural amputation	9 Multiple amputation
02	9	6	2 Cloudy	2 Half	NEW (Asses.)	3 Escaped	FIRST DIGIT • EAR CLIP
04	23	14	3 Drizzle	3 3-Quarter	5 New animal	TORPID • DEAD	0 = No Clip
06	40	25	4 Rain	4 Full	RE-CAPTURS	1 Torpid	1 = Right ear Animals
08	60	38	5 Snow		Blank	2 Dead	2 = Left ear straight
10	84	52	6 Fog		TIME	GRID STAKE NUMBER	3 = Both ears cut
12	104	65			Hr. from sunset	9999 - Unusual location	

FIELD DATA SHEET

PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION					Time	Air Temp. °C	Rel Hum	Beauf. No.	Cloud Cover	Moon		
	DAY	MONTH	YEAR			1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown	MALE	FEMALE										
II	DD	MM	YY	I														
2-3	5-6	7-8	9-10	12														
7	8	12	2008	C4														
SPECIES CODE	ALPHA CODE		NEW	ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gr.)	BRIEF NOTES						
	GENUS	SPECIES																
II	AAA	AAA	I	IIII	I	I	I	I	I	III	IIID	AAAAAAAAA						
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	72-80						
	Dip	her	1			1	2	2		3	87							
	Per	man	1			2	4	2		4	22							
	Dip	her	1			2	4	2		14	78							
	Dip	her	1			1	3	2		20	82							
	Dip	her	1			1	3	2		24	90							
	Dip	her	1			1	3	2		27	83							
	Dip	her	1			2	4	2		30	88							
	Dip	her	1			1	3	2		46	77							
	Dip	her	1			1	3	2		50	85							
Ended at 12:48																		

WIND

Beauf. No.

km.

mi.

CLOUD COVER

0 Clear

1 Partly Cloudy

2 Cloudy

3 Drizzle

4 Rain

5 Snow

6 Fog

MOON

0 None

1 Quarter

2 Half

3 3-Quarter

4 Full

NEW (Basic)

1 New animal

2 Re-tag

NEW (Asses.)

5 New animal

RE-CAPTURS

Blank

TIME

Hr. from sunset

NUMBER CONFUSED

1 Tag lost

2 Natural amputation

3 Escaped

TORPID - DEAD

1 Torpid

2 Dead

GRID STAKE NUMBER

9999 - Unusual location

ANIMAL NUMBER

8 Dead unmarked animal

9 Multiple amputation

FIRST DIGIT - EAR CLIP

0 = No Clip

1 = Right ear Animals

2 = Left ear straight

3 = Both ears cut

FIELD DATA SHEET

RV FORM 68

PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION 1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown	MALE	Time	Air Temp. °C	Rel Hum %	Beauf. No.	Cloud Cover	Moon
	DAY	MONTH	YEAR										
II	DD	MM	YY	I				II	IIID	II	II	I	I
2-3	5-6	7-8	9-10	12				51-52	54-57	59-60	62-63	65	66
7	9	12	2008	Cu				1137	0		5	0	3

SPECIES CODE	ALPHA CODE		NEW	RB ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gr.)	BRIEF NOTES
	GENUS	SPECIES										
II	AAA	AAA	I	IIII	I	I	I	I	I	IIII	IIID	AAAAAAAAA
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	72-80
	Per	man	R							13		1
	Dip	her	R							19		2
	Dip	her	R							28		3
	Dip	her	R							38		4
												5
				Ended 12:00								6
												7
												8
												9
												10
												11
												12
												13
												14
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												21
												22
												23
												24
												25

WIND			CLOUD COVER		MOON	NEW (Basic)	NUMBER CONFUSED	ANIMAL NUMBER
Beauf. No.	km.	mi.	0 Clear	0 None	1 New animal	1 Tag lost	8 Dead unmarked animal	
00	.5	.5	1 Partly Cloudy	1 Quarter	2 Re-tag	2 Natural amputation	9 Multiple amputation	
02	9	6	2 Cloudy	2 Half	NEW (Asses.)	3 Escaped	FIRST DIGIT - EAR CLIP	
04	23	14	3 Drizzle	3 3-Quarter	5 New animal	TORPID - DEAD	0 = No Clip	
06	40	25	4 Rain	4 Full	RE-CAPTURS	1 Torpid	1 = Right ear Animals	
08	60	38	5 Snow		Blank	2 Dead	2 = Left ear straight	
10	84	52	6 Fog		TIME	GRID STAKE NUMBER	3 = Both ears cut	
12	104	65			Hr. from sunset	9999 - Unusual location		

RV FORM 08

[illegible]

WIND			CLOUD COVER	MOON	NEW (Basic)	NUMBER CONFUSED	ANIMAL NUMBER
Beauf. No.	km.	mi.	0 Clear	0 None	1 New animal	1 Tag lost	8 Dead unmarked animal
00	.5	.5	1 Partly Cloudy	1 Quarter	2 Re-tag	2 Natural amputation	9 Multiple amputation
02	9	6	2 Cloudy	2 Half	NEW (Asses.)	3 Escaped	FIRST DIGIT - EAR CLIP
04	23	14	3 Drizzle	3 3-Quarter	5 New animal	TORPID - DEAD	0 = No Clip
06	40	25	4 Rain	4 Full	RE-CAPTURS	1 Torpid	1 = Right ear Animals
08	60	38	5 Snow		Blank	2 Dead	2 = Left ear straight
10	84	52	6 Fog		TIME	GRID STAKE NUMBER	3 = Both ears cut
12	104	65			Hr. from sunset	9999 - Unusual location	

RV FORM 08

PLOT	DATE			OBS	SEX	SEXUAL CONDITION	Time	Air Temp _c	Rel Hum %	Beauf. Wind No.	Cloud Cover	Moon	
	DAY	MONTH	YEAR		1 Male 2 Female 9 Unknown	1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown							
II	DD	MM	YY	I			II	IIID	II	II	I	I	
2-3	5-6	7-8	9-10	12	AGE		51-52	54-57	59-60	62-63	65	66	
7	11	12	2008	C4	1 Young Yr. 2 Adult 9 Unknown	FEMALE	11:48	5		0.5	0	4	

[illegible]

WIND			CLOUD COVER	MOON	NEW (Basic)	NUMBER CONFUSED	ANIMAL NUMBER
Beauf. No.	km.	mi.					
00	.5	.5	1 Clear	0 None	1 New animal	1 Tag lost	8 Dead unmarked animal
02	9	6	1 Partly Cloudy	1 Quarter	2 Re-tag	2 Natural amputation	9 Multiple amputation
04	23	14	2 Cloudy	2 Half	NEW (Asses.)	3 Escaped	FIRST DIGIT - EAR CLIP
06	40	25	3 Drizzle	3 3-Quarter	5 New animal	TORPID - DEAD	0 = No Clip
08	60	38	4 Rain	4 Full	RE-CAPTURS	1 Torpid	1 = Right ear Animals
10	84	52	5 Snow		Blank	2 Dead	2 = Left ear straight
12	104	65	6 Fog		TIME	GRID STAKE NUMBER	3 = Both ears cut
					Hr. from sunset	9999 - Unusual location	

FIELD DATA SHEET

PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION					Time	Air Temp. °C	Rel Hum	Beauf. No.	Cloud Cover	Moon		
	DAY	MONTH	YEAR			1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown	MALE	FEMALE										
II	DD	MM	YY	I														
2-3	5-6	7-8	9-10	12														
8	8	12	2008	CU														
SPECIES CODE	ALPHA CODE		NEW	ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gr.)	BRIEF NOTES						
	GENUS	SPECIES																
II	AAA	AAA	I	IIII	I	I	I	I	I	III	III	AAAAAAAA						
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	72-80						
	Dip	her	1			1	3	2		7	94							
	Dip	her	1			1	2	2		10	86							
	Per	man	1			2	4	1		13	14							
	Dip	her	1			2	4	2		19	59							
	Dip	her	1			1	3	2		27	97							
	Dip	her	1			2	4	2		33	72							
	Dip	her	1			1	3	2		38	90							
	Per	man	1			2	4	1		47	12							
	Per	man	1			2	8	2		48	17							
Ended at 1:33																		

WIND			CLOUD COVER		MOON		NEW (Basic)		NUMBER CONFUSED		ANIMAL NUMBER	
Beauf. No.	km.	mi.	0	Clear	0	None	1	New animal	1	Tag lost	8	Dead unmarked animal
00	.5	.5	1	Partly Cloudy	1	Quarter	2	Re-tag	2	Natural amputation	9	Multiple amputation
02	9	6	2	Cloudy	2	Half	NEW (Asses.)		3	Escaped	FIRST DIGIT - EAR CLIP	
04	23	14	3	Drizzle	3	3-Quarter	5	New animal	TORPID - DEAD		0	No Clip
06	40	25	4	Rain	4	Full	RE-CAPTURS		1	Torpid	1	Right ear Animals
08	60	38	5	Snow			Blank		2	Dead	2	Left ear straight
10	84	52	6	Fog			TIME		GRID STAKE NUMBER		3	Both ears cut
12	104	65					Hr. from sunset		9999 - Unusual location			

RV FORM 08

[illegible]

FIELD DATA SHEET

RV FORM 08

PLOT	DATE			OBS	SEX 1 Male 2 Female 9 Unknown	SEXUAL CONDITION		Time	Air Temp. °C	Rel Hum	Beauf. No.	Cloud Cover	Moon		
	DAY	MONTH	YEAR			1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged 6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown	MALE FEMALE								
II	DD	MM	YY	I				II	IIID	II	II	I	I		
2-3	5-6	7-8	9-10	12	AGE 1 Young Yr. 2 Adult 9 Unknown			51-52	54-57	59-60	62-63	65	66		
8	10	12	2008	CN				12:24	4		15	0	4		
SPECIES CODE	ALPHA CODE		NEW	RB ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gr.)	BRIEF NOTES			
	GENUS	SPECIES													
II	AAA	AAA	I	IIII	I	I	I	I	I	IIII	IIID	AAAAAAAAA			
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	72-80			
	Dip	her	R							3			1		
	Dip	her	1			2	4	2		20	69		2		
	Per	man	1			2	4	2		21	14		3		
	Dip	her	1			1	3	2		24	91		4		
	Per	man	1			1	2	2		26	24		5		
	Per	man	1			2	4	2		30	15		6		
	Dip	her	R							31		Bloody Nose	7		
													8		
				End 12:44									9		
													10		
													11		
													12		
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													24		
													25		

WIND			CLOUD COVER	MOON	NEW (Basic)	NUMBER CONFUSED	ANIMAL NUMBER			
Beauf. No.	km.	mi.	0	Clear	0	None	1	Tag lost	8	Dead unmarked animal
00	.5	.5	1	Partly Cloudy	1	Quarter	2	Re-tag	2	Natural amputation
02	9	6	2	Cloudy	2	Half	NEW (Asses.)	3	Escaped	FIRST DIGIT - EAR CLIP
04	23	14	3	Drizzle	3	3-Quarter	5	New animal	TORPID - DEAD	0 = No Clip
06	40	25	4	Rain	4	Full	RE-CAPTURS	1	Torpid	1 = Right ear Animals
08	60	38	5	Snow			Blank	2	Dead	2 = Left ear straight
10	84	52	6	Fog			TIME	GRID STAKE NUMBER	3 = Both ears	cut
12	104	65					Hr. from sunset	9999 - Unusual location		

FIELD DATA SHEET

RV FORM 08

PLOT	DATE			OBS	SEX	SEXUAL CONDITION	Time	Air Temp.	Rel Hum	Beet. No.	Cloud Cover	Moon		
	DAY	MONTH	YEAR		1 Male 2 Female 9 Unknown	1 Testes Abdominal 2 Testes scrotal Up 3 Testes scrotal Dwn. 4 Vulva inactive, closed 5 Vulva turgid, enlarged								
II	DD	MM	YY	I			II	IIID	II	II	I	I		
2-3	5-6	7-8	9-10	12	AGE									
					1 Young Yr. 2 Adult 9 Unknown	6 Cop. plug 7 Pregnant 8 Lactating 9 Condition unknown								
8	11	12	2008	C4			51-52	54-57	59-60	62-63	65	66		
							12:18	5		.5	0	4		

SPECIES CODE	ALPHA CODE		NEW	RB ANIMAL NUMBER	NO. CONFUSED	SEX	SEXUAL COND.	AGE	TORPID-DEAD	GRID STAKE NUMBER	BODY WT. (gr.)	BRIEF NOTES
	GENUS	SPECIES										
II	AAA	AAA	I	IIII	I	I	I	I	I	IIII	IIID	AAAAAAAAA
14-15	17-19	20-22	24	26-30	32	34	36	38	40	41-44	46-49	72-80
	Per	man	1			2	4	1		1	7	
	Per	man	1			1	2	2		3	19	
	Dip	her	R							4		
	Per	man	1			2	8	2		22	21	Huge Tumor on right side
	Dip	her	R							24		
	Per	man	1			1	2	2		25	19	
	Per	man	1			1	2	2		29	16	
	Dip	her	1			1	2	2		34	78	
				End 12:43								

WIND			CLOUD COVER	MOON	NEW (Basic)	NUMBER CONFUSED	ANIMAL NUMBER
Beauf. No.	km.	mi.					
00	.5	.5	0 Clear	0 None	1 New animal	1 Tag lost	8 Dead unmarked animal
02	9	6	1 Partly Cloudy	1 Quarter	2 Re-tag	2 Natural amputation	9 Multiple amputation
04	23	14	2 Cloudy	2 Half	NEW (Asses.)	3 Escaped	FIRST DIGIT - EAR CLIP
06	40	25	3 Drizzle	3 3-Quarter	5 New animal	TORPID - DEAD	0 = No Clip
08	60	38	4 Rain	4 Full	RE-CAPTURS	1 Torpid	1 = Right ear Animals
10	84	52	5 Snow		Blank	2 Dead	2 = Left ear straight
12	104	65	6 Fog		TIME	GRID STAKE NUMBER	3 = Both ears cut
					Hr. from sunset	9999 - Unusual location	

JURISDICTIONAL DELINEATION DATA SHEETS

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WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site:	San Joaquin Solar	City/County:	Fresno County	Sampling Date:	1/14/2009
Applicant/Owner:		State:	CA	Sampling Point:	1DP1U
Investigator(s):	Curtis Uptain/Woody Moise	Section, Township, Range:			
Landform (hillslope, terrace, etc.):	Terrace	Local Relief (concave, convex, none):	Flat	Slope (%):	0
Subregion (LRR):	LRR C	Lat:		Long:	
				Datum:	WGS 1984
Soil Map Unit Name:	NW1 Classification:				
Are climatic/hydrological conditions on the site typical for this time of the year? ☒ Yes ☐ No					
Are Vegetation, ☐ Soil, ☒ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" Present? ☒ Yes ☐ No					
Are Vegetation, ☐ Soil, ☐ or Hydrology ☐ naturally problematic? (If needed, explain answers in remarks)					
SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.					
Hydrophytic Vegetation Present?		☐ Yes ☒ No			
Hydric Soil Present?		☐ Yes ☒ No			
Wetland Hydrology Present?		☐ Yes ☒ No			
Remarks:		Soil pit on bank in upland. Past work in channel has pushed soil from channel onto bank.			

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:			
1. Populus fremontii	15%	X	FACW	Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)			
2. Tamarix aphylla	10%	X	FACW	Total Number of Dominant Species Across All Strata: <u>5</u> (B)			
3.				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>40%</u> (A/B)			
4.							
Total Cover:	0.25						
Sapling/Shrub Stratum				Prevalence Index worksheet:			
1.				Total % Cover of:		Multiplied by:	
2.				OBL species		x1 =	
3.				FACW species	25	x2 =	50
4.				FAC species		x3 =	
5.				FACU species		x4 =	
Total Cover:	0			UPL species	65	x5 =	325
				Column Totals:	90 (A)		375 (B)
Herb Stratum				Prevalence Index = B/A = <u>4.16666667</u>			
1. Sisymbrium orientale	25%	X	NOL	Hydrophytic Vegetation Indicators:			
2. Bromus diandrus	20%	X	NOL	☐ Dominance Test is >50%			
3. Amsinckia menziesii	5%		NOL	☐ Prevalence Index is ≤3.0 ¹			
4. Bromus madritensis	15%	X	NI	☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)			
5.				☐ Problematic Hydrophytic Vegetation ¹ (Explain)			
6.							
7.							
8.							
Total Cover:	0.65						
Woody Vine Stratum				¹ Indicators of hydric soil and wetland hydrology must be present.			
1.				Hydrophytic Vegetation Present? ☐ Yes ☒ No			
2.							
Total Cover:	0						
% Bare Ground in Herb Stratum: 50%	% Cover of Biotic Crust: 0%						
Remarks:							

SOIL

Sampling Point:

1DP1U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-20	10 YR3/3	100	None				Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.²Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5) (LRR C)
☐ 1 cm Muck (A9) (LRR D)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ Sandy Gleyed Matrix (S4)

- ☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

 Type: _____
 Depth (inches): _____
Hydric Soil Present? ☐ Yes ☒ No

Remarks: No evidence of hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1) (Nonriverine)
☐ Sediment Deposits (B2) (Nonriverine)
☐ Drift Deposits (B3) (Nonriverine)
☐ Surface Soil Cracks (B6)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Water-Stained Leaves (B9)
☐ Salt Crust (B11)
☐ Biotic Crust (B12)
☐ Aquatic Invertebrates (B13)
☐ Hydrogen Sulfide Odor (C1)
☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Presence Of Reduced Iron (C4)
☐ Recent Iron Reduction in Plowed Soils (C6)
☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
☐ Sediment Deposits (B2) (Riverine)
☐ Drift Deposits (B3) (Riverine)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Thin Muck Surface (C7)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? ☐ Yes ☒ No Depth (inches): _____
 Water Table Present? ☐ Yes ☒ No Depth (inches): _____
 Saturation Present? (Includes capillary fringe) ☐ Yes ☒ No Depth (inches): _____

