URS

DOCKET
08-AFC-5
DATE SEP 26 2008
RECD. SEP 29 2008

September 26, 2008

Mr. Christopher Meyer
Project Manager
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512

Subject: SES Solar Two (08-AFC-5)
AFC Supplement in Response to CEC Data Adequacy Requests and BLM Minimum Requirement Comments
URS Project No. 27657106.00100

Dear Mr. Meyer:

On behalf of SES Solar Two, LLC, URS Corporation Americas (URS) hereby submits the Applicant's Supplemental Information in response to CEC Data Adequacy Requests and BLM Minimum Requirement Comments (SES Solar Two 08-AFC-5).

I certify under penalty of perjury that the foregoing is true, correct, and complete to the best of my knowledge. I also certify that I am authorized to submit the AFC Supplement on behalf of Solar Two, LLC.

Sincerely,

Angela Leiba
Project Manager

AL:ml

cc: Lynda Kastoll
Project Manager
Bureau of Land Management
1661 S. 4th Street
El Centro, CA 92243

URS Corporation
1615 Murray Canyon Road, Suite 1000
San Diego, CA 92108
Tel: 619.294.9400
Fax: 619.293.7920

Supplemental Information In Response to CEC Data Adequacy Requests and BLM Minimum Requirement Comments Application for Certification (08-AFC-5)

SES Solar Two, LLC

Submitted to:
Bureau of Land Management
1661 S. 4th Street, El Centro, CA 92243

Submitted to:
California Energy Commission
1516 9th Street , MS 15, Sacramento, CA 95814-5504

Submitted by:
SES Solar Two, LLC
2920 E. Camelback Road, Suite 150, Phoenix, AZ 85016

With Support From:
URS Corporation

September 2008

Data Adequacy Requests Response Guide

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TECHNICAL AREA: AIR QUALITY

Data Adequacy Request 1: The Imperial County Air Pollution Control District is currently reviewing the application and expects to make a determination regarding completeness by August 25, 2008.

Response: The Authority to Construct application was submitted to the Imperial County Air Pollution Control District on August 5, 2008 and is provided here as an attachment (see Attachment AQ-1). This application addresses the diesel firewater pump engine and emergency generator engine, which are the only stationary sources of air pollutants associated with the operational project and thus the only equipment requiring a permit from ICAPCD. The application was deemed complete on August 19th, 2008. This letter is included in Attachment AQ-1.

150 South Ninth Street
El Centro, CA 92243
(760) 482-4606

IMPERIAL COUNTY
AIR POLLUTION CONTROL DISTRICT

Attachment AQ-1

APPLICATION FOR

- [x] Authority to Construction
- [ ] New
- [ ] Amendment
- [ ] Permit to Operate
- [ ] Transfer of Ownership
- [ ] Relocation
- [ ] Name change
- [ ] Emission Credit Banking $85.00
- [ ] Change of Permit Conditions
- [ ] Equipment Modification or Addition

PERMIT NUMBER (if any)

1. Name of Applicant: **SES Solar Two LLC.**
2. Responsible Person: **Bob Liden**
3. Mailing Address: **2920 E. Camelback Road, Suite 150**
4. Title: **Executive Vice President**
5. City: **Phoenix** State: **AZ** Zip Code: **85016**
6. Phone (Area Code): **(602) 957-1818** Cell Phone (Area Code):
7. Type of Organization (Corp., Government, Individual, etc.): **LLC (Limited Liability Company)**
8. Brief Description of Project/Activity: **The project will consist about 30,000 solar dish Stirling systems and the design electric capacity will be 750 MW.**
9. Location of Project/Activity: **The project encompasses approximately 6,500 acres and is located near Plaster City in Imperial County.**
10. Property Owner: **Bureau of Land Management (BLM)**
11. Person in Charge at Location: **Bob Liden**
12. Title: **Executive Vice President**
13. Phone Number (Area Code): **(602) 957-1818**
14. Anticipated Date of Construction
    Start: **Oct. 2009**
    Completion: **Feb. 2013**
15. Anticipated Life of Project: **40 years**
16. Estimated Emissions

	Uncontrolled lbs/day	Controlled lbs/day
For largest single pollutant	N/A	0.29 (NOx)
Total for all emissions	N/A	0.33 (all pollutants)

17. Other Permits Have Been or Will be Obtained From: **N/A**
18. [x] Plot plans, flow charts, calculations, equipment description and other information required by "List and Critieria" attached.
19. [ ] The information previously submitted with _____ is still valid and no changes have been made except as shown on attachement.
20. [ ] Request for confidential handling of attached.
21. [x] Total pages attached **15**

"I am familiar with the Rules and Regulations of the Imperial County Air Pollution Control District and I certify that the operation of the plant and/or equipment which is subject to the application will comply with said Rules and Regulations."

August 5, 2008
Date

Signature of Responsible Person

OFFICE USE ONLY: All payments must be made by Check or Money Order. Cash will not be accepted Thank you.
Note: An application fee of $157.00 is due upon submission of an application.