Wetland Hydrology Present? ☐ Yes ☒ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No evidence of hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site:	San Joaquin Solar	City/County:	Fresno County	Sampling Date:	1/14/2009
Applicant/Owner:		State:	CA	Sampling Point:	1DP1W
Investigator(s):	Curtis Uptain/Woody Moise	Section, Township, Range:			
Landform (hillslope, terrace, etc.):	Channel	Local Relief (concave, convex, none):	Concave	Slope (%):	2
Subregion (LRR):	LRR C	Lat:	Long:	Datum:	WGS 1984
Soil Map Unit Name:	NW1 Classification:				
Are climatic/hydrological conditions on the site typical for this time of the year? ☒ Yes ☐ No					
Are Vegetation, ☐ Soil, ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" Present? ☒ Yes ☐ No					
Are Vegetation, ☐ Soil, ☐ or Hydrology ☐ naturally problematic? (If needed, explain answers in remarks)					
SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.					
Hydrophytic Vegetation Present?		☐ Yes ☒ No			
Hydric Soil Present?		☐ Yes ☒ No			
Wetland Hydrology Present?		☒ Yes ☐ No			
Is the Sampled Area within a Wetland? ☐ Yes ☒ No					
Remarks:					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1.				Number of Dominant Species That Are OBL, FACW, or FAC:	0 (A)
2.				Total Number of Dominant Species Across All Strata:	1 (B)
3.				Percent of Dominant Species That Are OBL, FACW, or FAC:	0% (A/B)
4.					
Total Cover:	0				
Sapling/Shrub Stratum				Prevalence Index worksheet:	
1. <i>Lepidospartum squamatum</i>	5%	X	NOL	Total % Cover of:	Multiplied by:
2.				OBL species	x1 =
3.				FACW species	x2 =
4.				FAC species	x3 =
5.				FACU species	x4 =
Total Cover:	0.05			UPL species	x5 =
Herb Stratum				Column Totals:	0 (A) 0 (B)
1.				Prevalence Index = B/A = #DIV/0!	
2.					
3.					
4.					
5.					
6.					
7.					
8.					
Total Cover:	0				
Woody Vine Stratum				Hydrophytic Vegetation Indicators:	
1.				☐ Dominance Test is >50%	
2.				☐ Prevalence Index is ≤3.0 ¹	
				☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
				☐ Problematic Hydrophytic Vegetation ¹ (Explain)	
				¹ Indicators of hydric soil and wetland hydrology must be present.	
Total Cover:		0		Hydrophytic Vegetation Present? ☐ Yes ☒ No	
% Bare Ground in Herb Stratum: 95%		% Cover of Biotic Crust: 0%			
Remarks:					

SOIL

Sampling Point:

1DP1W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-20	10 YR 3/2	100					Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.²Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5) (LRR C)
☐ 1 cm Muck (A9) (LRR D)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ Sandy Gleyed Matrix (S4)

- ☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

 Type: _____
 Depth (inches): _____
Hydric Soil Present? ☐ Yes ☒ No

Remarks: No evidence of hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1) (Nonriverine)
☐ Sediment Deposits (B2) (Nonriverine)
☐ Drift Deposits (B3) (Nonriverine)
☐ Surface Soil Cracks (B6)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Water-Stained Leaves (B9)
☐ Salt Crust (B11)
☐ Biotic Crust (B12)
☐ Aquatic Invertebrates (B13)
☐ Hydrogen Sulfide Odor (C1)
☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Presence Of Reduced Iron (C4)
☐ Recent Iron Reduction in Plowed Soils (C6)
☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
☐ Sediment Deposits (B2) (Riverine)
☒ Drift Deposits (B3) (Riverine)
☒ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Thin Muck Surface (C7)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? ☐ Yes ☒ No Depth (inches): _____
 Water Table Present? ☐ Yes ☒ No Depth (inches): _____
 Saturation Present? (Includes capillary fringe) ☐ Yes ☒ No Depth (inches): _____

Wetland Hydrology Present? ☒ Yes ☐ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Secondary indicators in channel bottom.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site:	San Joaquin Solar	City/County:	Fresno County	Sampling Date:	1/14/2009
Applicant/Owner:		State:	CA	Sampling Point:	2DP1U
Investigator(s):	Curtis Uptain/Woody Moise	Section, Township, Range:			
Landform (hillslope, terrace, etc.):	Terrace	Local Relief (concave, convex, none):	None	Slope (%):	0-2
Subregion (LRR):	LRR C	Lat:	Long:	Datum:	WGS 1984
Soil Map Unit Name:	NW1 Classification:				
Are climatic/hydrological conditions on the site typical for this time of the year? ☒ Yes ☐ No					
Are Vegetation, ☐ Soil, ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" Present? ☒ Yes ☐ No					
Are Vegetation, ☐ Soil, ☐ or Hydrology ☐ naturally problematic? (If needed, explain answers in remarks)					

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	☐ Yes ☒ No	Is the Sampled Area within a Wetland?	☐ Yes ☒ No
Hydric Soil Present?	☐ Yes ☒ No		
Wetland Hydrology Present?	☐ Yes ☒ No		
Remarks:			

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1. Tamarix aphylla	8%	X	FACW	Number of Dominant Species That Are OBL, FACW, or FAC:	1 (A)
2.				Total Number of Dominant Species Across All Strata:	2 (B)
3.				Percent of Dominant Species That Are OBL, FACW, or FAC:	50% (A/B)
4.					
Total Cover:	0.08				
Sapling/Shrub Stratum				Prevalence Index worksheet:	
1.				Total % Cover of:	Multiplied by:
2.				OBL species	x1 =
3.				FACW species	x2 =
4.				FAC species	x3 =
5.				FACU species	x4 =
Total Cover:	0			UPL species	x5 =
				Column Totals:	0 (A) 0 (B)
Herb Stratum				Prevalence Index = B/A = #DIV/0!	
1. Amsinckia menziesii	15%		NOL	Hydrophytic Vegetation Indicators: ☐ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present.	
2. Bromus diandrus	60%	X	NOL		
3. Hordeum murinum	5%		NI		
4. Erodium cicutarium	2%		NOL		
5. Sisymbrium irio	4%		NOL		
6.					
7.					
8.					
Total Cover:	0.86				
Woody Vine Stratum					
1.					
2.					
Total Cover:	0				
% Bare Ground in Herb Stratum: 6%	% Cover of Biotic Crust:				
Remarks:					

SOIL

Sampling Point:

2DP1U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-16	7.5 YR 3/3	100	None				Sandy loam	silty clay
16-21	10 YR 4/3	75	None				Sandy loam	Sandy loam with intrusions as clumps

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.²Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|---|
| ☐ Histosol (A1) | ☐ Sandy Redox (S5) |
| ☐ Histic Epipedon (A2) | ☐ Stripped Matrix (S6) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) (LRR C) | ☐ Depleted Matrix (F3) |
| ☐ 1 cm Muck (A9) (LRR D) | ☐ Redox Dark Surface (F6) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Depleted Dark Surface (F7) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Depressions (F8) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Vernal Pools (F9) |
| ☐ Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

 Type: _____
 Depth (inches): _____
Hydric Soil Present? ☐ Yes ☒ No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- | | |
|--|--|
| ☐ Surface Water (A1) | ☐ Salt Crust (B11) |
| ☐ High Water Table (A2) | ☐ Biotic Crust (B12) |
| ☐ Saturation (A3) | ☐ Aquatic Invertebrates (B13) |
| ☐ Water Marks (B1) (Nonriverine) | ☐ Hydrogen Sulfide Odor (C1) |
| ☐ Sediment Deposits (B2) (Nonriverine) | ☐ Oxidized Rhizospheres along Living Roots (C3) |
| ☐ Drift Deposits (B3) (Nonriverine) | ☐ Presence Of Reduced Iron (C4) |
| ☐ Surface Soil Cracks (B6) | ☐ Recent Iron Reduction in Plowed Soils (C6) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Other (Explain in Remarks) |
| ☐ Water-Stained Leaves (B9) | |

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
☐ Sediment Deposits (B2) (Riverine)
☐ Drift Deposits (B3) (Riverine)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Thin Muck Surface (C7)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	☐ Yes ☐ No	Depth (inches): _____
Water Table Present?	☐ Yes ☐ No	Depth (inches): _____
Saturation Present? (Includes capillary fringe)	☐ Yes ☐ No	Depth (inches): _____

Wetland Hydrology Present? ☐ Yes ☒ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site:	San Joaquin Solar	City/County:	Fresno County	Sampling Date:	1/14/2009
Applicant/Owner:		State:	CA	Sampling Point:	2DP1W
Investigator(s):	Curtis Uptain/Woody Moise	Section, Township, Range:			
Landform (hillslope, terrace, etc.):	Creek channel	Local Relief (concave, convex, none):	Concave	Slope (%):	2-4
Subregion (LRR):	LRR C	Lat:		Long:	
				Datum:	WGS 1984
Soil Map Unit Name:	NW1 Classification:				
Are climatic/hydrological conditions on the site typical for this time of the year? ☒ Yes ☐ No					
Are Vegetation, ☐ Soil, ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" Present? ☒ Yes ☐ No					
Are Vegetation, ☐ Soil, ☐ or Hydrology ☐ naturally problematic? (If needed, explain answers in remarks)					
SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.					
Hydrophytic Vegetation Present?		☐ Yes ☒ No			
Hydric Soil Present?		☐ Yes ☒ No			
Wetland Hydrology Present?		☒ Yes ☐ No			
Is the Sampled Area within a Wetland?		☐ Yes ☒ No			
Remarks: Soil pit on bank in upland. Past work in channel has pushed soil from channel onto bank.					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1.				Number of Dominant Species That Are OBL, FACW, or FAC:	<u> N/A </u> (A)
2.				Total Number of Dominant Species Across All Strata:	<u> </u> (B)
3.				Percent of Dominant Species That Are OBL, FACW, or FAC:	<u> #VALUE! </u> (A/B)
4.					
Total Cover:	0				
Sapling/Shrub Stratum				Prevalence Index worksheet:	
1.				Total % Cover of:	Multiplied by:
2.				OBL species	x1 =
3.				FACW species	x2 =
4.				FAC species	x3 =
5.				FACU species	x4 =
Total Cover:	0			UPL species	x5 =
Herb Stratum				Column Totals:	(A) (B)
1. Hordeum murinum	3%		NI	Prevalence Index = B/A = #DIV/0!	
2.				Hydrophytic Vegetation Indicators: ☐ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present.	
3.					
4.					
5.					
6.					
7.					
8.					
Total Cover:	0.03				
Woody Vine Stratum				Hydrophytic Vegetation Present? ☐ Yes ☒ No	
1.					
2.					
Total Cover:	0				
% Bare Ground in Herb Stratum: 9%	% Cover of Biotic Crust:				
Remarks: Essentially unvegetated.					

SOIL

Sampling Point:

2DP1W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-20	10 YR 3/2	100					5	Pea gravel in 14-20"

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.²Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5) (LRR C)
☐ 1 cm Muck (A9) (LRR D)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ Sandy Gleyed Matrix (S4)

- ☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

 Type: _____
 Depth (inches): _____
Hydric Soil Present? ☐ Yes ☒ No

Remarks: No evidence of hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1) (Nonriverine)
☐ Sediment Deposits (B2) (Nonriverine)
☐ Drift Deposits (B3) (Nonriverine)
☐ Surface Soil Cracks (B6)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Water-Stained Leaves (B9)
☐ Salt Crust (B11)
☐ Biotic Crust (B12)
☐ Aquatic Invertebrates (B13)
☐ Hydrogen Sulfide Odor (C1)
☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Presence Of Reduced Iron (C4)
☐ Recent Iron Reduction in Plowed Soils (C6)
☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
☐ Sediment Deposits (B2) (Riverine)
☒ Drift Deposits (B3) (Riverine)
☒ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Thin Muck Surface (C7)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? ☐ Yes ☐ No Depth (inches): _____
 Water Table Present? ☐ Yes ☐ No Depth (inches): _____
 Saturation Present? (Includes capillary fringe) ☐ Yes ☐ No Depth (inches): _____

Wetland Hydrology Present? ☒ Yes ☐ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site:	San Joaquin Solar	City/County:	Fresno County	Sampling Date:	1/14/2009
Applicant/Owner:		State:	CA	Sampling Point:	3DP1U
Investigator(s):	Curtis Uptain/Woody Moise	Section, Township, Range:			
Landform (hillslope, terrace, etc.):	River terrace	Local Relief (concave, convex, none):	None	Slope (%):	0-4
Subregion (LRR):	LRR C	Lat:	Long:	Datum:	WGS 1984
Soil Map Unit Name:	NW1 Classification:				
Are climatic/hydrological conditions on the site typical for this time of the year? ☒ Yes ☐ No					
Are Vegetation, ☒ Soil, ☒ or Hydrology ☒ significantly disturbed? Are "Normal Circumstances" Present? ☐ Yes ☒ No					
Are Vegetation, ☐ Soil, ☐ or Hydrology ☐ naturally problematic? (If needed, explain answers in remarks)					
SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.					
Hydrophytic Vegetation Present?		☐ Yes ☒ No		Is the Sampled Area within a Wetland? ☐ Yes ☒ No	
Hydric Soil Present?		☐ Yes ☒ No			
Wetland Hydrology Present?		☐ Yes ☒ No			
Remarks: Creek bed is channeled, and banks are graded.					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1.				Number of Dominant Species That Are OBL, FACW, or FAC:	1 (A)
2.				Total Number of Dominant Species Across All Strata:	2 (B)
3.				Percent of Dominant Species That Are OBL, FACW, or FAC:	50% (A/B)
4.					
Total Cover:	0				
Sapling/Shrub Stratum				Prevalence Index worksheet:	
1.				Total % Cover of:	Multiplied by:
2.				OBL species	x1 =
3.				FACW species	x2 =
4.				FAC species	x3 =
5.				FACU species	x4 =
Total Cover:	0			UPL species	x5 =
Herb Stratum				Column Totals:	(A) (B)
1. <i>Ambrosia psilostachya</i>	20%	X	FAC	Prevalence Index = B/A = #DIV/0!	
2. <i>Lessingia</i> sp.	50%	X	NOL	Hydrophytic Vegetation Indicators: ☐ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present.	
3. <i>Bromus madritensis</i>	10%		NI		
4.					
5.					
6.					
7.					
8.					
Total Cover:	0.8				
Woody Vine Stratum				Hydrophytic Vegetation Present? ☐ Yes ☒ No	
1.					
2.					
Total Cover:	0				
% Bare Ground in Herb Stratum: 15%	% Cover of Biotic Crust: 0%				
Remarks: Essentially unvegetated.					

SOIL

Sampling Point:

3DP1U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
1-12	2.5 Y1 3/2	100					SL	Sandy loam
12-20	10 YR 3/2	100					5	Loose sand

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.²Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5) (LRR C)
☐ 1 cm Muck (A9) (LRR D)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ Sandy Gleyed Matrix (S4)

- ☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

 Type: _____
 Depth (inches): _____
Hydric Soil Present? ☐ Yes ☒ No

Remarks: No evidence of hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1) (Nonriverine)
☐ Sediment Deposits (B2) (Nonriverine)
☐ Drift Deposits (B3) (Nonriverine)
☐ Surface Soil Cracks (B6)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Water-Stained Leaves (B9)
☐ Salt Crust (B11)
☐ Biotic Crust (B12)
☐ Aquatic Invertebrates (B13)
☐ Hydrogen Sulfide Odor (C1)
☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Presence Of Reduced Iron (C4)
☐ Recent Iron Reduction in Plowed Soils (C6)
☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
☐ Sediment Deposits (B2) (Riverine)
☐ Drift Deposits (B3) (Riverine)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Thin Muck Surface (C7)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? ☐ Yes ☒ No Depth (inches): _____
 Water Table Present? ☐ Yes ☒ No Depth (inches): _____
 Saturation Present? (Includes capillary fringe) ☐ Yes ☒ No Depth (inches): _____

Wetland Hydrology Present? ☐ Yes ☒ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site:	San Joaquin Solar	City/County:	Fresno County	Sampling Date:	1/14/2009
Applicant/Owner:		State:	CA	Sampling Point:	3DP1W
Investigator(s):	Curtis Uptain/Woody Moise	Section, Township, Range:			
Landform (hillslope, terrace, etc.):	Creek channel	Local Relief (concave, convex, none):	Concave	Slope (%):	5
Subregion (LRR):	LRR C	Lat:	Long:	Datum:	WGS 1984
Soil Map Unit Name:	NW1 Classification:				
Are climatic/hydrological conditions on the site typical for this time of the year? ☒ Yes ☐ No					
Are Vegetation, ☒ Soil, ☒ or Hydrology ☒ significantly disturbed? Are "Normal Circumstances" Present? ☐ Yes ☒ No					
Are Vegetation, ☐ Soil, ☐ or Hydrology ☐ naturally problematic? (If needed, explain answers in remarks)					
SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.					
Hydrophytic Vegetation Present?		☐ Yes ☒ No			
Hydric Soil Present?		☐ Yes ☒ No			
Wetland Hydrology Present?		☒ Yes ☐ No			
Remarks:		Is the Sampled Area within a Wetland? ☐ Yes ☒ No Soil sandy - no redox features. Wetland hydrology only indicator present. The creek bed at this location has been channelled and the banks have been graded.			

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1.				Number of Dominant Species That Are OBL, FACW, or FAC:	<u> N/A </u> (A)
2.				Total Number of Dominant Species Across All Strata:	<u> </u> (B)
3.				Percent of Dominant Species That Are OBL, FACW, or FAC:	<u> #VALUE! </u> (A/B)
4.					
Total Cover:	0				
Sapling/Shrub Stratum				Prevalence Index worksheet:	
1.				Total % Cover of:	Multiplied by:
2.				OBL species	x1 =
3.				FACW species	x2 =
4.				FAC species	x3 =
5.				FACU species	x4 =
Total Cover:	0			UPL species	x5 =
Herb Stratum				Column Totals:	(A) (B)
1.				Prevalence Index = B/A = #DIV/0!	
2.				Hydrophytic Vegetation Indicators:	
3.				☐ Dominance Test is >50%	
4.				☐ Prevalence Index is ≤3.0 ¹	
5.				☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
6.				☐ Problematic Hydrophytic Vegetation ¹ (Explain)	
7.				¹ Indicators of hydric soil and wetland hydrology must be present.	
8.				Hydrophytic Vegetation Present? ☐ Yes ☒ No	
Total Cover:	0				
Woody Vine Stratum					
1.					
2.					
Total Cover:	0				
% Bare Ground in Herb Stratum: 100%	% Cover of Biotic Crust: 5%				
Remarks: Essentially unvegetated.					

SOIL

Sampling Point:

3DP1W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-20	7.5 YR 3/3	100					5	Sandy with silt-sand fragments

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.²Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5) (LRR C)
☐ 1 cm Muck (A9) (LRR D)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ Sandy Gleyed Matrix (S4)

- ☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

 Type: _____
 Depth (inches): _____
Hydric Soil Present? ☐ Yes ☒ No

Remarks: No evidence of hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1) (Nonriverine)
☐ Sediment Deposits (B2) (Nonriverine)
☐ Drift Deposits (B3) (Nonriverine)
☐ Surface Soil Cracks (B6)
☐ Inundation Visible on Aerial Imagery (B7)
☒ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
☐ Biotic Crust (B12)
☐ Aquatic Invertebrates (B13)
☐ Hydrogen Sulfide Odor (C1)
☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Presence Of Reduced Iron (C4)
☐ Recent Iron Reduction in Plowed Soils (C6)
☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
☐ Sediment Deposits (B2) (Riverine)
☒ Drift Deposits (B3) (Riverine)
☒ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Thin Muck Surface (C7)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? ☐ Yes ☒ No Depth (inches): _____
 Water Table Present? ☐ Yes ☒ No Depth (inches): _____
 Saturation Present? (Includes capillary fringe) ☐ Yes ☒ No Depth (inches): _____

Wetland Hydrology Present? ☒ Yes ☐ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Channel and banks have been graded.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site:	San Joaquin Solar	City/County:	Fresno County	Sampling Date:	1/14/2009
Applicant/Owner:		State:	CA	Sampling Point:	4DP1U
Investigator(s):	Curtis Uptain/Woody Moise	Section, Township, Range:			
Landform (hillslope, terrace, etc.):	Terrace	Local Relief (concave, convex, none):	Convex	Slope (%):	5
Subregion (LRR):	LRR C	Lat:	Long:	Datum:	WGS 1984
Soil Map Unit Name:	NW1 Classification:				
Are climatic/hydrological conditions on the site typical for this time of the year? ☒ Yes ☐ No					
Are Vegetation, ☒ Soil, ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" Present? ☐ Yes ☐ No					
Are Vegetation, ☐ Soil, ☐ or Hydrology ☐ naturally problematic? (If needed, explain answers in remarks)					
SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.					
Hydrophytic Vegetation Present?		☐ Yes ☒ No			
Hydric Soil Present?		☐ Yes ☒ No			
Wetland Hydrology Present?		☐ Yes ☒ No			
Is the Sampled Area within a Wetland?		☐ Yes ☒ No			
Remarks: Soil pit on bank in upland. Past work in channel has pushed soil from channel onto bank.					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1.				Number of Dominant Species That Are OBL, FACW, or FAC:	0 (A)
2.				Total Number of Dominant Species Across All Strata:	2 (B)
3.				Percent of Dominant Species That Are OBL, FACW, or FAC:	0% (A/B)
4.					
Total Cover:	0				
Sapling/Shrub Stratum				Prevalence Index worksheet:	
1.				Total % Cover of:	Multiplied by:
2.				OBL species	x1 =
3.				FACW species	x2 =
4.				FAC species	x3 =
5.				FACU species	x4 =
Total Cover:	0			UPL species	x5 =
Herb Stratum				Column Totals:	0 (A) 0 (B)
1. Bromus madritensis	30%	X	NI	Prevalence Index = B/A = #DIV/0!	
2. Bromus diandrus	15%		NOL		
3. Marrubium vulgare	5%		FAC		
4. Salsola tragus	40%	X	FACU		
5.					
6.					
7.					
8.					
Total Cover:	0.9				
Woody Vine Stratum				Hydrophytic Vegetation Indicators:	
1.				☐ Dominance Test is >50%	
2.				☐ Prevalence Index is ≤3.0 ¹	
				☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
				☐ Problematic Hydrophytic Vegetation ¹ (Explain)	
				¹ Indicators of hydric soil and wetland hydrology must be present.	
% Bare Ground in Herb Stratum: 10%		% Cover of Biotic Crust: 0%		Hydrophytic Vegetation Present? ☐ Yes ☒ No	
Remarks:					

SOIL

Sampling Point:

4DP1U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-20	10 YR 3/2	100					5	Fine sand

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.²Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5) (LRR C)
☐ 1 cm Muck (A9) (LRR D)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ Sandy Gleyed Matrix (S4)

- ☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

 Type: _____
 Depth (inches): _____
Hydric Soil Present? ☐ Yes ☒ No

Remarks: No hydric soil indicators.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1) (Nonriverine)
☐ Sediment Deposits (B2) (Nonriverine)
☐ Drift Deposits (B3) (Nonriverine)
☐ Surface Soil Cracks (B6)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Water-Stained Leaves (B9)
☐ Salt Crust (B11)
☐ Biotic Crust (B12)
☐ Aquatic Invertebrates (B13)
☐ Hydrogen Sulfide Odor (C1)
☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Presence Of Reduced Iron (C4)
☐ Recent Iron Reduction in Plowed Soils (C6)
☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
☐ Sediment Deposits (B2) (Riverine)
☐ Drift Deposits (B3) (Riverine)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Thin Muck Surface (C7)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? ☐ Yes ☒ No Depth (inches): _____
 Water Table Present? ☐ Yes ☒ No Depth (inches): _____
 Saturation Present? (Includes capillary fringe) ☐ Yes ☒ No Depth (inches): _____

Wetland Hydrology Present? ☐ Yes ☒ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Low terrace above creek channel.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site:	San Joaquin Solar	City/County:	Fresno County	Sampling Date:	1/14/2009
Applicant/Owner:		State:	CA	Sampling Point:	4DP1W
Investigator(s):	Curtis Uptain/Woody Moise	Section, Township, Range:			
Landform (hillslope, terrace, etc.):	Creek channel	Local Relief (concave, convex, none):	Concave	Slope (%):	2
Subregion (LRR):	LRR C	Lat:		Long:	
				Datum:	WGS 1984
Soil Map Unit Name:	NW1 Classification:				
Are climatic/hydrological conditions on the site typical for this time of the year? ☒ Yes ☐ No					
Are Vegetation, ☐ Soil, ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" Present? ☒ Yes ☐ No					
Are Vegetation, ☐ Soil, ☐ or Hydrology ☐ naturally problematic? (If needed, explain answers in remarks)					

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	☐ Yes ☒ No	Is the Sampled Area within a Wetland?	☐ Yes ☒ No
Hydric Soil Present?	☐ Yes ☒ No		
Wetland Hydrology Present?	☒ Yes ☐ No		
Remarks:			

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1.				Number of Dominant Species That Are OBL, FACW, or FAC:	N/A (A)
2.				Total Number of Dominant Species Across All Strata:	(B)
3.				Percent of Dominant Species That Are OBL, FACW, or FAC:	#VALUE! (A/B)
4.					
Total Cover:	0				
Sapling/Shrub Stratum				Prevalence Index worksheet:	
1.				Total % Cover of:	Multiplied by:
2.				OBL species	x1 =
3.				FACW species	x2 =
4.				FAC species	x3 =
5.				FACU species	x4 =
Total Cover:	0			UPL species	x5 =
Herb Stratum				Column Totals:	0 (A) 0 (B)
1.				Prevalence Index = B/A = #DIV/0!	
2.				Hydrophytic Vegetation Indicators:	
3.				☐ Dominance Test is >50%	
4.				☐ Prevalence Index is ≤3.0 ¹	
5.				☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
6.				☐ Problematic Hydrophytic Vegetation ¹ (Explain)	
7.				¹ Indicators of hydric soil and wetland hydrology must be present.	
8.					
Total Cover:	0				
Woody Vine Stratum				Hydrophytic Vegetation Present? ☐ Yes ☒ No	
1.					
2.					
Total Cover:	0				
% Bare Ground in Herb Stratum: 100%	% Cover of Biotic Crust: 0%				
Remarks: Unvegetated channel.					

SOIL

Sampling Point:

4DP1W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-20	7.5 YR 3/2	100					5	Coarse and fine sands layered

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.²Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|---|
| ☐ Histosol (A1) | ☐ Sandy Redox (S5) |
| ☐ Histic Epipedon (A2) | ☐ Stripped Matrix (S6) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) (LRR C) | ☐ Depleted Matrix (F3) |
| ☐ 1 cm Muck (A9) (LRR D) | ☐ Redox Dark Surface (F6) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Depleted Dark Surface (F7) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Depressions (F8) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Vernal Pools (F9) |
| ☐ Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

 Type: _____
 Depth (inches): _____
Hydric Soil Present? ☐ Yes ☒ No

Remarks: No hydric soil indicators present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- | | |
|--|--|
| ☐ Surface Water (A1) | ☐ Salt Crust (B11) |
| ☐ High Water Table (A2) | ☐ Biotic Crust (B12) |
| ☐ Saturation (A3) | ☐ Aquatic Invertebrates (B13) |
| ☐ Water Marks (B1) (Nonriverine) | ☐ Hydrogen Sulfide Odor (C1) |
| ☐ Sediment Deposits (B2) (Nonriverine) | ☐ Oxidized Rhizospheres along Living Roots (C3) |
| ☐ Drift Deposits (B3) (Nonriverine) | ☐ Presence Of Reduced Iron (C4) |
| ☐ Surface Soil Cracks (B6) | ☐ Recent Iron Reduction in Plowed Soils (C6) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Other (Explain in Remarks) |
| ☐ Water-Stained Leaves (B9) | |

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
☐ Sediment Deposits (B2) (Riverine)
☒ Drift Deposits (B3) (Riverine)
☒ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Thin Muck Surface (C7)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	☐ Yes ☐ No	Depth (inches): _____
Water Table Present?	☐ Yes ☐ No	Depth (inches): _____
Saturation Present? (Includes capillary fringe)	☐ Yes ☐ No	Depth (inches): _____

Wetland Hydrology Present? ☒ Yes ☐ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site:	San Joaquin Solar	City/County:	Fresno County	Sampling Date:	1/14/2009
Applicant/Owner:		State:	CA	Sampling Point:	5DP1U
Investigator(s):	Curtis Uptain/Woody Moise	Section, Township, Range:			
Landform (hillslope, terrace, etc.):	Terrace	Local Relief (concave, convex, none):	Concave	Slope (%):	2
Subregion (LRR):	LRR C	Lat:		Long:	
				Datum:	WGS 1984
Soil Map Unit Name:	NW1 Classification:				
Are climatic/hydrological conditions on the site typical for this time of the year? ☒ Yes ☐ No					
Are Vegetation, ☐ Soil, ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" Present? ☒ Yes ☐ No					
Are Vegetation, ☐ Soil, ☐ or Hydrology ☐ naturally problematic? (If needed, explain answers in remarks)					
SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.					
Hydrophytic Vegetation Present?		☐ Yes ☒ No			
Hydric Soil Present?		☐ Yes ☒ No			
Wetland Hydrology Present?		☐ Yes ☒ No			
Remarks:		Point taken on terrace above channel.			
		Is the Sampled Area within a Wetland? ☐ Yes ☒ No			

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1.				Number of Dominant Species That Are OBL, FACW, or FAC:	0 (A)
2.				Total Number of Dominant Species Across All Strata:	2 (B)
3.				Percent of Dominant Species That Are OBL, FACW, or FAC:	0% (A/B)
4.					
Total Cover:	0				
Sapling/Shrub Stratum				Prevalence Index worksheet:	
1. Artemisia californica	5%	X	NOL	Total % Cover of:	Multiplied by:
2.				OBL species	x1 =
3.				FACW species	x2 =
4.				FAC species	x3 =
5.				FACU species	x4 =
Total Cover:	0.05			UPL species	x5 =
Herb Stratum				Column Totals:	0 (A) 0 (B)
1. Artemisia douglasiana	5%		FACW	Prevalence Index = B/A = #DIV/0!	
2. Brassica nigra	2%		NOL		
3. Ambrosia psilostachya	5%		FACW		
4. Bromus madritensis	25%	X	NI		
5.					
6.					
7.					
8.					
Total Cover:	0.37				
Woody Vine Stratum					
1.					
2.					
Total Cover:	0				
% Bare Ground in Herb Stratum: 58%	% Cover of Biotic Crust:			Hydrophytic Vegetation Present? ☐ Yes ☒ No	
Remarks:					

SOIL

Sampling Point:

5DP1U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-20	7.5 YR 3/3	100					5	Fine sand

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.²Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|---|
| ☐ Histosol (A1) | ☐ Sandy Redox (S5) |
| ☐ Histic Epipedon (A2) | ☐ Stripped Matrix (S6) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) (LRR C) | ☐ Depleted Matrix (F3) |
| ☐ 1 cm Muck (A9) (LRR D) | ☐ Redox Dark Surface (F6) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Depleted Dark Surface (F7) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Depressions (F8) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Vernal Pools (F9) |
| ☐ Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

 Type: _____
 Depth (inches): _____
Hydric Soil Present? ☐ Yes ☒ No

Remarks: No hydric soil indicators present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- | | |
|--|--|
| ☐ Surface Water (A1) | ☐ Salt Crust (B11) |
| ☐ High Water Table (A2) | ☐ Biotic Crust (B12) |
| ☐ Saturation (A3) | ☐ Aquatic Invertebrates (B13) |
| ☐ Water Marks (B1) (Nonriverine) | ☐ Hydrogen Sulfide Odor (C1) |
| ☐ Sediment Deposits (B2) (Nonriverine) | ☐ Oxidized Rhizospheres along Living Roots (C3) |
| ☐ Drift Deposits (B3) (Nonriverine) | ☐ Presence Of Reduced Iron (C4) |
| ☐ Surface Soil Cracks (B6) | ☐ Recent Iron Reduction in Plowed Soils (C6) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Other (Explain in Remarks) |
| ☐ Water-Stained Leaves (B9) | |

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
☐ Sediment Deposits (B2) (Riverine)
☐ Drift Deposits (B3) (Riverine)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Thin Muck Surface (C7)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	☐ Yes ☒ No	Depth (inches): _____
Water Table Present?	☐ Yes ☒ No	Depth (inches): _____
Saturation Present? (Includes capillary fringe)	☐ Yes ☒ No	Depth (inches): _____

Wetland Hydrology Present? ☐ Yes ☒ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site:	San Joaquin Solar	City/County:	Fresno County	Sampling Date:	1/14/2009
Applicant/Owner:		State:	CA	Sampling Point:	5DP1W
Investigator(s):	Curtis Uptain/Woody Moise	Section, Township, Range:			
Landform (hillslope, terrace, etc.):	Creek channel	Local Relief (concave, convex, none):	Convex	Slope (%):	2
Subregion (LRR):	LRR C	Lat:	Long:	Datum:	WGS 1984
Soil Map Unit Name:	NW1 Classification:				
Are climatic/hydrological conditions on the site typical for this time of the year? ☒ Yes ☐ No					
Are Vegetation, ☐ Soil, ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" Present? ☒ Yes ☐ No					
Are Vegetation, ☐ Soil, ☐ or Hydrology ☐ naturally problematic? (If needed, explain answers in remarks)					
SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.					
Hydrophytic Vegetation Present?		☐ Yes ☒ No			
Hydric Soil Present?		☐ Yes ☒ No			
Wetland Hydrology Present?		☒ Yes ☐ No			
Remarks:		Point taken on terrace above channel.			
Is the Sampled Area within a Wetland?		☐ Yes ☒ No			

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1.				Number of Dominant Species That Are OBL, FACW, or FAC:	<u> N/A </u> (A)
2.				Total Number of Dominant Species Across All Strata:	<u> </u> (B)
3.				Percent of Dominant Species That Are OBL, FACW, or FAC:	<u> #VALUE! </u> (A/B)
4.					
Total Cover:	0				
Sapling/Shrub Stratum				Prevalence Index worksheet:	
1.				Total % Cover of:	Multiplied by:
2.				OBL species	x1 =
3.				FACW species	x2 =
4.				FAC species	x3 =
5.				FACU species	x4 =
Total Cover:	0			UPL species	x5 =
Herb Stratum				Column Totals:	0 (A) 0 (B)
1.				Prevalence Index = B/A = <u> #DIV/0! </u>	
2.				Hydrophytic Vegetation Indicators:	
3.				☐ Dominance Test is >50%	
4.				☐ Prevalence Index is ≤3.0 ¹	
5.				☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
6.				☐ Problematic Hydrophytic Vegetation ¹ (Explain)	
7.				¹ Indicators of hydric soil and wetland hydrology must be present.	
8.					
Total Cover:	0				
Woody Vine Stratum				Hydrophytic Vegetation Present? ☐ Yes ☒ No	
1.					
2.					
Total Cover:	0				
% Bare Ground in Herb Stratum: 100%	% Cover of Biotic Crust:				
Remarks: Unvegetated channel.					