Date application submitted: _____ **Amount paid:** _____

Received by: _____ **Receipt Number:** _____

Staff Comments:

150 South Ninth Street
El Centro, CA 92243
(760) 482-4606

IMPERIAL COUNTY
AIR POLLUTION CONTROL DISTRICT

INTERNAL COMBUSTION ENGINE SUMMARY FORM

NOTICE

An application will not be processed unless ALL fields in "Section A" are complete.

Section A

Company/Agency **SES Solar Two LLC.**	Phone Number **(602) 957-1818**
Equipment Location **near Plaster City in Imperial County, California**	Existing Permit # (if any) **N/A**
Engine Manufacturer **Cummins**	Model Number **QSL9-G3NR3 or similar**
Engine Serial Number: **TBD**	EPA/C.A.R.B. 12-character Engine Family Name **TBD**
Manufacturer Date: **TBD**	Is unit equipped with a non-resettable hour meter? ☒ Yes ☐ No

Utilization of Engine

☐ Electrical Generator _____ Kw ☐ Fire Pump ☐ Portable
☐ Compressor Driver _____ cfm ☒ Other **Emergency Generator**
☐ Pump Driver _____ gpm ☐ Rental

Fuel Information Air to Fuel Ratio **TBD**

☐ Natural Gas ☐ Gasoline ☐ LPG ☐ Other _____
☐ Digester Gas ☐ Landfill Gas ☒ Diesel Oil

Engine Size (Manufacturers Rating) BHP@ **335** RPM

Operating Schedule

_____ Hr/Days _____ Days/Week

_____ Weeks/Year Maximum Operating Hours _____ Hrs/Days

☒ Emergency Only (indicate hours operated for testing & maintenance)

Section B

Is this unit designed to be moved or carried from one location to another, or does it have wheels, skids,

☐ Yes (Portable) ☒ No (Stationary)

150 South Ninth Street
El Centro, CA 92243
(760) 482-4606

IMPERIAL COUNTY
AIR POLLUTION CONTROL DISTRICT

INTERNAL COMBUSTION ENGINE SUMMARY FORM

Section C

Engine Description — Number of Cylinders: 6

- ☐ Two Cycle or ☒ Four Cycle
- ☒ Lean Burn or ☐ Rich Burn
- ☐ Turbocharged ☒ Turbocharged/Aftercooled ☐ Naturally Aspirated

Sulfer Content of Disgester Gas, Landfill Gas or Diesel

15 ppm sulfur content of diesel fuel

Maximum Rated Fuel Consumption (Gas/Hr, Cu. Ft/Hr)

19.2 gal/hr

Average Load Percentage %

Energy Recovery From Exhaust ☐ Yes ☒ No If yes, please explain

Emission Control Device ☐ Yes ☒ No If yes, please explain

Emission Data:

POLLUTANT	EMISSION BEFORE CONTROL Gr/BHP PPM Lb/Day	EMISSION AFTER CONTROL Gr/BHP PPM Lb/Day
NMHC or TOC	N/A	0.07 Gr/BHP-hour
NOx	N/A	5.67 Gr/BHP-hour
CO	N/A	0.39 Gr/BHP-hour
PM10	N/A	0.06 Gr/BHP-hour
SOx	N/A	0.12 Gr/BHP-hour

☒ Manufacturer Data ☐ Source Test Data

Section D

Stationary Engines Only

Stack Dimensions

Height Above Grade 6.5 Ft Height Above Building Ft

Exhaust Cross Section

Diameter 8 In Width In Length In

Exhaust Temperature 869 °F Direction of Stack Outlet ☐ Horizontal ☐ Other ☒ Vertical

End of the Stack ☒ Open ☐ Capped ☐ Flapper Valve

Stack Serves

- ☒ Only this equipment
- ☐ Other equipment also

Exhaust Flow 1,218 CFM
Total Flow Rate CFM
Exhaust Pressure CFM

Receptor Information. A receptor is a residence or business whose occupants could be exposed to toxic emissions from your facility.

Nearest offsite receptor residence

Distance to nearest offsite receptor 18,491 feet

Distance to nearest school grounds 44,230 feet

John Lague
Name of preparer

August 5, 2008
Date

150 South Ninth Street
El Centro, CA 92243
(760) 482-4606

IMPERIAL COUNTY
AIR POLLUTION CONTROL DISTRICT

INTERNAL COMBUSTION ENGINE SUMMARY FORM

NOTICE

An application will not be processed unless ALL fields in "Section A" are complete.

Section A

Company/Agency **SES Solar Two LLC.**	Phone Number **(602) 957-1818**
Equipment Location **near Plaster City in Imperial County, California**	Existing Permit # (if any) **N/A**
Engine Manufacturer **Cummins**	Model Number **CFP33-F35 or similar**
Engine Serial Number: **TBD**	EPA/C.A.R.B. 12-character Engine Family Name **TBD**
Manufacturer Date: **TBD**	Is unit equipped with a non-resettable hour meter? ☒ Yes ☐ No

Utilization of Engine

☐ Electrical Generator _____ Kw ☒ Fire Pump ☐ Portable
☐ Compressor Driver _____ cfm ☐ Other _____
☐ Pump Driver _____ gpm ☐ Rental

Fuel Information — Air to Fuel Ratio **TBD**

☐ Natural Gas ☐ Gasoline ☐ LPG ☐ Other _____
☐ Digester Gas ☐ Landfill Gas ☒ Diesel Oil

Engine Size (Manufacturers Rating) BHP@ **77** RPM **2600**

Operating Schedule

_____ Hr/Days _____ Days/Week

_____ Weeks/Year Maximum Operating Hours _____ Hrs/Days

☒ Emergency Only (indicate hours operated for testing & maintenance)

Section B

Is this unit designed to be moved or carried from one location to another, or does it have wheels, skids,

☐ Yes (Portable) ☒ No (Stationary)

150 South Ninth Street
El Centro, CA 92243
(760) 482-4606

IMPERIAL COUNTY
AIR POLLUTION CONTROL DISTRICT

INTERNAL COMBUSTION ENGINE SUMMARY FORM

Section C

Engine Description — Number of Cylinders: 4

- ☐ Two Cycle or ☒ Four Cycle
- ☒ Lean Burn or ☐ Rich Burn
- ☐ Turbocharged ☐ Turbocharged/Aftercooled ☐ Naturally Aspirated

Sulfer Content of Disgester Gas, Landfill Gas or Diesel

15 ppm sulfur content of diesel fuel

Maximum Rated Fuel Consumption (Gas/Hr, Cu. Ft/Hr)

Average Load Percentage %

Energy Recovery From Exhaust ☐ Yes ☒ No If yes, please explain

Emission Control Device ☐ Yes ☒ No If yes, please explain

Emission Data:

POLLUTANT	EMISSION BEFORE CONTROL Gr/BHP PPM Lb/Day	EMISSION AFTER CONTROL Gr/BHP PPM Lb/Day
NMHC or TOC	N/A	0.1 Gr/BHP-hour
NOx	N/A	4.138 Gr/BHP-hour
CO	N/A	0.820 Gr/BHP-hour
PM10	N/A	0.170 Gr/BHP-hour
SOx	N/A	0.01 Gr/BHP-hour

☒ Manufacturer Data ☐ Source Test Data

Section D

Stationary Engines Only

Stack Dimensions
Height Above Grade 5.75 Ft Height Above Building Ft

Exhaust Cross Section
Diameter 5 In Width In Length In

Exhaust Temperature 1075 °F Direction of Stack Outlet ☐ Horizontal ☐ Other ☒ Vertical

End of the Stack ☒ Open ☐ Capped ☐ Flapper Valve

Stack Serves
- ☒ Only this equipment
- ☐ Other equipment also

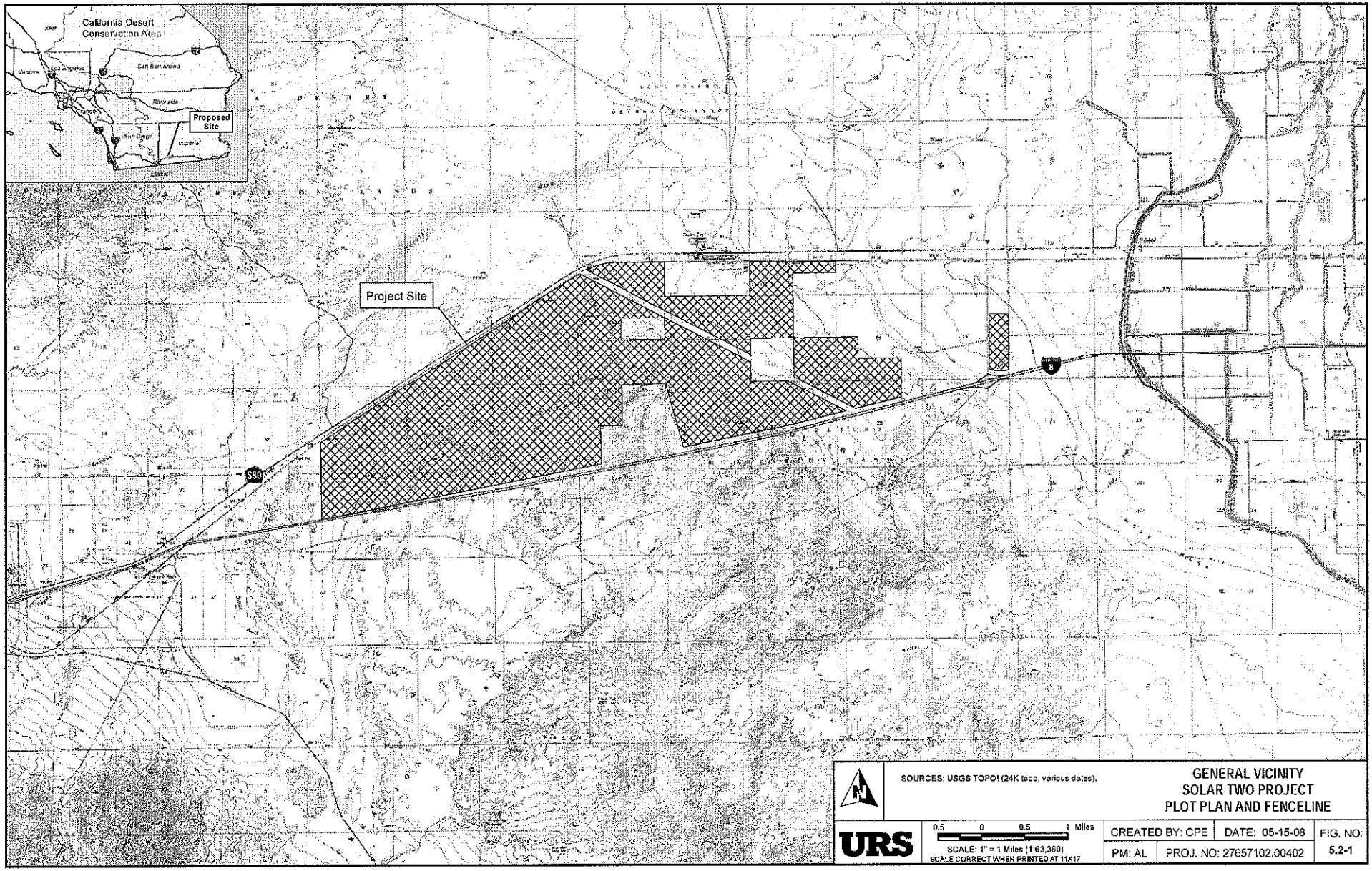
Exhaust Flow 475 CFM
Total Flow Rate CFM
Exhaust Pressure CFM