SOIL

Sampling Point:

5DP1W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-20	10 YR 3/2	100					5	Coarse sand

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.²Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|---|
| ☐ Histosol (A1) | ☐ Sandy Redox (S5) |
| ☐ Histic Epipedon (A2) | ☐ Stripped Matrix (S6) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) (LRR C) | ☐ Depleted Matrix (F3) |
| ☐ 1 cm Muck (A9) (LRR D) | ☐ Redox Dark Surface (F6) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Depleted Dark Surface (F7) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Depressions (F8) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Vernal Pools (F9) |
| ☐ Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

 Type: _____
 Depth (inches): _____
Hydric Soil Present? ☐ Yes ☒ No

Remarks: No hydric soil indicators present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- | | |
|--|--|
| ☐ Surface Water (A1) | ☐ Salt Crust (B11) |
| ☐ High Water Table (A2) | ☐ Biotic Crust (B12) |
| ☐ Saturation (A3) | ☐ Aquatic Invertebrates (B13) |
| ☐ Water Marks (B1) (Nonriverine) | ☐ Hydrogen Sulfide Odor (C1) |
| ☐ Sediment Deposits (B2) (Nonriverine) | ☐ Oxidized Rhizospheres along Living Roots (C3) |
| ☐ Drift Deposits (B3) (Nonriverine) | ☐ Presence Of Reduced Iron (C4) |
| ☐ Surface Soil Cracks (B6) | ☐ Recent Iron Reduction in Plowed Soils (C6) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Other (Explain in Remarks) |
| ☐ Water-Stained Leaves (B9) | |

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
☐ Sediment Deposits (B2) (Riverine)
☒ Drift Deposits (B3) (Riverine)
☒ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Thin Muck Surface (C7)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	☐ Yes ☒ No	Depth (inches): _____
Water Table Present?	☐ Yes ☒ No	Depth (inches): _____
Saturation Present? (Includes capillary fringe)	☐ Yes ☒ No	Depth (inches): _____

Wetland Hydrology Present? ☒ Yes ☐ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site:	San Joaquin Solar	City/County:	Fresno County	Sampling Date:	1/14/2009
Applicant/Owner:		State:	CA	Sampling Point:	6DP1U
Investigator(s):	Curtis Uptain/Woody Moise	Section, Township, Range:			
Landform (hillslope, terrace, etc.):	Terrace	Local Relief (concave, convex, none):	None	Slope (%):	0
Subregion (LRR):	LRR C	Lat:	Long:	Datum:	WGS 1984
Soil Map Unit Name:	NW1 Classification:				
Are climatic/hydrological conditions on the site typical for this time of the year? ☒ Yes ☐ No					
Are Vegetation, ☐ Soil, ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" Present? ☐ Yes ☒ No					
Are Vegetation, ☐ Soil, ☐ or Hydrology ☐ naturally problematic? (If needed, explain answers in remarks)					
SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.					
Hydrophytic Vegetation Present?		☐ Yes ☒ No			
Hydric Soil Present?		☐ Yes ☒ No			
Wetland Hydrology Present?		☐ Yes ☒ No			
Remarks:		Rip rap upstream confines channel.			
Is the Sampled Area within a Wetland?		☐ Yes ☒ No			

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1.				Number of Dominant Species That Are OBL, FACW, or FAC:	0 (A)
2.				Total Number of Dominant Species Across All Strata:	2 (B)
3.				Percent of Dominant Species That Are OBL, FACW, or FAC:	0% (A/B)
4.					
Total Cover:	0				
Sapling/Shrub Stratum				Prevalence Index worksheet:	
1. Artemisia californica	7%	X	NOL	Total % Cover of:	Multiplied by:
2.				OBL species	x1 =
3.				FACW species	x2 =
4.				FAC species	x3 =
5.				FACU species	x4 =
Total Cover:	0.07			UPL species	x5 =
Herb Stratum				Column Totals:	0 (A) 0 (B)
1. Bromus madritensis	50%	X	NI	Prevalence Index = B/A = #DIV/0!	
2. Lessingia sp.	5%		NOL	Hydrophytic Vegetation Indicators:	
3. Amsinckia menziesii	2%		NOL	☐ Dominance Test is >50%	
4.				☐ Prevalence Index is ≤3.0 ¹	
5.				☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
6.				☐ Problematic Hydrophytic Vegetation ¹ (Explain)	
7.				¹ Indicators of hydric soil and wetland hydrology must be present.	
8.					
Total Cover:	0.57				
Woody Vine Stratum				Hydrophytic Vegetation Present?	
1.				☐ Yes ☒ No	
2.					
Total Cover:	0				
% Bare Ground in Herb Stratum: 36%	% Cover of Biotic Crust: 2%				
Remarks:					

SOIL

Sampling Point:

6DP1U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-20	7.5 YR 3/3	100					5	Sand with cobbles

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.²Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5) (LRR C)
☐ 1 cm Muck (A9) (LRR D)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ Sandy Gleyed Matrix (S4)

- ☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

 Type: _____
 Depth (inches): _____
Hydric Soil Present? ☐ Yes ☒ No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1) (Nonriverine)
☐ Sediment Deposits (B2) (Nonriverine)
☐ Drift Deposits (B3) (Nonriverine)
☐ Surface Soil Cracks (B6)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Water-Stained Leaves (B9)
☐ Salt Crust (B11)
☐ Biotic Crust (B12)
☐ Aquatic Invertebrates (B13)
☐ Hydrogen Sulfide Odor (C1)
☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Presence Of Reduced Iron (C4)
☐ Recent Iron Reduction in Plowed Soils (C6)
☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
☐ Sediment Deposits (B2) (Riverine)
☐ Drift Deposits (B3) (Riverine)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Thin Muck Surface (C7)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? ☐ Yes ☒ No Depth (inches): _____
 Water Table Present? ☐ Yes ☒ No Depth (inches): _____
 Saturation Present? (Includes capillary fringe) ☐ Yes ☒ No Depth (inches): _____

Wetland Hydrology Present? ☐ Yes ☒ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site:	San Joaquin Solar	City/County:	Fresno County	Sampling Date:	1/14/2009
Applicant/Owner:		State:	CA	Sampling Point:	6DP1W
Investigator(s):	Curtis Uptain/Woody Moise	Section, Township, Range:			
Landform (hillslope, terrace, etc.):	Creek channel	Local Relief (concave, convex, none):	Convex	Slope (%):	2
Subregion (LRR):	LRR C	Lat:		Long:	
				Datum:	WGS 1984
Soil Map Unit Name:	NW1 Classification:				
Are climatic/hydrological conditions on the site typical for this time of the year? ☒ Yes ☐ No					
Are Vegetation, ☐ Soil, ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" Present? ☒ Yes ☐ No					
Are Vegetation, ☐ Soil, ☐ or Hydrology ☐ naturally problematic? (If needed, explain answers in remarks)					

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	☒ Yes ☐ No	Is the Sampled Area within a Wetland?	☐ Yes ☒ No
Hydric Soil Present?	☐ Yes ☒ No		
Wetland Hydrology Present?	☒ Yes ☐ No		
Remarks: Upstream, rip rap has confined channel, whereas here is open, broad, unconfined. Hydrologic and vegetative indicators present, but hydric soil indicators are not. Point taken within OHWM of channel.			

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:			
1. Populus fremontii	18%	X	FACW	Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)			
2.				Total Number of Dominant Species Across All Strata: <u>4</u> (B)			
3.				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75%</u> (A/B)			
4.							
Total Cover:	0.18						
Sapling/Shrub Stratum				Prevalence Index worksheet:			
1. Baccharis salicifolia	5%	X	FACW	Total % Cover of:		Multiplied by:	
2. Artemisia californica	10%	X	NOL	OBL species		x1 =	
3. Tamarix ramosissima	5%	X	FACW	FACW species	23	x2 =	46
4. Nicotiana glauca	3%			FAC species	5	x3 =	15
5.				FACU species		x4 =	
Total Cover:	0.23			UPL species	10	x5 =	50
				Column Totals:	38 (A)	111 (B)	
Herb Stratum				Prevalence Index = B/A = <u>2.921052632</u>			
1.				Hydrophytic Vegetation Indicators:			
2.				☒ Dominance Test is >50%			
3.				☒ Prevalence Index is ≤3.0 ¹			
4.				☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)			
5.				☐ Problematic Hydrophytic Vegetation ¹ (Explain)			
6.							
7.							
8.							
Total Cover:	0						
Woody Vine Stratum				¹ Indicators of hydric soil and wetland hydrology must be present.			
1.							
2.							
Total Cover:	0						
% Bare Ground in Herb Stratum: 80%	% Cover of Biotic Crust:			Hydrophytic Vegetation Present? ☒ Yes ☐ No			
Remarks:							

SOIL

Sampling Point:

6DP1W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-14	7.5 YR 3/2	100					5	Coarse sand
14-18	10 YR 3/3	100					silt	Silty clay
18-21	7.5 YR 3/2	100					5	Coarse sand

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix. ²Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|---|
| ☐ Histosol (A1) | ☐ Sandy Redox (S5) |
| ☐ Histic Epipedon (A2) | ☐ Stripped Matrix (S6) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) (LRR C) | ☐ Depleted Matrix (F3) |
| ☐ 1 cm Muck (A9) (LRR D) | ☐ Redox Dark Surface (F6) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Depleted Dark Surface (F7) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Depressions (F8) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Vernal Pools (F9) |
| ☐ Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____
Depth (inches): _____

Hydric Soil Present? ☐ Yes ☒ No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- | | |
|--|--|
| ☐ Surface Water (A1) | ☐ Salt Crust (B11) |
| ☐ High Water Table (A2) | ☐ Biotic Crust (B12) |
| ☐ Saturation (A3) | ☐ Aquatic Invertebrates (B13) |
| ☐ Water Marks (B1) (Nonriverine) | ☐ Hydrogen Sulfide Odor (C1) |
| ☐ Sediment Deposits (B2) (Nonriverine) | ☐ Oxidized Rhizospheres along Living Roots (C3) |
| ☐ Drift Deposits (B3) (Nonriverine) | ☐ Presence Of Reduced Iron (C4) |
| ☐ Surface Soil Cracks (B6) | ☐ Recent Iron Reduction in Plowed Soils (C6) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Other (Explain in Remarks) |
| ☐ Water-Stained Leaves (B9) | |

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
☐ Sediment Deposits (B2) (Riverine)
☒ Drift Deposits (B3) (Riverine)
☒ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Thin Muck Surface (C7)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? ☐ Yes ☒ No Depth (inches): _____
 Water Table Present? ☐ Yes ☒ No Depth (inches): _____
 Saturation Present? (Includes capillary fringe) ☐ Yes ☒ No Depth (inches): _____

Wetland Hydrology Present? ☒ Yes ☐ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site:	San Joaquin Solar	City/County:	Fresno County	Sampling Date:	1/14/2009
Applicant/Owner:		State:	CA	Sampling Point:	7DP1U
Investigator(s):	Curtis Uptain/Woody Moise	Section, Township, Range:			
Landform (hillslope, terrace, etc.):	Terrace	Local Relief (concave, convex, none):	None	Slope (%):	3
Subregion (LRR):	LRR C	Lat:	Long:	Datum:	WGS 1984
Soil Map Unit Name:	NW1 Classification:				
Are climatic/hydrological conditions on the site typical for this time of the year? ☒ Yes ☐ No					
Are Vegetation, ☐ Soil, ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" Present? ☒ Yes ☐ No					
Are Vegetation, ☐ Soil, ☐ or Hydrology ☐ naturally problematic? (If needed, explain answers in remarks)					
SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.					
Hydrophytic Vegetation Present?		☐ Yes ☐ No			
Hydric Soil Present?		☐ Yes ☒ No			
Wetland Hydrology Present?		☐ Yes ☒ No			
Is the Sampled Area within a Wetland?		☐ Yes ☒ No			
Remarks: Terrace above deeply incised creek channel. Insufficient data on vegetation to determine if hydrophytic vegetation present.					

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:	
1.				Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)	
2.				Total Number of Dominant Species Across All Strata: _____ (B)	
3.				Percent of Dominant Species That Are OBL, FACW, or FAC: #DIV/0! (A/B)	
4.					
Total Cover:	0				
Sapling/Shrub Stratum				Prevalence Index worksheet:	
1. Baccharis salicifolia	10%	X	FACW	Total % Cover of: Multiplied by:	
2. Nicotiana glauca	5%	X	FACW	OBL species	x1 =
3.				FACW species	x2 =
4.				FAC species	x3 =
5.				FACU species	x4 =
Total Cover:	0.15			UPL species	x5 =
Herb Stratum				Column Totals: 0 (A) 0 (B)	
1. Bromus madritensis	10%	X	NI	Prevalence Index = B/A = #DIV/0!	
2. Marrubium vulgare	2%		FACW	Hydrophytic Vegetation Indicators:	
3. Unknown	4%	X	?	☒ Dominance Test is >50%	
4.				☒ Prevalence Index is ≤3.0 ¹	
5.				☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)	
6.				☐ Problematic Hydrophytic Vegetation ¹ (Explain)	
7.				¹ Indicators of hydric soil and wetland hydrology must be present.	
8.					
Total Cover:	0.16				
Woody Vine Stratum				Hydrophytic Vegetation Present? ☐ Yes ☐ No	
1.					
2.					
Total Cover:	0				
% Bare Ground in Herb Stratum: 69%	% Cover of Biotic Crust:				
Remarks: Unidentified herb may be hydrophytic indicator, but not enough characters of this plant were available to identify it. Hydrophytic vegetation possibly present. Nonetheless, data point is not in a wetland because soil and hydrology indicators are absent.					

SOIL

Sampling Point:

7DP1U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-8	10 YR 3/2	100					5	Medium coarse sand
8-12	10 YR 3/3	100					5	Very coarse sand
12-21	7.5 YR 3/2	100					5	Fine sand

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.²Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|---|
| ☐ Histosol (A1) | ☐ Sandy Redox (S5) |
| ☐ Histic Epipedon (A2) | ☐ Stripped Matrix (S6) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) (LRR C) | ☐ Depleted Matrix (F3) |
| ☐ 1 cm Muck (A9) (LRR D) | ☐ Redox Dark Surface (F6) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Depleted Dark Surface (F7) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Depressions (F8) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Vernal Pools (F9) |
| ☐ Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

 Type: _____
 Depth (inches): _____
Hydric Soil Present? ☐ Yes ☒ No

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- | | |
|--|--|
| ☐ Surface Water (A1) | ☐ Salt Crust (B11) |
| ☐ High Water Table (A2) | ☐ Biotic Crust (B12) |
| ☐ Saturation (A3) | ☐ Aquatic Invertebrates (B13) |
| ☐ Water Marks (B1) (Nonriverine) | ☐ Hydrogen Sulfide Odor (C1) |
| ☐ Sediment Deposits (B2) (Nonriverine) | ☐ Oxidized Rhizospheres along Living Roots (C3) |
| ☐ Drift Deposits (B3) (Nonriverine) | ☐ Presence Of Reduced Iron (C4) |
| ☐ Surface Soil Cracks (B6) | ☐ Recent Iron Reduction in Plowed Soils (C6) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Other (Explain in Remarks) |
| ☐ Water-Stained Leaves (B9) | |

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
☐ Sediment Deposits (B2) (Riverine)
☒ Drift Deposits (B3) (Riverine)
☒ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Thin Muck Surface (C7)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	☐ Yes ☒ No	Depth (inches): _____
Water Table Present?	☐ Yes ☒ No	Depth (inches): _____
Saturation Present? (Includes capillary fringe)	☐ Yes ☒ No	Depth (inches): _____

Wetland Hydrology Present? ☐ Yes ☒ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site:	San Joaquin Solar	City/County:	Fresno County	Sampling Date:	1/14/2009
Applicant/Owner:		State:	CA	Sampling Point:	7DP1W
Investigator(s):	Curtis Uptain/Woody Moise	Section, Township, Range:			
Landform (hillslope, terrace, etc.):	Creek channel	Local Relief (concave, convex, none):	Concave	Slope (%):	4
Subregion (LRR):	LRR C	Lat:	Long:	Datum:	WGS 1984
Soil Map Unit Name:	NW1 Classification:				
Are climatic/hydrological conditions on the site typical for this time of the year? ☒ Yes ☐ No					
Are Vegetation, ☐ Soil, ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" Present? ☒ Yes ☐ No					
Are Vegetation, ☐ Soil, ☐ or Hydrology ☐ naturally problematic? (If needed, explain answers in remarks)					

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	☒ Yes ☐ No	Is the Sampled Area within a Wetland?	☐ Yes ☒ No
Hydric Soil Present?	☐ Yes ☒ No		
Wetland Hydrology Present?	☒ Yes ☐ No		
Remarks: Multiple channels are present.			

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test Worksheet:			
1. <i>Nicotiana glauca</i>	10%	X	FAC	Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A)			
2. <i>Populus fremontii</i>	30%	X	FACW	Total Number of Dominant Species Across All Strata: <u>5</u> (B)			
3.				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)			
4.							
Total Cover:	0.4						
Sapling/Shrub Stratum				Prevalence Index worksheet:			
1. <i>Baccharis salicifolia</i>	40%	X	FACW	Total % Cover of:		Multiplied by:	
2.				OBL species		x1 =	
3.				FACW species	85	x2 =	170
4.				FAC species	15	x3 =	45
5.				FACU species		x4 =	
Total Cover:	0.4			UPL species		x5 =	
				Column Totals:	100 (A)	215 (B)	
				Prevalence Index = B/A = <u>2.15</u>			
Herb Stratum				Hydrophytic Vegetation Indicators:			
1. <i>Marrubium vulare</i>	5%	X	FAC	☒ Dominance Test is >50%			
2. <i>Artemisia douglasiana</i>	15%	X	FACW	☒ Prevalence Index is ≤3.0 ¹			
3.				☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet)			
4.				☐ Problematic Hydrophytic Vegetation ¹ (Explain)			
5.							
6.							
7.							
8.							
Total Cover:	0.2						
Woody Vine Stratum				¹ Indicators of hydric soil and wetland hydrology must be present.			
1.							
2.							
Total Cover:	0						
% Bare Ground in Herb Stratum: 50%	% Cover of Biotic Crust:			Hydrophytic Vegetation Present? ☒ Yes ☐ No			
Remarks:							

SOIL

Sampling Point:

7DP1W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-14	7.5 YR 3/2	100					5	Sand
14-16	10 YR 3/4	100					5	Silty sand
16-21	7.5 YR 3/2	100					5	Sand

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix.²Location: PL=Pore Lining, RC=Root Channel, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- | | |
|--|---|
| ☐ Histosol (A1) | ☐ Sandy Redox (S5) |
| ☐ Histic Epipedon (A2) | ☐ Stripped Matrix (S6) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) (LRR C) | ☐ Depleted Matrix (F3) |
| ☐ 1 cm Muck (A9) (LRR D) | ☐ Redox Dark Surface (F6) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Depleted Dark Surface (F7) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Depressions (F8) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Vernal Pools (F9) |
| ☐ Sandy Gleyed Matrix (S4) | |

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

 Type: _____
 Depth (inches): _____
Hydric Soil Present? ☐ Yes ☒ No

Remarks: No evidence of hydric soil indicators. However, point is within OH w/g of channel.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- | | |
|--|--|
| ☐ Surface Water (A1) | ☐ Salt Crust (B11) |
| ☐ High Water Table (A2) | ☐ Biotic Crust (B12) |
| ☐ Saturation (A3) | ☐ Aquatic Invertebrates (B13) |
| ☐ Water Marks (B1) (Nonriverine) | ☐ Hydrogen Sulfide Odor (C1) |
| ☐ Sediment Deposits (B2) (Nonriverine) | ☐ Oxidized Rhizospheres along Living Roots (C3) |
| ☐ Drift Deposits (B3) (Nonriverine) | ☐ Presence Of Reduced Iron (C4) |
| ☐ Surface Soil Cracks (B6) | ☐ Recent Iron Reduction in Plowed Soils (C6) |
| ☐ Inundation Visible on Aerial Imagery (B7) | ☐ Other (Explain in Remarks) |
| ☐ Water-Stained Leaves (B9) | |

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
☐ Sediment Deposits (B2) (Riverine)
☒ Drift Deposits (B3) (Riverine)
☒ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Thin Muck Surface (C7)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	☐ Yes ☐ No	Depth (inches): _____
Water Table Present?	☐ Yes ☐ No	Depth (inches): _____
Saturation Present? (Includes capillary fringe)	☐ Yes ☐ No	Depth (inches): _____

Wetland Hydrology Present? ☒ Yes ☐ No

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):

B. DISTRICT OFFICE, FILE NAME, AND NUMBER:

C. PROJECT LOCATION AND BACKGROUND INFORMATION: San Joaquin Solar 1 & 2

State: CA

County/parish/borough: Fresno County City: Coalinga

Center coordinates of site (lat/long in degree decimal format): Lat. 36.13699° **N**, Long. -120.18841° **W**.

Universal Transverse Mercator: NAD 83

Name of nearest waterbody: Hernandez Reservoir - northwest

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: N/A

Name of watershed or Hydrologic Unit Code (HUC): Pleasant Valley/Westside

☐ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.

☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:

☒ Field Determination. Date(s): January 14, 2009

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

☐ Waters subject to the ebb and flow of the tide.

☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.
Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are no** "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

1. Waters of the U.S.

a. Indicate presence of waters of U.S. in review area (check all that apply):¹

- ☐ TNWs, including territorial seas
- ☐ Wetlands adjacent to TNWs
- ☐ Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs
- ☐ Non-RPWs that flow directly or indirectly into TNWs
- ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
- ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
- ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
- ☐ Impoundments of jurisdictional waters
- ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

b. Identify (estimate) size of waters of the U.S. in the review area:

Non-wetland waters: linear feet: width (ft) and/or acres.

Wetlands: 0 acres.

c. Limits (boundaries) of jurisdiction based on: 1987 Delineation Manual

Elevation of established OHWM (if known): unknown.

2. Non-regulated waters/wetlands (check if applicable):³

- ☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.
Explain: **The potentially jurisdictional water is identified as Zapato Chino Creek, which supports an ephemeral flow regime and displays an OHWM. Flow from this large creek is fed by the Diablo Range to the south and leads to Los**

¹ Boxes checked below shall be supported by completing the appropriate sections in Section III below.

² For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

³ Supporting documentation is presented in Section III.F.

Gatos Creek, which has apparently been channelized as it nears I-5. Los Gatos Creek eventually dissipates and becomes a distributional flow before it reaches the California Aqueduct. It appears that a portion of Los Gatos Creek has been channelized to respond to major storms and prevent runoff from reaching and potentially damaging the flat agricultural lands that abut the California Aqueduct. Therefore, because Los Gatos does not have a direct discrete connectivity to a downstream traditionally navigable water (TNW) of the United States, the Zapato Chino Creek does not have a direct discrete connectivity to a downstream traditionally navigable water (TNW) of the United States. Additionally, the Creek has no substantial nexus to interstate commerce. Please see Section III F for supplementary information..

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. **TNW**

Identify TNW: _____.

Summarize rationale supporting determination: _____.

2. **Wetland adjacent to TNW**

Summarize rationale supporting conclusion that wetland is “adjacent”: _____.

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are “relatively permanent waters” (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody⁴ is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. **Characteristics of non-TNWs that flow directly or indirectly into TNW**

(i) **General Area Conditions:**

Watershed size: **Pick List**

Drainage area: **Pick List**

Average annual rainfall: _____ inches

Average annual snowfall: _____ inches

(ii) **Physical Characteristics:**

(a) **Relationship with TNW:**

☐ Tributary flows directly into TNW.

☐ Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are **Pick List** river miles from TNW.

Project waters are **Pick List** river miles from RPW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Project waters are **Pick List** aerial (straight) miles from RPW.

Project waters cross or serve as state boundaries. Explain: _____.

Identify flow route to TNW⁵: _____.

Tributary stream order, if known: _____.

⁴ Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

⁵ Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is: ☐ Natural
☐ Artificial (man-made). Explain: .
☐ Manipulated (man-altered). Explain: Man-made culverts and irrigation increase flow.

Tributary properties with respect to top of bank (estimate):

Average width: feet
Average depth: feet
Average side slopes: **Pick List**.

Primary tributary substrate composition (check all that apply):

☐ Silts ☐ Sands ☐ Concrete
☐ Cobbles ☐ Gravel ☐ Muck
☐ Bedrock ☐ Vegetation. Type/% cover:
☐ Other. Explain: .

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: .

Presence of run/riffle/pool complexes. Explain: .

Tributary geometry: **Pick List**

Tributary gradient (approximate average slope): %

(c) Flow:

Tributary provides for: **Pick List**

Estimate average number of flow events in review area/year: **Pick List**

Describe flow regime: .

Other information on duration and volume: .

Surface flow is: **Pick List**. Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .

☐ Dye (or other) test performed: .

Tributary has (check all that apply):

☐ Bed and banks
☐ OHWM⁶ (check all indicators that apply):
☐ clear, natural line impressed on the bank ☐ the presence of litter and debris
☐ changes in the character of soil ☐ destruction of terrestrial vegetation
☐ shelving ☐ the presence of wrack line
☐ vegetation matted down, bent, or absent ☐ sediment sorting
☐ leaf litter disturbed or washed away ☐ scour
☐ sediment deposition ☐ multiple observed or predicted flow events
☐ water staining ☐ abrupt change in plant community
☐ other (list):
☐ Discontinuous OHWM.⁷ Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

☒ High Tide Line indicated by: ☐ Mean High Water Mark indicated by:
☐ oil or scum line along shore objects ☐ survey to available datum;
☐ fine shell or debris deposits (foreshore) ☐ physical markings;
☐ physical markings/characteristics ☐ vegetation lines/changes in vegetation types.
☐ tidal gauges
☐ other (list):

(iii) **Chemical Characteristics:**

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).

Explain: .

Identify specific pollutants, if known: .

⁶A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.

⁷Ibid.

(iv) **Biological Characteristics. Channel supports (check all that apply):**

- ☐ Riparian corridor. Characteristics (type, average width): .
- ☐ Wetland fringe. Characteristics: .
- ☐ Habitat for:
 - ☐ Federally Listed species. Explain findings: .
 - ☐ Fish/spawn areas. Explain findings: .
 - ☐ Other environmentally-sensitive species. Explain findings: .
 - ☐ Aquatic/wildlife diversity. Explain findings: .

2. **Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW**

(i) **Physical Characteristics:**

(a) General Wetland Characteristics:

Properties:

Wetland size: acres

Wetland type. Explain: .

Wetland quality. Explain: .

Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:

Flow is: **Pick List**. Explain: .

Surface flow is: **Pick List**

Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .

☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

☐ Directly abutting

☐ Not directly abutting

☐ Discrete wetland hydrologic connection. Explain: .

☐ Ecological connection. Explain: .

☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Flow is from: **Pick List**.

Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) **Chemical Characteristics:**

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .

Identify specific pollutants, if known: .

(iii) **Biological Characteristics. Wetland supports (check all that apply):**

- ☐ Riparian buffer. Characteristics (type, average width): .
- ☐ Vegetation type/percent cover. Explain: .
- ☐ Habitat for:
 - ☐ Federally Listed species. Explain findings: .
 - ☐ Fish/spawn areas. Explain findings: .
 - ☐ Other environmentally-sensitive species. Explain findings: .
 - ☐ Aquatic/wildlife diversity. Explain findings: .

3. **Characteristics of all wetlands adjacent to the tributary (if any)**

All wetland(s) being considered in the cumulative analysis: **Pick List**

Approximately () acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)

Size (in acres)

Directly abuts? (Y/N)

Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: Tributary connects to San Dieguito Creek and eventually to the Pacific Ocean.
2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .
3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:

☐ TNWs: linear feet width (ft), Or, acres.

☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**

☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .

☐ Tributaries of TNW where tributaries have continuous flow “seasonally” (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):

☐ Tributary waters: linear feet width (ft).

☐ Other non-wetland waters: acres.

Identify type(s) of waters: .

3. Non-RPWs⁸ that flow directly or indirectly into TNWs.

- ☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

☐ Tributary waters: linear feet width (ft).

☐ Other non-wetland waters: acres.

Identify type(s) of waters: .

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.

- ☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.

☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

☐ Wetlands directly abutting an RPW where tributaries typically flow “seasonally.” Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.

- ☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.

- ☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. Impoundments of jurisdictional waters.⁹

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.

☐ Demonstrate that impoundment was created from “waters of the U.S.,” or

☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or

☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):¹⁰

☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.

☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.

☐ which are or could be used for industrial purposes by industries in interstate commerce.

☐ Interstate isolated waters. Explain: .

☐ Other factors. Explain: .

⁸See Footnote # 3.

⁹To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

¹⁰Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA Memorandum Regarding CWA Act Jurisdiction Following Rapanos.

Identify water body and summarize rationale supporting determination:

Provide estimates for jurisdictional waters in the review area (check all that apply):

- ☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .
☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

- ☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☐ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☐ Prior to the Jan 2001 Supreme Court decision in "SWANCC," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☒ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
☐ Other: (explain, if not covered above):

The potentially jurisdictional feature is the Zapato Chino Creek located near Coalinga, CA in the San Joaquin Valley in Fresno County. Vegetation in the area is dominated by agricultural land uses. Features associated with an OHWM such as shelving and sediment deposition are present. The creek flows northeastward and confluences with Los Gatos Creek, near the City of Huron. The Los Gatos Creek continues as a natural drainage within agricultural lands, then abruptly ends at a culvert at Lassen Avenue and becomes a distributional sheet flow feature. Beyond this point, the creek no longer displays an OHWM and becomes a distributional flow over the flat topography.

Because of the lack of discrete and defined downstream connectivity in combination with the low probability that flow from a major event ultimately reaches the California Aqueduct, the potentially jurisdictional feature is a geographically isolated water and does not flow into a TNW. The potentially jurisdictional feature does not meet the criteria laid out by 33 CFR 328.3(a)(3)(i-iii). The feature has no potential for recreation, no ability to support fish or shellfish, and no ability to support an industry engaged in interstate or even intercountry commerce mainly due to its ephemeral nature, lack of vegetation, and no pooling water. This creek has no other substantial effect or contribution to any interstate commerce. Therefore, a substantial nexus to interstate commerce does not exist. Thus the drainage, which is geographically isolated and has no substantial nexus to interstate commerce, is a non-jurisdictional waters of the United States.

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

- ☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

- ☒ Non-wetland waters (i.e., rivers, streams): **14,652** linear feet, **40** width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

- ☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☐ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps: .
☐ Corps navigable waters' study: .
☐ U.S. Geological Survey Hydrologic Atlas: .
☐ USGS NHD data.
☐ USGS 8 and 12 digit HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name:GIS database.
☒ USDA Natural Resources Conservation Service Soil Survey. Citation:GIS database.
☒ National wetlands inventory map(s). Cite name:GIS database.

- ☐ State/Local wetland inventory map(s): .
- ☐ FEMA/FIRM maps: .
- ☐ 100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)
- ☒ Photographs: ☒ Aerial (Name & Date): Digital Globe 2007.
or ☒ Other (Name & Date): Site photographs of the creek - 1/14/09.
- ☐ Previous determination(s). File no. and date of response letter: .
- ☐ Applicable/supporting case law: .
- ☐ Applicable/supporting scientific literature: .
- ☐ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: .



Susan_P_Jones@fws.gov

04/07/2008 05:15 PM

To Patrick_Mock@URSCorp.com

cc Anne_Runnalls@URSCorp.com, "Justin Sloan"
<JSLOAN@dfg.ca.gov>, "Julie Vance"
<JVANCE@dfg.ca.gov>, Susan_Jones@fws.gov,
bcc

Subject Re: Intro to Bethel Solar Hybrid Project 7 & 8 - Request for
Concurrence of Survey effort

The maps showing the two alternative locations are not attached to the version of this that I received. Are you in our Ventura office's jurisdiction or in Sacramento office? I would appreciate receiving the maps. You will also need Service approval for surveys.

Susan Jones, San Joaquin Valley Branch Chief
U.S. Fish and Wildlife Office, 2800 Cottage Way, W-2605, Sacramento, CA
95825
916/414-6600, fax 916/414-6713

Patrick_Mock@URSC
orp.com

04/07/2008 04:02
PM

To
"Julie Vance" <JVANCE@dfg.ca.gov>
cc
Anne_Runnalls@URSCorp.com, "Justin
Sloan" <JSLOAN@dfg.ca.gov>,
Susan_Jones@fws.gov,
Theresa_Miller@URSCorp.com
Subject
Re: Intro to Bethel Solar Hybrid
Project 7 & 8 - Request for
Concurrence of Survey effort

Yes this project is a CEC AFC process.

Yes, we assumed Kit fox and BUOW are likely to present.

We will look for raptor nesting activity in the project vicinity.

We will include a hydrology assessment for the sites and will contact the local agencies for any additional data they may have.

Hope you are available to meet with Theresa & I. We will coordinate with Justin to meet this Friday.

Pat

Patrick J. Mock, Ph.D.
Senior Project Manager
Senior Biologist
URS Corporation
1615 Murray Canyon Road, Suite 1000
San Diego, CA 92108
619-294-9400
619-293-7920 Fax

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fg. <Patrick_Mock@URSCorp.com>
ca. (Embedded image moved to file: pic26500.gif)
gov cc
> (Embedded image moved to file:
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"Justin Sloan"
04/ <JSLOAN@dfg.ca.gov>,
07/ <Susan_Jones@fws.gov>,
200 <Anne_Runnalls@URSCorp.com>,
8 <Theresa_Miller@URSCorp.com>
01: (Embedded image moved to file: pic15724.gif)
19 Subject
PM (Embedded image moved to file:
pic11478.gif)
Re: Intro to Bethel Solar Hybrid
Project 7 & 8 - Request for
Concurrence of Survey effort

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pic26962.gif)

Patrick,

Justin Sloan of my staff may be able to attend your meeting on April 11; I have other meetings scheduled on that date but may be able to attend also, depending on the meeting time. Justin will be back in the office tomorrow and will let you know of his availability. Does this particular project require CEC approvals?

Just as an FYI, active ag, especially in Pleasant Valley where much of the ag is dry farmed, does not preclude the presence of species like kit fox and burrowing owl. Any of the Arroyo Pasajero (AP) watershed (Los Gatos, Zapato Chino, Jacalitos and Warthan Creeks, collectively) can support all of the species, including BNLL. It appears that at least one of these creeks is present on site. I would recommend finding out where DFG's Eco Reserves in the area are; I think they are close and we have additional species info and direct and indirect impacts to these would need to be considered. Swainson's Hawks are known to occur in the area as well.

Any proposed work in the AP floodplain will need to be discussed in detail given the flashy nature of these creeks (tend to carry mudflows, heavily incised, high carving power; took out I5 in the late 90's). In addition, the AP floodplain is important from a connectivity standpoint. During the preparation of the Pleasant Valley, and later the Coalinga, HCP (never completed), primary and secondary kit fox corridors were identified in Pleasant Valley. If my memory serves, your project is in that area. Those HCPs have a lot of good biological information which may be useful. The City of Coalinga could help you with those.

Sincerely,

Julie

Julie Vance, Senior Environmental Scientist
Permitting and Project Review
Department of Fish and Game
Central Region (R4)
1234 E. Shaw Ave
Fresno, CA 93710
(559) 243-4014 x 222
>>> <Patrick_Mock@URSCorp.com> 4/4/2008 10:30 AM >>>
Julie:

As with the Ausra project, URS would like to obtain concurrence from CDFG regarding the surveys, level of effort and schedule for this new power project.

Attached is the 10-mile & 1-mile buffer maps for the two alternative sites we are assessing. Both sites are currently active agricultural fields. Site photos to follow once they are available. We will be doing a preliminary site visit next Friday (4/11). Are you or one of your staff available to meet us on site or in your office to discuss our survey approach? Based on our site visit, we will determine the surveys we think should be required. We have tentatively scheduled BNLL/SJAS and BUOW surveys given their CNDDDB locations on the adjacent parcels. Botanical surveys will also be conducted.

Please reply ASAP next week so that we can coordinate and perhaps meet next Friday.

Pat

Patrick J. Mock, Ph.D.
Senior Project Manager
Senior Biologist
URS Corporation
1615 Murray Canyon Road, Suite 1000
San Diego, CA 92108
619-294-9400
619-293-7920 Fax

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"Justin Sloan" <JSLOAN@dfg.ca.gov>
05/30/2008 11:30 AM

To <Theresa_Miller@URSCorp.com>
cc
bcc

Subject Re: blunt-nosed observed on coalinga reference site

History:  This message has been forwarded.

Theresa,

Do you know if the client had already purchased the section with the arroyo? It could be something they could use for mitigation if allowed to revert back to "natural" conditions.

Have a nice weekend.

Justin

>>> <Theresa_Miller@URSCorp.com> 5/30/2008 5:32 AM >>>
Hi Justin,

Thanks for the quick response. We have not surveyed the arroyo because the client dropped that section out of the project when we told them of the setback requirements. It wouldn't work for their project needs.

Also, thank you for the confidence, I was just reading my email and I thought it was confusing, and it occurred to me that I might sound unsure. I didn't want to portray that about our company or myself.

We will submit the information to CNDDDB.

Thanks and have a great day,
Theresa

Theresa Miller
Wildlife Biologist
URS Corporation
1615 Murray Canyon Rd
Suite 1000
San Diego, CA 92109
Office: 619-294-9400 ext 1070
Mobile: 619-888-0131
Fax: 619-293-7920

-----"Justin Sloan" <JSLOAN@dfg.ca.gov> wrote: -----

To: <Theresa_Miller@URSCorp.com>
From: "Justin Sloan" <JSLOAN@dfg.ca.gov>
Date: 05/29/2008 04:33PM
Subject: Re: blunt-nosed observed on coalinga reference site

Hi Theresa,

Thanks for the pics.

I don't know that your email was confusing, it could have been my reading comprehension skills.... I didn't mean to imply and did not think that you might not know the protocol, I just wanted to be clear about things.

I think it would be ok to stop the surveys at this point. We know they are there and are detectable. We will have to include some specific avoidance measures during construction and likely for the life of the project.

Did you already survey the arroyo on the southeast parcel?

Are you planning on submitting this location to CNDDDB? Please do so if you weren't. Otherwise, let me know and I can submit it. This is a BIG sighting for the area as it has been a long time since they have been observed in the area.

We appreciate your effort on DFG lands. It makes the dump site to the north that much more important.

Thanks again,
Justin

>>> <Theresa_Miller@URSCorp.com> 5/29/2008 3:59 PM >>>

Hi Justin,
sorry for the confusing email. I attached the photos below.. yes, it was found on the quarter section of DFG land adjacent to the proposed sites.

I am asking if we stop the protocol transect surveys for the reference site now that we saw the BNLL. And if we did stop the transect surveys for the reference site, I was saying we would still visit to check for activity during the entire survey.

Theresa Miller
Wildlife Biologist
URS Corporation
1615 Murray Canyon Rd
Suite 1000
San Diego, CA 92109
Office: 619-294-9400 ext 1070
Mobile: 619-888-0131
Fax: 619-293-7920

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"Justin Sloan" <JSLOAN@dfg.ca.gov>
05/29/2008 03:50 PM

To
<Theresa_Miller@URSCorp.com>
cc

Subject
Re: blunt-nosed observed on coalinga reference site

Theresa,

So to be clear, they found a BNLL on the quarter section of DFG land adjacent to the proposed sites?

Great to hear! At least in some aspects. I wouldn't have expected them there either. I have to ask since it will be asked of me, was the observer 100% sure and confident in the id?

Also, are you asking to stop the transect surveys for the project site or just the reference site? What do you mean by "still visit for protocol requirements" but not continue the transect surveys?

I just want to be clear what you are asking before I answer.

Thanks for the news.