Receptor Information. A receptor is a residence or business whose occupants could be exposed to toxic emissions from your facility.

Nearest offsite receptor **residence**
Distance to nearest offsite receptor 18,464 feet
Distance to nearest school grounds 44,257 feet

John Lague
Name of preparer

August 5, 2008
Date



SOURCES: USGS TOPO! (24K topo, various dates).

GENERAL VICINITY
SOLAR TWO PROJECT
PLOT PLAN AND FENCELINE

URS

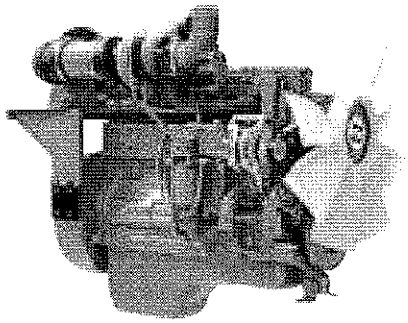
0.5 0 0.5 1 Miles

SCALE: 1" = 1 Miles (1:63,360)
SCALE CORRECT WHEN PRINTED AT 11X17

CREATED BY: CPE	DATE: 05-15-08	FIG. NO:
PM: AL	PROJ. NO: 27657102.00402	5.2-1

Path: G:\gis\projects\U37\02239\thousfour_general_vicinity.mxd, 05/15/08.

QSL9-G3



EPA T3/EU SIIIA

> Specification sheet

Our energy working for you.™

Description

Cummins QSL engines are built to deliver heavy-duty performance in every piece of machinery. Full-authority electronic engine controls combine with the high-pressure fuel system, 24-valve design and centred injectors for one of the highest power-to-weight ratios in its class, with up to 50% torque rise. At the same time, the QSL delivers better fuel economy, has better cold starting capability and is up to 50% quieter in operation than predecessors.

CE — This engine has been built to comply with CE certification.

This engine has been designed in facilities certified to ISO9001 and manufactured in facilities certified to ISO9001 or ISO9002.

Features

Common Rail fuel System and Controls - Bosch high pressure common rail (HPCR) - Optimize engine performance to provide seamless integration and advanced diagnostics and programming options.

Holset HX40 Turbocharging - Wastegated design optimizes operation across the torque curve with improved response.

Integrated Block Design - Integrated fluid circuits replace hoses and eliminate potential leaks.

24-Valve Cylinder Head – Four valves per cylinder for increased power with faster response at every rpm.

Coolpac Integrated Design - products are supplied complete with cooling package and air cleaner kit for a complete power package. Each component has been specifically developed and rigorously tested for G-Drive products, ensuring high performance, durability and reliability.

Service and Support - G-Drive products are backed by an uncompromising level of technical support and after sales service, delivered through a world class service network.

1500 rpm (50 Hz) Ratings

Gross Engine Output			Net Engine Output			Typical Generator Set Output					
Standby	Prime	Base	Standby	Prime	Base	Standby (ESP)		Prime (PRP)		Base (COP)	
kWm/BHP			kWm/BHP			kWe	kVA	kWe	kVA	kWe	kVA
257/345	227/304	193/259	257/344	227/304	193/258	220	275	200	250	170	213

1800 rpm (60 Hz) Ratings

Gross Engine Output			Net Engine Output			Typical Generator Set Output					
Standby	Prime	Base	Standby	Prime	Base	Standby (ESP)		Prime (PRP)		Base (COP)	
kWm/BHP			kWm/BHP			kWe	kVA	kWe	kVA	kWe	kVA
297/398	262/351	223/299	284/381	249/334	210/282	250	313	227	284	194	243

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www.cumminsgdrive.com

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(01/08) (GDSS122-RevA)

Power Generation

General Engine Data

Type	4 cycle, in-line, Turbo Charged, Air-cooled
Bore mm	114 mm (4.5in)
Stroke mm	145 mm (5.7in)
Displacement Litre	8.8 litre (543 in³)
Cylinder Block	Cast iron, 6 cylinder
Battery Charging Alternator	70 amps
Starting Voltage	24 volt, negative ground
Fuel System	Direct injection
Fuel Filter	Spin-on fuel filters with water separator
Lube Oil Filter Type(s)	Spin-on full flow filter
Lube Oil Capacity (l)	26.5
Flywheel Dimensions	2/11.5

Coolpac Performance Data

Cooling System Design	Air-Air Charge Cooled
Coolant Ratio	50% ethlene glycol; 50% water
Coolant Capacity (l)	15.0
Limiting Ambient Temp.**	53.0
Fan Power	7.5
Cooling system air flow (m³/s)**	9.4
Air Cleaner Type	Dry replaceable element with retriction indicator

** @ 13 mm H²O

Ratings Definitions

Emergency Standby Power (ESP):
Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel Stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

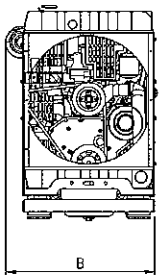
Limited-Time Running Power (LTP):
Applicable for supplying power to a constant electrical load for limited hours. Limited-Time Running Power (LTP) is in accordance with ISO 8528.

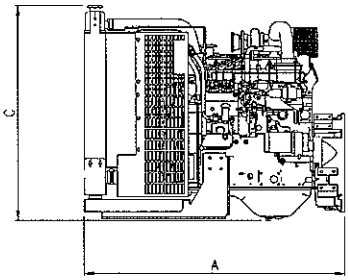
Prime Power (PRP):
Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Base Load (Continuous) Power (COP):
Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) in accordance with ISO 8528, ISO 3046, AS 2789, DIN6271 and BS 5514.

Weights & Dimension

Length	Width	Height	Weight (dry)
mm	mm	mm	kg
1624	1064	1463	910





Fuel Consumption 1500 (50 Hz)

%	kWm	BHP	L/ph	US gal/ph
Standby Power				
100	257	345	66	17.2
Prime Power				
100	227	304	59	15.3
75	170	228	49	12.7
50	114	152	34	8.8
25	57	76	18	4.7
Continuous Power				
100	193	259	53	13.8

Fuel Consumption 1800 (60 Hz)

%	kWm	BHP	L/ph	US gal/ph
Standby Power				
100	297	398	77	20.0
Prime Power				
100	262	351	70	18.2
75	197	264	58	15.1
50	131	176	41	10.7
25	66	88	21	5.5
Continuous Power				
100	223	299	53	13.8

Cummins G-Drive Engines

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10 Toh Guan Road
#07-01
TT International Tradepark
Singapore 608838
Phone 65 6417 2388
Fax 65 6417 2399

Europe, CIS, Middle East and Africa
Manston Park Columbus Ave
Manston Ramsgate
Kent CT12 5BF. UK
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Latin America
Rua Jati, 310, Cumbica
Guarulhos, SP 07180-900
Brazil
Phone 55 11 2186 4552
Fax 55 11 2186 4729

Mexico
Cummins S. de R.L. de C.V.
Eje 122 No. 200 Zona Industrial
San Luis Potosi, S.L.P. 78090
Mexico
Phone 52 444 870 6700
Fax 52 444 870 6811

North America
1400 73rd Avenue N.E.
Minneapolis, MN 55432
USA
Phone 1 763 574 5000
USA Toll-free 1 877 769 7669
Fax 1 763 574 5298

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(01/08) (GDSS122-RevA)

Power Generation

Solar Two

Emissions from Emergency Diesel Generator

Rated Horsepower	**335**	**BHP**
Testing duration	**15**	**min/week**
Yearly testing	**52**	**week/year**
Expected non-emergency usage	**13**	**hr/yr**

Pollutant	Emision Factor	Emission Rate per Testing	Yearly Emission Rate	Hourly Emission Rate	Annual Emission Rate
	g/HP/Hr	lb/hr	lb/yr	g/s	g/s
NO_X	5.67	1.05	13.62	0.132	1.96E-04
CO	0.39	0.07	0.94	0.009	1.35E-05
VOC (Total Hydrocarbons)	0.07	0.01	0.17	0.002	2.42E-06
SO_X	0.12	0.02	0.29	0.0028	4.15E-06
PM_{10}	0.06	0.01	0.14	0.001	2.07E-06

Engine parameters and nearby building dimension

Flow Rate (acfm)	1218	17.726 m/s
Exhaust Temp (degrees C)	465	738.15 K
Stack Diameter (feet)	0.6667	0.2032 m
Stack height (feet) above ground	6.5	1.981 m
Diesel generator building height (ft)	6.5	1.981 m
Diesel generator building width (ft)	4	1.219 m
Diesel generator building length (ft)	11	3.353 m
nearby admin building height (ft)	14	4.267 m
nearby admin building width (ft)	200	60.960 m
nearby admin building length (ft)	150	45.720 m
nearby mainten building height (ft)	44	13.411 m
nearby mainten building width (ft)	180	54.864 m
nearby mainten building length (ft)	250	76.200 m
nearby firewater tank height (ft)	20	6.096 m
nearby firewater tank horizontal dimension (ft)	40	12.192 m
The distance from the stack to the nearest fenceline (ft)	1175.634	358.3332432 m

Note:
The firewater pump stack will be in outdoor enclosures, not in buildings.