Justin

>>> <Theresa_Miller@URSCorp.com> 5/29/2008 3:39 PM >>>

Hi Justin,

My team just informed me that they found a blunt-nosed on the reference site. They were pretty surprised since the habitat is so poor... So do you want us to continue the protocol surveys of the site, or is it not necessary? We would still visit for our protocol requirements, however not sure we need to continue the transect surveys.

Thanks,
Theresa

Theresa Miller
Wildlife Biologist
URS Corporation
1615 Murray Canyon Rd
Suite 1000
San Diego, CA 92109
Office: 619-294-9400 ext 1070
Mobile: 619-888-0131
Fax: 619-293-7920

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"Justin Sloan" <JSLOAN@dfg.ca.gov>
07/09/2008 07:57 AM

To <Theresa_Miller@URSCorp.com>
cc
bcc
Subject Re: Coalinga Solar Project

History:  This message has been replied to.

Hi Theresa,

Attached is a species list for the DFG surveys that were done on PVER. Most of these species were found on the main parcel. I guess we can add BNLL as well.

Is it called San Joaquin Solar 1 & 2 because they are back to 2 sites? Are they including the southeast parcel again?

Take care,
Justin

>>> <Theresa_Miller@URSCorp.com> 7/8/2008 12:04 PM >>>
Hi Justin,
How are you? I hope you had a great 4th of July holiday!

I am working on the AFC document for the Bethel Project in Coalinga (it is now actually called the San Joaquin Solar 1 & 2). I saw in my notes from our meeting in April that you may have data from the 2005-2006 resource assessments done at the Pleasant Valley Ecological Reserve, and other surveys in the area. Is it possible for me to get that data or a species list from you to include in the project analysis?

As an update, we will finish our surveys for adult BNLL this week. None have been observed on the transmission line alignment to date.

Thanks,
Theresa

Theresa Miller
Wildlife Biologist
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Suite 1000
San Diego, CA 92109
Office: 619-294-9400 ext 1070
Mobile: 619-888-0131
Fax: 619-293-7920

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DFG PVER RAP sp lists.xls



"Justin Sloan" <JSLOAN@dfg.ca.gov>
07/09/2008 09:17 AM

To <Theresa_Miller@URSCorp.com>
cc
bcc
Subject Re: Coalinga Solar Project

History:  This message has been replied to.

Reference sites aren't required in the San Joaquin Valley but with current climatic conditions and the resulting reduced detectability in some areas, they don't hurt. This turned out to not be the best of years for surveys in some areas due to lack of rainfall and seed production.

So, while it would be beneficial to have results from reference sites to submit with results from Project sites, you are correct, reference sites aren't required.

>>> <Theresa_Miller@URSCorp.com> 7/9/2008 8:03 AM >>>
Thanks Justin.

The client is not using the southeast site again, they just called it 1&2...not sure why actually.

I wanted to check in again about the BNLL reference site. We didn't get access to the other Eco Reserve Reference site yet.. But since we are in the upper San Joaquin Valley, reference site visits are not required, correct? We have been seeing BNLL consistently at another reference site in the Elkhorn Plain.

Theresa Miller
Wildlife Biologist
URS Corporation
1615 Murray Canyon Rd
Suite 1000
San Diego, CA 92109
Office: 619-294-9400 ext 1070
Mobile: 619-888-0131
Fax: 619-293-7920

-----"Justin Sloan" <JSLOAN@dfg.ca.gov> wrote: -----

To: <Theresa_Miller@URSCorp.com>
From: "Justin Sloan" <JSLOAN@dfg.ca.gov>
Date: 07/09/2008 07:57AM
Subject: Re: Coalinga Solar Project

Hi Theresa,

Attached is a species list for the DFG surveys that were done on PVER. Most of these species were found on the main parcel. I guess we can add BNLL as well.

Is it called San Joaquin Solar 1 & 2 because they are back to 2 sites? Are they including the southeast parcel again?

Take care,

Justin

>>> <Theresa_Miller@URSCorp.com> 7/8/2008 12:04 PM >>>

Hi Justin,

How are you? I hope you had a great 4th of July holiday!

I am working on the AFC document for the Bethel Project in Coalinga (it is now actually called the San Joaquin Solar 1 & 2). I saw in my notes from our meeting in April that you may have data from the 2005-2006 resource assessments done at the Pleasant Valley Ecological Reserve, and other surveys in the area. Is it possible for me to get that data or a species list from you to include in the project analysis?

As an update, we will finish our surveys for adult BNLL this week. None have been observed on the transmission line alignment to date.

Thanks,
Theresa

Theresa Miller
Wildlife Biologist
URS Corporation
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Suite 1000
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Office: 619-294-9400 ext 1070
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Fax: 619-293-7920

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[attachment "DFG PVER RAP sp lists.xls" removed by Theresa Miller/SanDiego/URSCorp]

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Susan_P_Jones@fws.gov

04/08/2008 12:18 PM

To Patrick_Mock@URSCorp.com

cc Anne_Runnalls@URSCorp.com, "Justin Sloan"
<JSLOAN@dfg.ca.gov>, "Julie Vance"

<JVANCE@dfg.ca.gov>, Susan_Jones@fws.gov,
bcc

Subject Re: Intro to Bethel Solar Hybrid Project 7 & 8 - Request for
Concurrence of Survey effort

Patrick -

Now that I know where the project is located, I have turned it over to my staff person Shelley Buranek. Please include her in your e-mails, and take me out of the e-mails. The more we can have joint meetings and site visits with DFG, the smoother your project will go. I have forwarded the pictures and maps you sent to Shelley. She does not have any survey proposals from you. She won't be able to attend this Friday.

Thanks!

Susan Jones, San Joaquin Valley Branch Chief
U.S. Fish and Wildlife Office, 2800 Cottage Way, W-2605, Sacramento, CA
95825
916/414-6600, fax 916/414-6713

Patrick_Mock@URSC
orp.com

04/08/2008 10:14
AM

To
"Justin Sloan" <JSLOAN@dfg.ca.gov>
cc

<Susan_Jones@fws.gov>, "Julie
Vance" <JVANCE@dfg.ca.gov>,
<Theresa_Miller@URSCorp.com>,
<Anne_Runnalls@URSCorp.com>

Subject
Re: Intro to Bethel Solar Hybrid
Project 7 & 8 - Request fo
Concurrence of Survey effort

We can either meet at your office and then go out to the site or just meet at the site. Your preference. If we meet at your office, then maybe Julie Vance and Susan Jones can also meet with us if they are available.

We will be arriving at 9 AM on Friday, so we can meet between 10 and 11 AM depending on the meeting location.

Thank you for being available on short notice.

Pat

Patrick J. Mock, Ph.D.
Senior Project Manager
Senior Biologist
URS Corporation
1615 Murray Canyon Road, Suite 1000
San Diego, CA 92108
619-294-9400
619-293-7920 Fax

-----"Justin Sloan" <JSLOAN@dfg.ca.gov> wrote: -----

To: <Patrick_Mock@URSCorp.com>
From: "Justin Sloan" <JSLOAN@dfg.ca.gov>
Date: 04/08/2008 09:57AM
Subject: Re: Intro to Bethel Solar Hybrid Project 7 & 8 - Request for
Concurrence of Survey effort

Pat,

I am available to meet Friday. Do you have a preferred time/location?

Justin

Justin Sloan
Environmental Scientist
California Department of Fish and Game
Central Region
1234 E. Shaw Ave
Fresno, CA 93710
Phone: (559) 243-4014 ext 216
Fax: (559) 243-4020

>>> <Patrick_Mock@URSCorp.com> 4/7/2008 4:02 PM >>>

Yes this project is a CEC AFC process.

Yes, we assumed Kit fox and BUOW are likely to present.

We will look for raptor nesting activity in the project vicinity.

We will include a hydrology assessment for the sites and will contact the local agencies for any additional data they may have.

Hope you are available to meet with Theresa & I. We will coordinate with Justin to meet this Friday.

Pat

Patrick J. Mock, Ph.D.
Senior Project Manager
Senior Biologist
URS Corporation
1615 Murray Canyon Road, Suite 1000
San Diego, CA 92108
619-294-9400

619-293-7920 Fax

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"Julie Vance"
<JVANCE@dfg.ca.gov>

04/07/2008 01:19 PM

To
<Patrick_Mock@URSCorp.com>
cc

"Justin Sloan"
<JSLOAN@dfg.ca.gov>,
<Susan_Jones@fws.gov>,
<Anne_Runnalls@URSCorp.com>,
<Theresa_Miller@URSCorp.com>

Subject
Re: Intro to Bethel Solar
Hybrid Project 7 & 8 -
Request for Concurrence
of Survey effort

Patrick,

Justin Sloan of my staff may be able to attend your meeting on April 11; I have other meetings scheduled on that date but may be able to attend also, depending on the meeting time. Justin will be back in the office tomorrow and will let you know of his availability. Does this particular project require CEC approvals?

Just as an FYI, active ag, especially in Pleasant Valley where much of the ag is dry farmed, does not preclude the presence of species like kit fox and burrowing owl. Any of the Arroyo Pasajero (AP) watershed (Los Gatos, Zapato Chino, Jacalitos and Warthan Creeks, collectively) can support all of the species, including BNLL. It appears that at least one of these creeks is present on site. I would recommend finding out where DFG's Eco Reserves in the area are; I think they are close and we have additional species info and direct and indirect impacts to these would need to be considered. Swainson's Hawks are known to occur in the area as well.

Any proposed work in the AP floodplain will need to be discussed in detail

given the flashy nature of these creeks (tend to carry mudflows, heavily incised, high carving power; took out I5 in the late 90's). In addition, the AP floodplain is important from a connectivity standpoint. During the preparation of the Pleasant Valley, and later the Coalinga, HCP (never completed), primary and secondary kit fox corridors were identified in Pleasant Valley. If my memory serves, your project is in that area.

Those

HCPs have a lot of good biological information which may be useful. The City of Coalinga could help you with those.

Sincerely,

Julie

Julie Vance, Senior Environmental Scientist

Permitting and Project Review

Department of Fish and Game

Central Region (R4)

1234 E. Shaw Ave

Fresno, CA 93710

(559) 243-4014 x 222

>>> <Patrick_Mock@URSCorp.com> 4/4/2008 10:30 AM >>>

Julie:

As with the Ausra project, URS would like to obtain concurrence from CDFG regarding the surveys, level of effort and schedule for this new power project.

Attached is the 10-mile & 1-mile buffer maps for the two alternative sites we are assessing. Both sites are currently are active agricultural fields. Site photos to follow once they are available. We will be doing a preliminary site visit next Friday (4/11). Are you or one of your staff available to meet us on site or in your office to discuss our survey approach? Based on our site visit, we will determine the surveys we think should be required. We have tentatively scheduled BNLL/SJAS and BUOW surveys given their CNDDB locations on the adjacent parcels. Botanical surveys will also be conducted.

Please reply ASAP next week so that we can coordinate and perhaps meet next Friday.

Pat

Patrick J. Mock, Ph.D.

Senior Project Manager

Senior Biologist

URS Corporation

1615 Murray Canyon Road, Suite 1000

San Diego, CA 92108

619-294-9400

619-293-7920 Fax

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Path: G:\gis\misc\ArcMAP_Layouts\11x17.mxd, 01/21/09, comille_jill



Site Location

AERIAL PHOTO OF SAN JOAQUIN SOLAR 1 & 2
PRIOR TO CONSTRUCTION

URS

PHOTO TAKEN
PRIOR TO MAY 2008

CREATED BY: CM

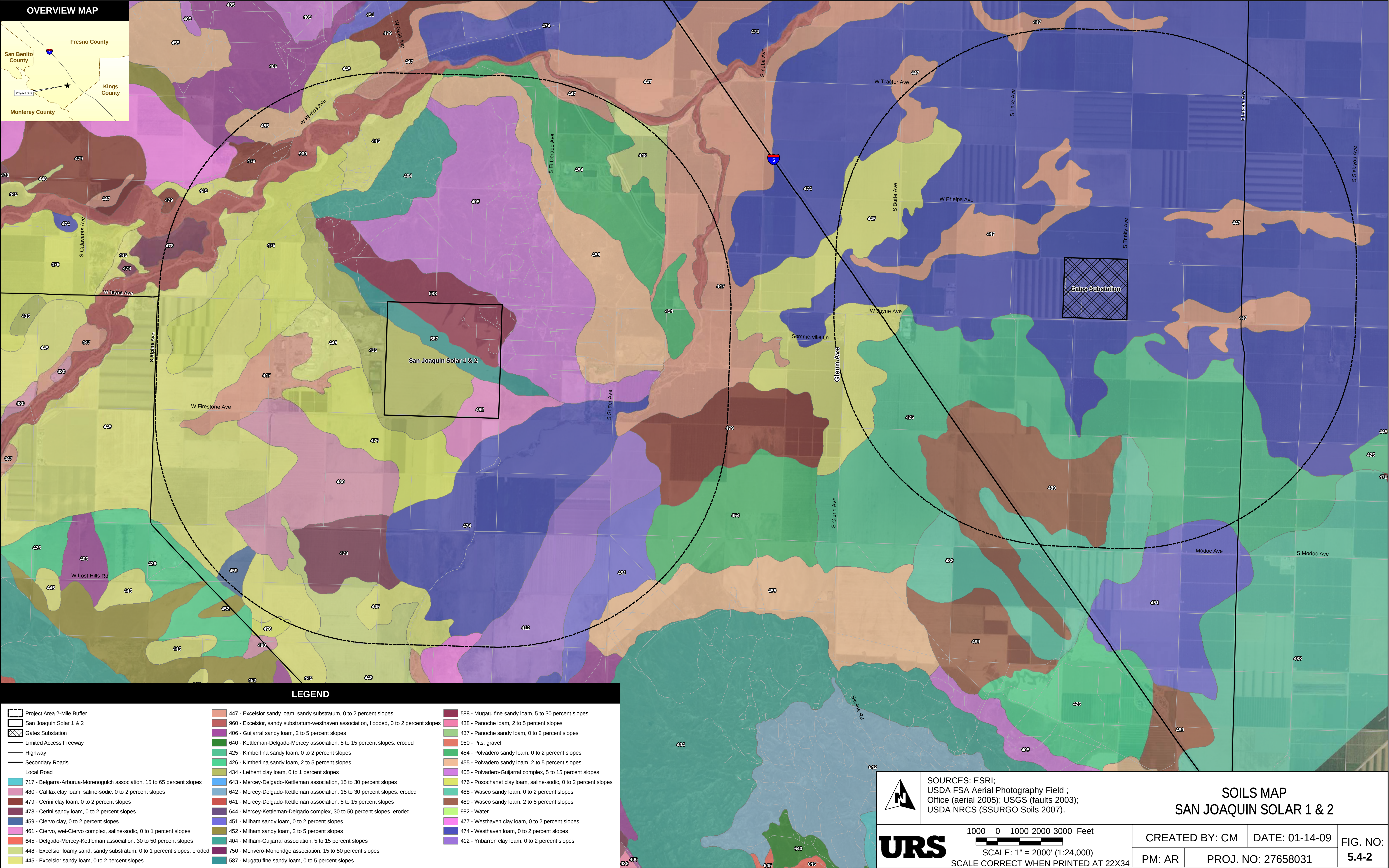
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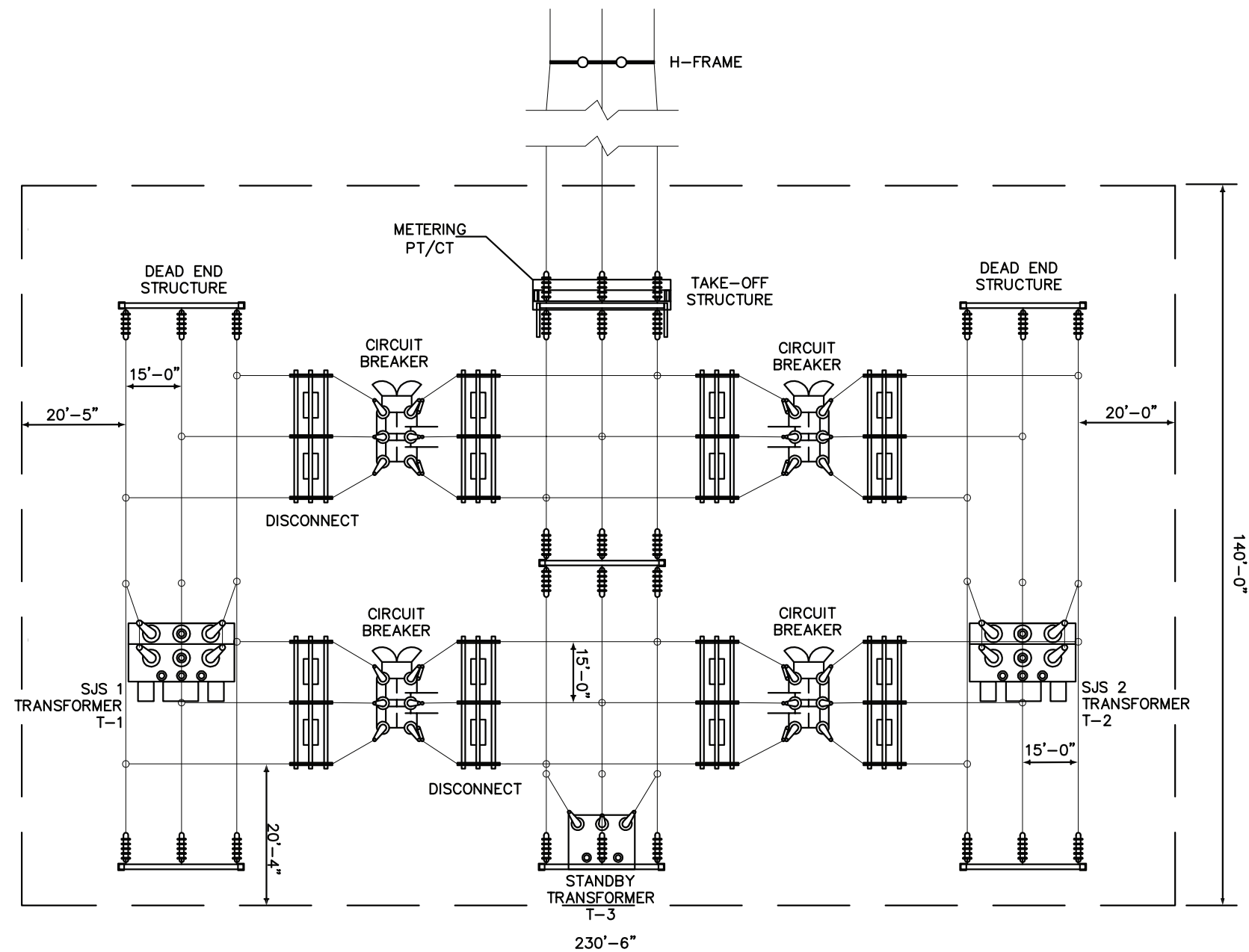
FIG. NO:

PM: AR

PROJ. NO: 27658031

3.4-2a





PRELIMINARY

SOURCE:
Ford, Davis and Bacon (drawing 2009)

**SWITCHBOARD PLAN
SAN JOAQUIN SOLAR 1 & 2**

URS

NO SCALE

CREATED BY: CM

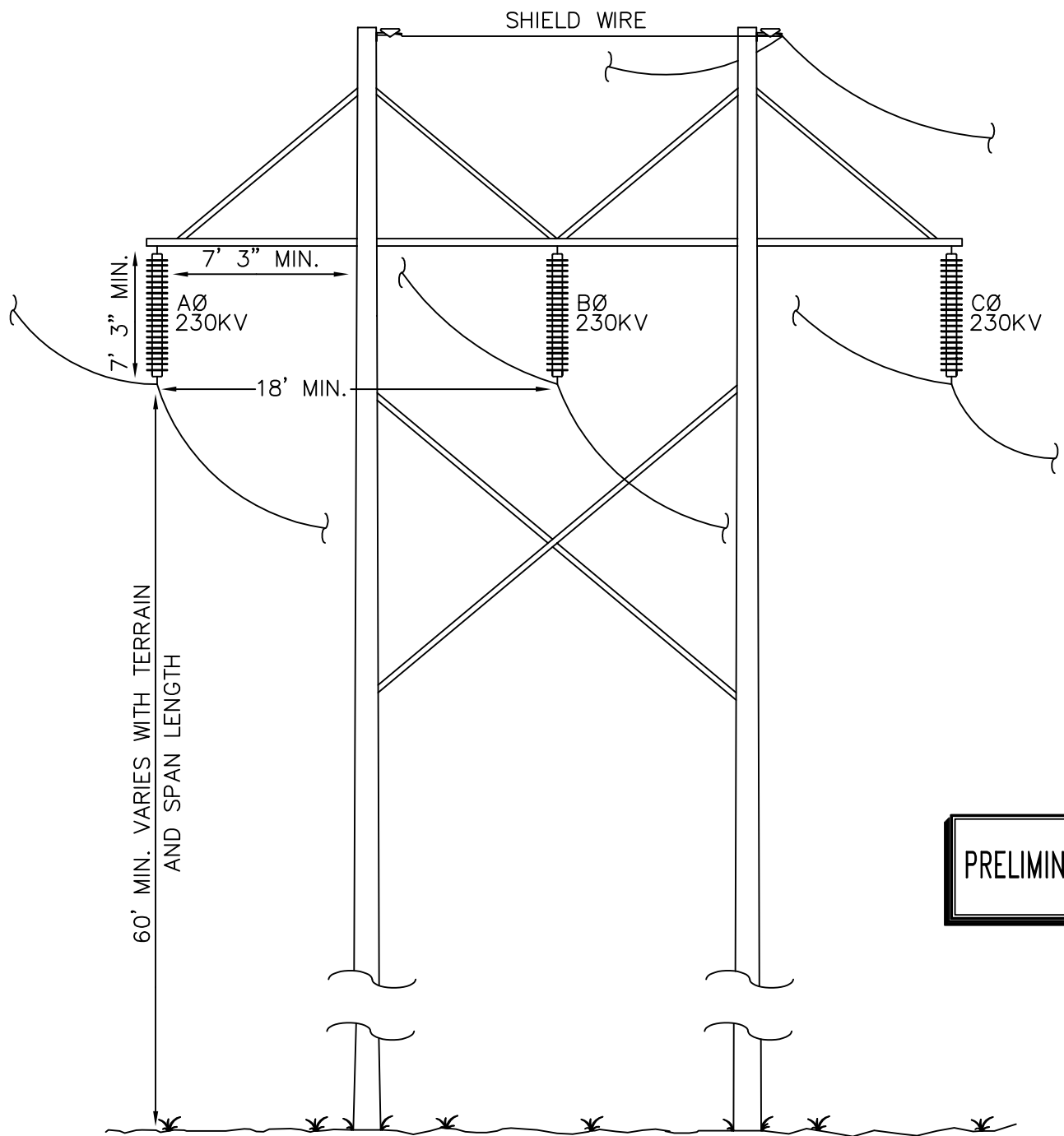
DATE: 01-22-09

FIG. NO:

PM: AR

PROJ. NO: 27658031

3.4-10



NOTES:

1. FINAL POLE DIMENSIONS WILL BE DETERMINED DURING DETAILED DESIGN

SOURCE:
Ford, Davis and Bacon (drawing 2009)

**POLE DETAIL 1
SAN JOAQUIN SOLAR 1 & 2**

URS

NO SCALE

CREATED BY: CM

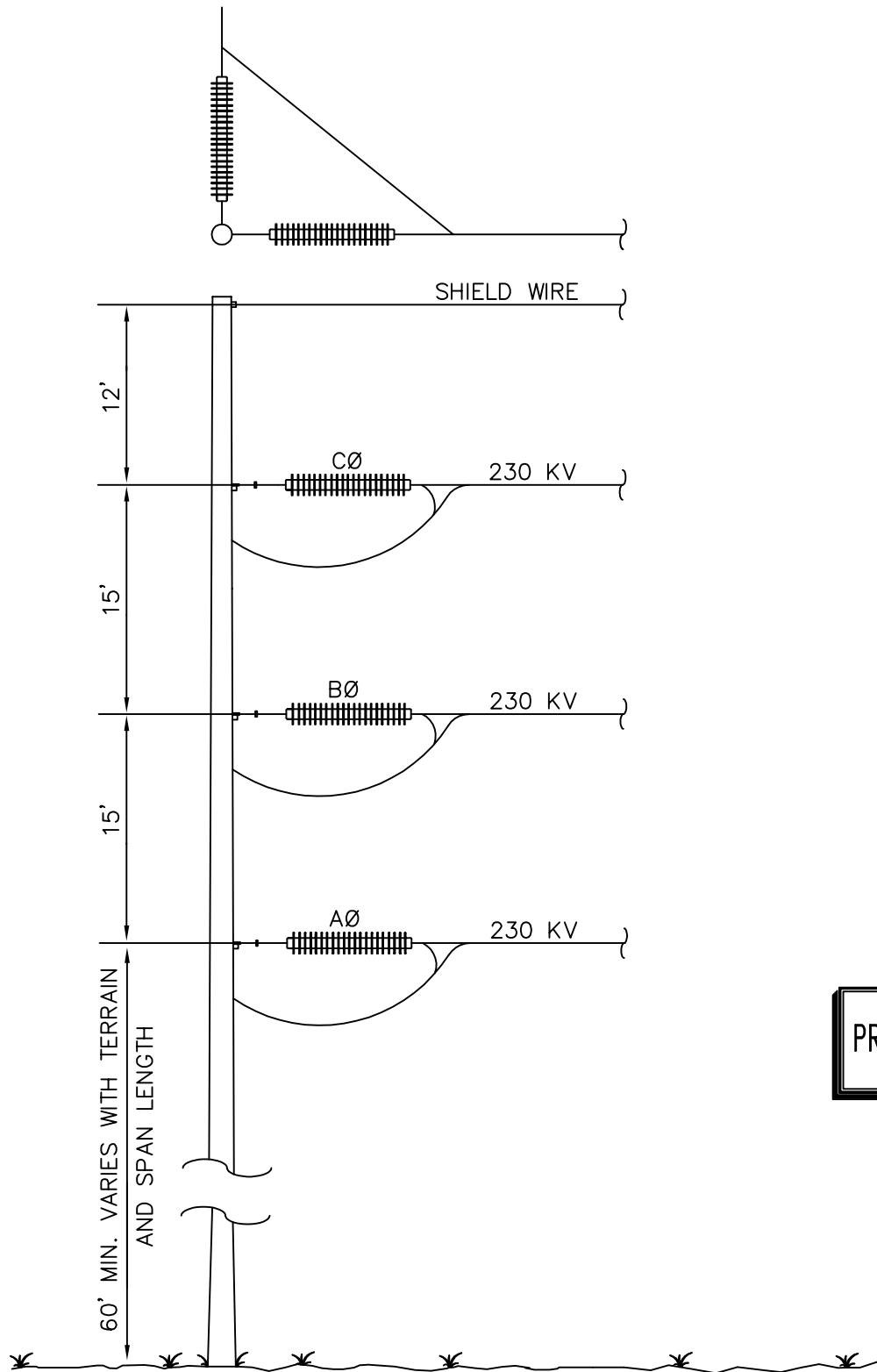
DATE: 01-22-09

FIG. NO:

PM: AR

PROJ. NO: 27658031

3.4-11



PRELIMINARY

NOTES:

1. FINAL POLE DIMENSIONS WILL BE DETERMINED DURING DETAILED DESIGN

SOURCE:
Ford, Davis and Bacon (drawing 2009)

**POLE DETAIL 2
SAN JOAQUIN SOLAR 1 & 2**

URS

NO SCALE

CREATED BY: CM

DATE: 01-22-09

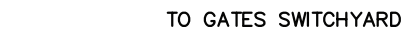
FIG. NO:

PM: AR

PROJ. NO: 27658031

3.4-12

(A)



- ① 3000 AMP BUS
- ② 3(3-350KCMIL 15KV, 1-4/0 600V G, 5" C)
- ③ 5(3-500KCMIL 5KV, 1-250 600V G, 5" C)
- ④ 4(3-500KCMIL 5KV, 1-250 600V G, 5" C)

- 32 REVERSE POWER
- 46 NEGATIVE SEQUENCE UNDERCURRENT (PHASE
- 50 CURRENT IMBALANCE)
- INSTANTANEOUS OVERCURRENT
- 51 TIME OVERCURRENT

1. SAFETY CONTROLS SHALL BE INSTALLED WHERE THE START UP TRANSFORMER T-3 AND THE OUTGOING TRANSFORMERS T-1 AND T-2 CANNOT BE CONNECTED TO THE 230KV LINE AT THE SAME TIME.

PRELIMINARY

MAIN SUBSTATION SINGLE LINE SAN JOAQUIN SOLAR 1 & 2

NO SCALE

DATE: 01-22-09

PROJ. NO: 27658031

3.4-6

Elizabeth Ingram

From: Wright, Linda [LWright@caiso.com]
Sent: Thursday, January 15, 2009 2:59 PM
To: Elizabeth Ingram; Fishback, Edward
Cc: Reese, Roni; Kent A. Larsen
Subject: RE: Bethel 7&8 Hybrid Project

Elizabeth –

Please accept this email as confirmation that the California ISO was unable to honor the request of Martifer Renewable Solar Thermal LLC (Martifer) to change the name of the Bethel 7 & 8 Solar Thermal Hybrid project to the San Joaquin Solar 1 & 2 project during the study process. The California ISO is able to facilitate project name changes at the time of Large Generator Interconnection Agreement execution at the request of the Interconnection Customer.

Let me know if I can be of further assistance. Ed Fishback, the Project Manager for this project, is out of the office until January 20, 2009.

Linda Wright
Project Specialist
California ISO
916/351-4470

From: Elizabeth Ingram [mailto:Elizabeth.Ingram@spinnakerenergy.net]
Sent: Thursday, January 15, 2009 1:14 PM
To: Wright, Linda; Fishback, Edward
Cc: Reese, Roni; Kent A. Larsen
Subject: Bethel 7&8 Hybrid Project
Importance: High

Linda,

As you may recall, we were in touch this fall with regard to fulfilling the requirements for the Bethel 7&8 projects to be included in the Transition Cluster. I was also in touch with Ed Fishback & Roni Reese at the same time in order to update the ownership of the project in CAISO's records. We now refer to the project as the San Joaquin Solar 1&2 project, rather than Bethel 7&8 Solar Hybrid Project. While I was working with Roni to file the appropriate Consent to Assignments, I was informed that we could not update the project name listed in the interconnection agreements until the end of the interconnection study process due to an accounting limitation on the part of CAISO.

On a separate note, we filed the Application for Certification for the project to the California Energy Commission on November 26, 2008. As one of their data requests, CEC has asked for clarification on the following:

The following discrepancies were observed in the Large Generator Interconnection Study Agreement (LGISA) submitted materials:

- i) Whereas the LGISA dated October 24, 2008 was executed and signed between the California ISO and Martifer Renewables Solar Thermal LLC., all requirements for inclusion in the Transition Cluster Generator Queue position including payment of fees were fulfilled by the Bethel 7 & 8 Solar Hybrid project.*
 - ii) However, the AFC for the proposed San Joaquin Solar 1 & 2 Hybrid (SJS 1 & 2) project to the Energy Commission was received from the applicant, San Joaquin Solar 1 LLC and San Joaquin Solar 2 LLC.*
- Please explain whether under the above circumstances the signed LGISA is still valid for the current proposed project and ownership, and as far as the generator California ISO queue position is concerned. CEC staff prefers to have a note from Cal ISO stating that they agree Bethel 7&8 is the same project as SJS 1&2.*

I plan to send CEC an explanation of the ownership of the project, but would you mind responding to this email to confirm that CAISO understands/acknowledges that “Bethel 7&8 Solar Hybrid project” and “San Joaquin Solar 1&2 Hybrid Project” are the same entity.

Please call me if you have any questions.

Thank you for your help,

*Elizabeth Ingram | Business Development | [Spinnaker Energy, Inc.](#)
12555 High Bluff Drive Suite 100 San Diego CA 92130 | T 858.427.6536 F 858.513.1205*

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Please consider the environment before printing this email.

_____ Information from ESET NOD32 Antivirus, version of virus signature database 3769 (20090115)

The message was checked by ESET NOD32 Antivirus.

<http://www.eset.com>

CONSENT TO ASSIGNMENT

This Consent to Assignment (this “**Consent**”), is entered into as of September 25, 2008 (the “**Effective Date**”), by and among the California Independent System Operator Corporation, a California nonprofit public benefit corporation (“**ISO**”, the “**Consenting Party**”), Bethel Energy LLC, a California limited liability company (“**Interconnection Customer**”), and Bethel Solar Partners LLC, a California limited liability company (the “**New Interconnection Customer**”).

RECITALS

WHEREAS, ISO and Interconnection Customer have entered into an Interconnection Feasibility Study Agreement dated March 3, 2008 (the “**Agreement**”);

WHEREAS, New Interconnection Customer holds all existing project development assets related to the construction and operation of the Bethel 7&8 Solar Thermal Hybrid Project, including leases, permit applications, environmental documents, etc. and intends to finance, construct and operate the Bethel 7&8 Solar Thermal Hybrid Project.

WHEREAS, Interconnection Customer intends to assign its rights, title and interest and obligations in, to and under the Agreement to New Interconnection Customer, and New Interconnection Customer intends to assume all of Interconnection Customer’s rights, title, interest and obligations in, to and under the Agreement.

WHEREAS, Interconnection Customer has requested that each of the Consenting Parties consent to, and each of the Consenting Parties desire to consent to, the transfer of ownership in accordance with Article 13.15 of the Agreement.

1. ISO hereby consents to the transfer of ownership by Interconnection Customer to New Interconnection Customer, in accordance with Article 13.15 of the Agreement. New Interconnection Customer represents that it has the operational and financial ability, as well as the legal authority, to satisfy Interconnection Customer's obligations under the Agreement.

2. Each Consenting Party agrees that upon the effectiveness of the transfer of ownership of the Agreement referred to herein, Interconnection Customer, as defined in the Agreement, shall be New Interconnection Customer and that Interconnection Customer’s representative and replaced with the following person and address, as follows:

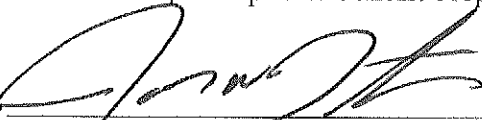
Steve Provol
Strategic Affairs Specialist
Bethel Solar Partners LLC
12025 Blue Diamond Court
San Diego, CA 92131
(858) 947-7056
S.Provol@BethelEnergy.com

3. New Interconnection Customer shall notify the Consenting Party upon the effectiveness of the transfer of ownership of the Agreement referred to herein.
4. A Fictitious Business Name Statement was filed with the Clerk of San Diego County on September 12, 2008 to establish that "Bethel Solar Partners LLC" does business as "Bethel Energy LLC." A copy of this statement is included in Appendix A.
5. This letter may be executed in any number of counterparts each of which shall be deemed an original, and all of which shall constitute one and the same instrument.

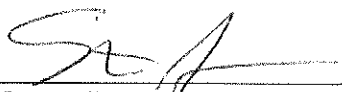
[Signature Page Follows]

IN WITNESS WHEREOF, each of the parties hereto have caused this Consent to be executed as of the day and year first above written.

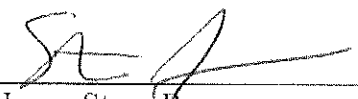
CALIFORNIA INDEPENDENT SYSTEM
OPERATOR CORPORATION,
a California nonprofit public benefit corporation

By: 
Name: JAMES W DETMERS
Title: VP OPERATIONS 

Bethel Solar Partners LLC
a California limited liability company

By: 
Name: Steve Kenner
Title: Principal

Bethel Energy LLC
a California limited liability company

By: 
Name: Steve Kenner
Title: Principal

CONSENT TO ASSIGNMENT

This Consent to Assignment (this “**Consent**”), is entered into as of September 26, 2008 (the “**Effective Date**”), by and among the California Independent System Operator Corporation, a California nonprofit public benefit corporation (“**ISO**”, the “**Consenting Party**”), Bethel Solar Partners LLC, a California limited liability company, a California limited liability company, (“**Interconnection Customer**”), and Martifer Renewables Solar Thermal LLC, a Delaware limited liability company (the “**New Interconnection Customer**”).

RECITALS

WHEREAS, ISO and Interconnection Customer have entered into an Interconnection Feasibility Study Agreement dated March 3, 2008 (the “**Agreement**”);

WHEREAS, New Interconnection Customer holds all existing project development assets related to the construction and operation of the Bethel 7&8 Solar Thermal Hybrid Project, including leases, permit applications, environmental documents, etc. and intends to finance, construct and operate the Bethel 7&8 Solar Thermal Hybrid Project.

WHEREAS, Interconnection Customer intends to assign its rights, title and interest and obligations in, to and under the Agreement to New Interconnection Customer, and New Interconnection Customer intends to assume all of Interconnection Customer’s rights, title, interest and obligations in, to and under the Agreement, pursuant to an Acquisition Agreement, dated **March 14, 2008**; and

WHEREAS, Interconnection Customer has requested that each of the Consenting Parties consent to, and each of the Consenting Parties desire to consent to, the Acquisition Agreement in accordance with Article 13.15 of the Agreement.