Fire Power

California ATCM Tier 2 Emission Data
EPA Tier 2 Emission Data

CFP33-F35 Fire Pump Driver

Type: 4 Cycle; In-Line; 4 Cylinder
Aspiration: Turbocharged, Charge Air Cooled

15 PPM Diesel Fuel													
		Fuel Consumption		D2 Cycle Exhaust Emissions						Exhaust			
				Grams per BHP - HR			Grams per kW - HR			Temperature		Gas Flow	
RPM	BHP	Gal/Hr	L/hr	NMHC+NOx	CO	PM	NMHC+NOx	CO	PM	°F	°C	CFM	L/sec
2600	77	4.3	16.3	4.238	0.820	0.170	5.683	1.100	0.228	1075	579	475	224

The emissions values above are based on CARB approved calculations for converting EPA (500 ppm) fuel to CARB (15 ppm) fuel.

300-500 PPM Diesel Fuel													
		Fuel Consumption		D2 Cycle Exhaust Emissions						Exhaust			
				Grams per BHP - HR			Grams per kW - HR			Temperature		Gas Flow	
RPM	BHP	Gal/Hr	L/hr	NMHC+NOx	CO	PM	NMHC+NOx	CO	PM	°F	°C	CFM	L/sec
2600	77	4.3	16.3	4.623	0.820	0.194	6.200	1.100	0.260	1075	579	475	224

B3.3T Base Model Manufactured by Cummins Inc.
- Using fuel rating 30203

Reference EPA Standard Engine Family: 7CEXL03.3ABB

No special options needed to meet current emission regulations for all 50 states

Test Methods:

EPA/CARB Nonroad emissions recorded per 40CFR89 (ref. ISO8178-1) and weighted at load points prescribed in Subpart E, Appendix A, for Constant Speed Engines (ref. ISO8178-4, D2).

Diesel Fuel Specifications:

Cetane Number: 40-48
Reference: ASTM D975 No. 2-D

Reference Conditions:

Air Inlet Temperature: 25°C (77°F)
Fuel Inlet Temperature: 40°C (104°F)
Barometric Pressure: 100 kPa (29.53 in Hg)
Humidity: 10.7 g/kg (75 grains H_2O/lb) of dry air; required for NOx correctior
Restrictions: Intake Restriction set to a maximum allowable limit for clean filter; Exhaust Back Pressure set to maximum allowable limit.

Tests conducted using alternate test methods, instrumentation, fuel or reference conditions can yield different results.

Solar Two

Emissions from Diesel Firewater Pump

Rated Horsepower	**77**	**BHP**
Testing duration	**15**	**min/week**
Yearly testing	**52**	**week/year**
Expected non-emergency usage	**13**	**hr/yr**

Pollutant	Emision Factor	Emission Rate per Testing	Yearly Emission Rate	Hourly Emission Rate	Annual Emission Rate
	g/HP/Hr	lb/hr	lb/yr	g/s	g/s
NO_X	4.138	0.176	2.28	0.022	3.29E-05
CO	0.82	0.035	0.45	0.004	6.51E-06
VOC (Total Hydrocarbons)	0.10	0.004	0.06	0.001	7.94E-07
SO_X	0.01	0.0005	0.01	0.0001	8.57E-08
PM_{10}	0.17	0.007	0.09	0.001	1.35E-06

fuel usage (gal/hr)	4.3
diesel density (lb/gal)	7.1

Engine parameters and nearby building dimension

Flow Rate (acfm)	475	17.697	m/s
Exhaust Temp (degrees C)	579	852.15	K
Stack Diameter (feet)	0.4167	0.127	m
Stack height (feet) above ground	5.75	1.753	m
Firewater pump building height (ft)	87.00	26.518	m
Firewater pump building width (ft)	4.67	1.422	m
Firewater pump building length (ft)	13.33	4.064	m
nearby admin building height (ft)	14	4.267	m
nearby admin building width (ft)	200	60.960	m
nearby admin building length (ft)	150	45.720	m
nearby mainten building height (ft)	44	13.411	m
nearby mainten building width (ft)	180	54.864	m
nearby mainten building length (ft)	250	76.200	m
nearby firewater tank height (ft)	20	6.096	m
nearby firewater tank horizontal dimension (ft)	40	12.192	m
The distance from the stack to the nearest fenceline (ft)	1200	365.76	m

Note:
The generator stack will be in outdoor enclosures, not in buildings.

Revised operations phase modeling is provided with this application to reflect slight changes in the selected firewater pump and emergency engine from the units described in the Solar Two AFC.

For merged source SCREEN3 model

ref: EPA-454/R-92-019, screening procedure for estimating the air quality impact of stationary sources, 1992

Merged Parameters for Multiple Stacks
parameter M:
$M = (h_s * V * T_s) / Q$

	Diesel Generator	Firewater Pump
h_s, stack height (m)	1.981	1.753
$V_s = (pei/4)\ d_s^2\ v_s$ = stack gas volumetric flow rate (m^3/s)	181.173	487.419
d_s, inside stack diameter (m)	0.203	0.127
v_s, stack gas exit velocity (m/s)	17.726	17.697
T_s, stack gas exit temperature (K)	738.150	852.150
Q, pollutant emission rate (g/s)[1]	0.132	0.022
M, merged stack parameter which accounts for the relative influence of stack height, plume rise, and emission rate on concentrations	2,005,290	32,869,267

Note:
- 1. use NOx emission rate as example

The stack that has the lowest value of M is used as a "representative" stack.
So, the representive stack is the "diesel generator" stack.