1. ISO hereby consents to the Acquisition Agreement by Interconnection Customer to New Interconnection Customer, in accordance with Article 13.15 of the Agreement. New Interconnection Customer represents that it has the operational and financial ability, as well as the legal authority, to satisfy Interconnection Customer's obligations under the Agreement.

2. Each Consenting Party agrees that upon the effectiveness of the Acquisition Agreement referred to herein, Interconnection Customer, as defined in the Agreement, shall be New Interconnection Customer and that Interconnection Customer’s representative and replaced with the following person and address, as follows:

Kent Larsen
Vice President
Spinnaker Energy, Inc.
(on behalf of Martifer Renewables Solar Thermal LLC)
12555 High Bluff Drive
Suite 100
San Diego, CA 92130
(858) 947-7056
kent.larsen@spinnakerenergy.net

3. New Interconnection Customer is notifying the Consenting Party of the Acquisition Agreement effective March 14, 2008 referred to herein. A copy of the Acquisition Agreement is included in Appendix A.

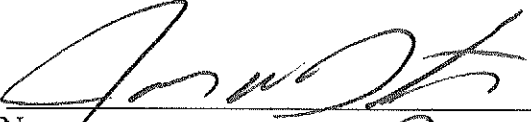
4. The Acquisition Agreement was made between “Bethel Solar Partners LLC” and “Eviva California Solar Holdings LLC.” The project owner referenced in the Acquisition Agreement filed with the Secretary of State of California for two Name Changes, subsequent to the execution of the Acquisition Agreement. “Eviva California Solar Holdings LLC” changed its name to “Martifer Renewables Solar LLC” on April 28, 2008. “Martifer Renewables Solar LLC” changed its name to “Martifer Renewables Solar Thermal LLC” (the New Interconnection Customer) on July 23, 2008. Copies of the referenced Certificates of Name Change are included in Appendix B.

5. This letter may be executed in any number of counterparts each of which shall be deemed an original, and all of which shall constitute one and the same instrument.

[Signature Page Follows]

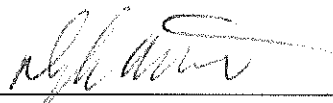
IN WITNESS WHEREOF, each of the parties hereto have caused this Consent to be executed as of the day and year first above written.

CALIFORNIA INDEPENDENT SYSTEM
OPERATOR CORPORATION,
a California nonprofit public benefit corporation

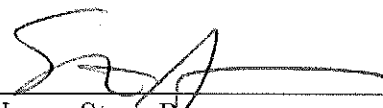
By: 
Name: James W. Detmers
Title: VP OPERATIONS

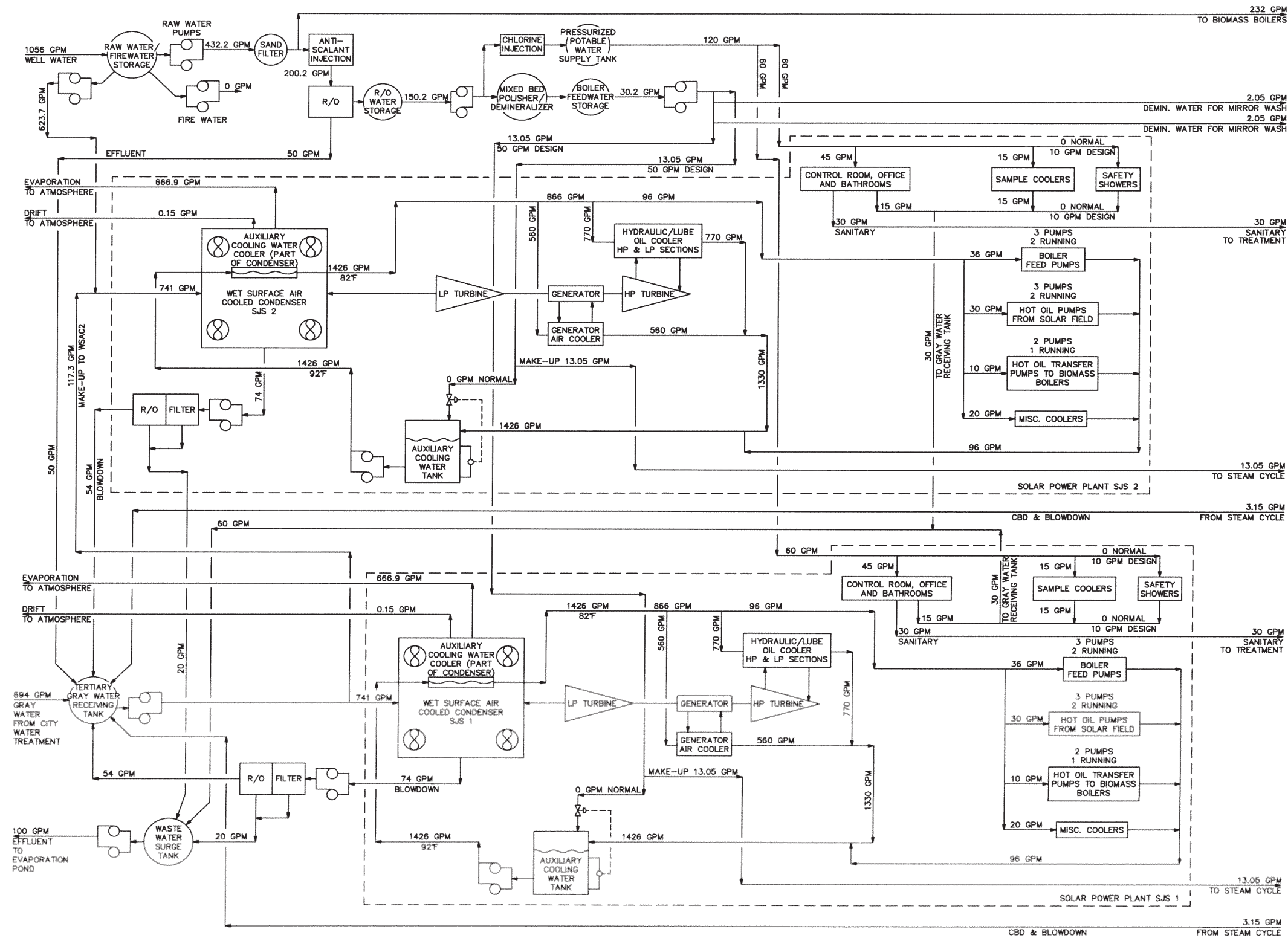


Martifer Renewables Solar Thermal LLC
a Delaware limited liability company

By: 
Name: Douglas Wert
Title: COO

Bethel Solar Partners LLC
a California limited liability company

By: 
Name: Steve Renner
Title: Principal



SOURCE:
Ford, Davis and Bacon (drawing 2009)

REVISED - WATER BALANCE SAN JOAQUIN SOLAR 1 & 2

URS

NO SCALE

CREATED BY: CM

DATE: 01-26-09

FIG. NO:

PM: AR

PROJ. NO: 27658031

5.5-3

Memorandum

Date: January 23, 2009

To: Anne Runnalls – Project Manager

From: Jason Moore – Project Geologist

Subject: **San Joaquin 1&2 – Anticipated Well Performance**

The well completion report (well report) for the existing, on-site agricultural irrigation well located near the southwest corner of the proposed San Joaquin Solar 1&2 Hybrid Power Plant (the Project) indicates that the well was drilled to a total depth of approximately 1,000 feet (ft) below ground surface (bgs) in 2006. The well was completed with 16-inch (in.) diameter steel casing, which was perforated by 0.070-in. diameter slots from 370 to 980 ft bgs with the exception of a blank interval between 858 and 939 ft bgs. A filter pack was placed from 40 to 1,000 ft bgs. The geologic materials encountered as reported on the well report ranged from clay to gravel, which is typical for alluvial sediments in the area.

Well tests were not reported on the well report, but according to the owner, in its current configuration, the well is normally pumped at a rate of about 1,400 gallons per minute (gpm) for extended periods of time to supply crops. The approximate depth to groundwater is 250 feet. No drawdown vs. time data is available for this well.

The water well driller's report (well report) for well number 21S/16E-4, located in the Project vicinity, indicates that the well was drilled to a total depth of approximately 1,000 ft bgs in 1970. The well was completed with 16-in. diameter casing, which was perforated by 0.125-in. diameter slots from 292 to 997 ft bgs. A filter pack was placed from 20 to 997 ft bgs. The geologic materials encountered as reported in the well report ranged from clay to gravel, which is comparable to the materials described in the Project's on-site agricultural irrigation well and typical alluvial sediments in the area.

Well test data summarized on the neighboring well report indicate a yield of 3,300 gallons per minute (gpm) with 55 ft of drawdown. It is likely that this test was conducted using airlift pumping equipment, which tends to indicate higher yields than are achievable using a vertical turbine pump. At the time of the test, the static water level was approximately 210 ft bgs.

The Project's on-site agricultural well is located near the southwest corner of Section 3, and well number 21S/16E-4 is located within Section 4 of the same township and range, therefore the two wells are located within about a mile of each other. These wells have comparable designs and encountered similar geologic materials; thus they will likely produce similar drawdown for a given yield. Average well yields for municipal and irrigation wells published by the California Department of Water Resources for the Pleasant Valley Subbasin range from 35 to 3,300 gallons per minute (gpm), with an average yield of 1,000 gpm. Based on the published range, and reported

performance of well number 21S/16E-4, wells in the vicinity of the site have the potential to produce yields above the average for the subbasin.

Under normal use, the on-site agricultural irrigation well is expected to generate drawdown comparable to the drawdown that other agricultural wells in the area are capable of producing. No site-specific geologic or hydrogeologic data have been identified that indicate drawdown from the well would substantially impact other groundwater users surrounding the site. Groundwater withdrawal by San Joaquin Solar 1&2 will produce groundwater drawdown within the aquifers penetrated by the well under the site and adjacent properties. Drawdown is expected to decrease at increased distances from the well used. Based on the significant distance to the nearest operational well, the expected drawdown would result in a negligible increase in the dynamic head and associated increase in pumping cost to neighboring well operators.

encl: Well Completion Report – On-Site Agricultural Irrigation Well
Water Well Drillers Report – Well Number 21S/16E-4

ORIGINAL
File with DWR

Page 1 of 1

Owner's Well No. **MOURAN #1**

Date Work Began **6/26/06**, Ended **7/14/06**

Local Permit Agency **FRESNO COUNTY**

Permit No. **WP-0026516** Permit Date **3/27/06**

STATE OF CALIFORNIA
WELL COMPLETION REPORT

Refer to Instruction Pamphlet

No. **EO-38695**

DWR USE ONLY — DO NOT FILL IN

STATE WELL NO./STATION NO.	
LATITUDE	LONGITUDE
APN/TRS/OTHER	

GEOLOGIC LOG

ORIENTATION (✓)		DRILLING METHOD	FLUID
☒ VERTICAL ☐ HORIZONTAL ☐ ANGLE (SPECIFY)		REVERSE	WATER
DEPTH FROM SURFACE		DESCRIPTION	
FL	TO FL	Describe material, grain, size, color, etc.	
0	8	BROWN TOP SOIL	
8	217	BROWN CLAY - TRACE SAND	
217	345	BROWN CLAY & 1/8" GRAVEL	
345	386	BROWN CLAY	
386	784	BROWN CLAY & GRAVEL	
784	805	BROWN CLAY	
805	928	BROWN CLAY & GRAVEL	
928	1000	BROWN GRITTY CLAY	

WELL OWNER

Name **W T MOURAN**

Mailing Address **P.O. BOX 835**

COALINGA

CA 93210

CITY

STATE ZIP

Address **JAYNE AVE BY PRISON**

City **COALINGA CA 93210**

County **FRESNO**

APN Book **085** Page **030** Parcel **57**

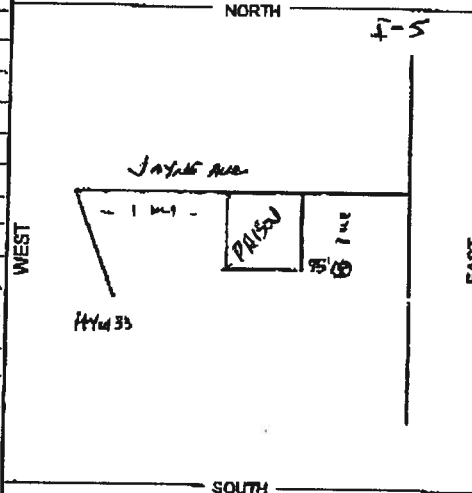
Township **21 S** Range **16 E** Section **3**

Latitude

DEG. MIN. SEC.

LOCATION SKETCH

NORTH



DEG. MIN. SEC.

ACTIVITY (✓)

☒ NEW WELL

MODIFICATION/REPAIR

— Deepen

— Other (Specify)

— DESTROY (Describe Procedures and Materials Under "GEOLOGIC LOG")

PLANNED USES (✓)

WATER SUPPLY

— Domestic — Public

☒ Irrigation — Industrial

MONITORING

TEST WELL

CATHODIC PROTECTION

HEAT EXCHANGE

DIRECT PUSH

INJECTION

VAPOR EXTRACTION

SPARGING

REMEDICATION

OTHER (SPECIFY)

Illustrate or Describe Distance of Well from Roads, Buildings, Ponds, Rivers, etc. and attach a map. Use additional paper if necessary. PLEASE BE ACCURATE & COMPLETE.

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH TO FIRST WATER ? (FL.) BELOW SURFACE

DEPTH OF STATIC

WATER LEVEL (FL.) & DATE MEASURED

ESTIMATED YIELD (GPM) & TEST TYPE

TEST LENGTH (Hrs.) TOTAL DRAWDOWN (FL.)

May not be representative of a well's long-term yield.

TOTAL DEPTH OF BORING **1000** (Feet)

TOTAL DEPTH OF COMPLETED WELL **980** (Feet)

DEPTH FROM SURFACE		BORE-HOLE DIA. (Inches)	CASING (S)				
FL	TO FL		TYPE (✓)	MATERIAL / GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0	40	42	BLANK	STEEL	30	250	
0	370	28	SCREEN	STEEL	16	312	
370	858	28	CON. DIAPHR.	STEEL	16	312	.070 X 32
858	939	28	FILL PIPE	STEEL	16	312	
939	980	28		STEEL	16	312	.070 X 32

DEPTH FROM SURFACE		ANNULAR MATERIAL TYPE			
FL	TO FL	CE-MENT (✓)	BEN-TONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0	40	✓			
40	1000				

ATTACHMENTS (✓)

- Geologic Log
- Well Construction Diagram
- Geophysical Log(s)
- Soil/Water Chemical Analysis
- Other

ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.

CERTIFICATION STATEMENT

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.

NAME **Farm Pump and Irrigation**

(PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)

P.O. Box 1477

ADDRESS

Signed

[Signature]
WELL DRILLER/AUTHORIZED REPRESENTATIVE

Shafter
CITY

CA 93263
STATE ZIP

07/13/06

DATE SIGNED

602148 C-57

C-57 LICENSE NUMBER

ORIGINAL
File with DWR

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
WATER WELL DRILLERS REPORT

Do Not Fill In

No 52561

State Well No.

Other Well No. 215/6E-4

(1) OWNER:

Name WALDO W. WEETH AND WEETH RANCHES INC.

Address

COALINGA, CALIFORNIA

(2) LOCATION OF WELL:

County Fresno

Owner's number, if any

Township, Range, and Section 21 16 sec. 4

Distance from cities, roads, railroads, etc.

(3) TYPE OF WORK (check):

New Well ☒ Deepening ☐ Reconditioning ☐ Destroying ☐

If destruction, describe material and procedure in Item 11.

(4) PROPOSED USE (check):

Domestic ☐ Industrial ☐ Municipal ☐

Irrigation ☒ Test Well ☐ Other ☐

(5) EQUIPMENT:

Rotary ☒

Cable ☐

Other ☐

(6) CASING INSTALLED:

STEEL:

OTHER:

SINGLE ☒ DOUBLE ☐

If gravel packed

From ft.	To ft.	Diam. in.	Gage or Wall in.	Diameter of Bore in.	From ft.	To ft.
0	997	16"	5/16"	27 1/2"	0	997

Size of shoe or well ring:

Size of gravel: 3/8

Describe joint:

(7) PERFORATIONS OR SCREEN:

Type of perforation or name of screen

From ft.	To ft.	Perf. per row	Rows per ft.	Size in. x in.
292	997	16	2	1/8" x 2"

(8) CONSTRUCTION:

Was a surface sanitary seal provided? Yes ☒ No ☐ To what depth 20 ft.

Were any struts sealed against pollution? Yes ☐ No ☐ If yes, note depth of struts

From ft. to ft.

From ft. to ft.

Method of sealing

(9) WATER LEVELS:

Depth at which water was first found, if known 210 ft.

Standing level before perforating, if known ft.

Standing level after perforating and developing 210 ft.

(10) WELL TESTS:

Was pump test made? Yes ☒ No ☐ If yes, by whom?

Yield: 3300 gal./min. with 35 ft. drawdown after hrs.

Temperature of water Was a chemical analysis made? Yes ☐ No ☒

Was electric log made of well? Yes ☒ No ☐ If yes, attach copy

(11) WELL LOG:

Total depth 1000 ft. Depth of completed well 997 ft.

Formation: Describe by color, character, size of material, and structure

Formation	ft. to	ft.
sand & gravel	0	150
sandy clay	150	216
sand	216	260
sand & streaks clay	260	300
sandy gravel	300	325
gravel & streaks sand	325	348
gravel	348	375
gravel & sand	375	410
clay & sand	410	450
clay	450	500
sand & gravel	500	525
gravel & clay	525	550
gravel & clay	550	575
sand & clay	575	600
clay & gravel	600	650
gravel & streaks clay	650	675
clay & sand	675	700
hard sand	700	724
sand & streaks clay	724	756
sand	756	786
fine sand	786	800
hard sand & boulders	800	825
sand & stks clay	825	850
fine sand	850	880
hard fine sand	880	900
sand	900	925
sand & clay	925	950
hard sand, clay & rock	950	975
hard sand	975	987
clay	987	1000

Work started 4/17/70, Completed 4/24/70

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME ROBERTSON BROS.

(Person, firm, or corporation) (Typed or printed)

Address Rt. 3 Box 1060

BAKERSFIELD, CALIF. 93307

[SIGNED] C. Robertson (Well Driller)

License No. 239627

Dated May 2, 1970

SKETCH LOCATION OF WELL ON REVERSE SIDE