The SCREEN3 model input

$Q = Q_1 + Q_2 = 1$ (g/s)		
Flow Rate (acfm)	1218	17.72571 m/s
Exhaust Temp (degrees C)	465	738.15 K
Stack Diameter (feet)	0.66667	0.2032 m
Stack height (feet) above ground	6.5	1.9812 m
Diesel generator building height (ft)	6.5	1.9812 m
Diesel generator building width (ft)	4	1.2192 m
Diesel generator building length (ft)	11	3.3528 m
nearby admin building height (ft)	14	4.2672 m
nearby admin building width (ft)	200	60.96 m
nearby admin building length (ft)	150	45.72 m
nearby mainten building height (ft)	44	13.4112 m
nearby mainten building width (ft)	180	54.864 m
nearby mainten building length (ft)	250	76.2 m
nearby firewater tank height (ft)	20	6.096 m
nearby firewater tank horizontal dim	40	12.192 m
The distance from the stack to the n	1175.63	358.3332 m

Solar Two
SCREEN3 results for combined sources (emergency diesel generator and firewater pump engines)

815.5 SCREEN3 modeled 1-hour χ/Q value using 1 gram/second emission rate $(\mu g/m^3)/(g/s)$ at the nearest fence line

Revised Table 5.2-30 Emergency Diesel Engines SCREEN3 Results							
Pollutant	**Averaging Period**	**Combined Emission Rate**	**Maximum Predicted Concentration**	**Background Concentration**	**Total Concentration**	**NAAQS**	**CAAQS**
		(g/s)	**($\mu g/m^3$)**	**($\mu g/m^3$)**	**($\mu g/m^3$)**	**($\mu g/m^3$)**	**($\mu g/m^3$)**
NO_2	1-hour	1.54E-01	125.810	133.7	259.5	NA	339*
	Annual	2.29E-04	0.015	24.7	24.7	100	57*
SO_2	1-hour	2.85E-03	2.327	36.7	39.0	NA	655
	3-hour	9.51E-04	0.698	26.0	26.7	1,300	NA
	24-hour	1.19E-04	0.039	10.5	10.5	365	105
	Annual	4.24E-06	0.000	2.7	2.7	80	NA
CO	1-hour	1.35E-02	10.990	4830.0	4,841.0	40,000	23,000
	8-hour	1.68E-03	0.962	2444.4	2,445.4	10,000	10,000
PM_{10}	24-hour	9.62E-05	0.031	200.0	200.0	150	50
	Annual	3.43E-06	0.00022	33.9	33.9	50	20
$PM_{2.5}$	24-hour	9.62E-05	0.031	74.2	74.2	35	NA
	Annual	3.43E-06	0.000	9.7	9.7	15	12

150 SOUTH NINTH STREET
EL CENTRO, CA 92243-2850

TELEPHONE: (760) 482-4606
FAX: (760) 353-9904

AIR POLLUTION CONTROL DISTRICT

08/19/08

Bob Liden
SES Solar Two LLC.
2920 E. Camelback Road, Suite 150
Phoenix, AZ 85016

Dear Mr. Liden,

The Imperial County Air Pollution Control District (ICAPCD) has received a signed application (#3838) for the installation and operation of a standby diesel power generator and a stand by diesel fire water pump, located at the SES Solar Two LLC Project. Appropriate application fees were also received.

This application has been reviewed and deemed complete. The ICAPCD will reserve the right to ask for more information during the engineering evaluation in case it is necessary.

The ICAPCD will be working with the California Energy Commission on the Project's certification, and will recommend conditions for construction and operation of these units be included in the CEC Certification. In addition, conditions which ensure compliance with fugitive PM10 regulations will be incorporated.

For additional information or questions regarding this matter, please contact the undersigned at 760 4824606.

Sincerely,

Jaime Hernandez
APC Engineer

CC: Chris Meyer, CEC

TECHNICAL AREA: AIR QUALITY

Data Adequacy Request 2: Please provide the modeling protocol for the cumulative assessment, including the means by which the applicant confirmed that there were no further new sources of emissions within 6 miles of the proposed project site.

Response: A letter was sent to Chris Meyer and Joe Loyer detailing the modeling protocol for the cumulative assessment on July 22, 2008. (See Attachment AQ-2.) The modeling protocol for the cumulative analysis consists of the following steps:

(1) Contact ICAPCD and the Imperial County Planning Department to ensure that all new projects within six miles that are currently under construction, currently in the permitting process or expected to enter the permitting process are accounted for.
(2) Prepare a list of all identified projects and recommendations as to which sources should be included in the cumulative modeling analysis.
(3) Submit the list to CEC for review and modify it based on CEC comments.
(4) With the help of ICAPCD and other County agencies, develop emissions and stack parameter data for characterizing the selected sources in terms of dispersion model input requirements.
(5) Conduct the cumulative modeling analysis using the AERMOD model with all of the identified cumulative sources in addition to the stationary sources of the Solar Two project.
(6) Compare modeled results (plus monitored background pollutant concentrations) with applicable ambient air quality standards to determine the potential significance of cumulative impacts to air quality.
(7) Provide documentation of study methods, input data, assumptions and results to CEC.

By these procedures, other new sources in the project area, if any, will be identified and considered in the analysis of the proposed project's cumulative impacts to air quality.

Attachment AQ-2

URS

July 22, 2008

Mr. Christopher Meyer
Lead Compliance Manager/Archeologist
Aspen Environmental Group
30423 Canwood Street, Suite 215
Agoura Hills, CA 91391

Subject: Air Quality Data Adequacy Items for the Solar Two Project
URS Project/Reference No. 24657106

Dear Mr. Meyer:

URS Corporation (URS) has been alerted by Mr. Joe Loyer of CEC that two aspects of the Solar Two AFC Air Quality section do not conform to CEC Data Adequacy Requirements. This letter describes the actions URS is taking to address each of these issues in order to correct the current deficiencies:

Submittal of Authority to Construct Application to Imperial County Air Pollution Control District

URS has contacted ICAPCD to regarding the permitting requirements for the project. Since Solar Two is a solar power generating facility, the only stationary sources of emissions for the operational project will be the diesel firewater pump engine and diesel emergency generator engine, each of which will normally be operated on a very limited basis for testing and maintenance purposes. Thus, the permit application will consist only of technical specifications for this equipment and completed permit application forms. URS expects to submit the application package to ICAPCD no later than July 25, 2008 and to respond promptly to any subsequent ICAPCD requests for additional information needed to support a finding of completeness.

Protocol for Cumulative Air Quality Analysis

The Air Quality section of the Solar Two AFC did not supply this protocol on the premise (now understood to be erroneous), that no other new or imminent stationary sources of air pollutants are being planned within six miles of the project site. We are now aware that at least one new industrial project within this radius will be applying for permits and should properly be included in the cumulative analysis. The protocol for this analysis consists of the following steps:

(1) Contact ICAPCD and the Imperial County Planning Department to ensure that all new projects within six miles that are currently under construction, currently in the permitting process or expected to enter the permitting process are accounted for.

(2) Prepare a list of all identified projects and recommendations as to which sources should be included in the cumulative modeling analysis.

(3) Submit the list to CEC for review and modify it based on CEC comments.

URS Corporation
1615 Murray Canyon Road, Suite 1000
San Diego, CA 92108
Tel: 619.294.9400
Fax: 619.293.7920

(4) With the help of ICAPCD and other County agencies, develop emissions and stack parameter data for characterizing the selected sources in terms of dispersion model input requirements.

(5) Conduct the cumulative modeling analysis using the AERMOD model with all of the identified cumulative sources in addition to the stationary sources of the Solar Two project.

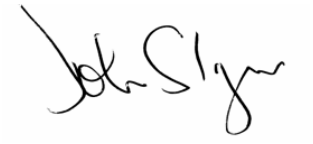
(6) Compare modeled results (plus monitored background pollutant concentrations) with applicable ambient air quality standards to determine the potential significance of cumulative impacts to air quality.

(7) Provide documentation of study methods, input data, assumptions and results to CEC.

URS believes that the Protocol discussion provided above is sufficient for Data Adequacy Purposes and that submittal of the permit application package will enable ICAPCD to determine its completeness within a short time. Please advise me if you have any remaining concerns or questions regarding the adequacy of the air quality analysis of the Solar Two AFC.

Sincerely

URS CORPORATION



John Lague
Senior Air Quality Consultant

JSL:kl

cc Joe Loyer (CEC), Angela Leiba (URS), Corinne Lytle (URS)

TECHNICAL AREA: ALTERNATIVES

Data Adequacy Request 1: Section 4.2.2.1 and 4.2.2.2 address the engineering, economic, and environmental merits of the Alternate Engineering Alternatives. Section 4.3.2.1-4.3.2.3 give comparative engineering and environmental merits of the alternative site locations. Please provide economic merits of the alternative site locations discussed in subsection (f) (1).

Response: The applicant looked at several scale alternatives at the site of the proposed 750 MW project. The 900 MW Alternative would generate 20% more revenue than the proposed project and have a slightly lower operating cost per megawatt hour (MWh) because of the ability to spread the fixed overhead over a larger generation base. This alternative was rejected because of environmental considerations.The 300 MW Alternative would generate only 40% of the revenue of the 750 MW project, and the operating costs per MWh would be slightly higher because of the fixed operations overhead (site management, security and facilities maintenance force, etc.).

Economic pro-formas for the "Sites Considered but Rejected Alternatives" were not prepared because the sites were rejected for other reasons. In general, however, the Sites considered but rejected were economically inferior to the 750 MW Project.

Both sites Alternative Site # 1 (AS1) and Alternative Site # 2 (AS2) would result in higher construction costs because of the steeper slope to the sites, involve more expense in building access roads to the site for both construction and operation, and result in added mileage to reach the site (higher transportation and commute costs). The existence of a relatively steep site slope (generally sloping from a higher elevation in the southwest to a lower elevation in the northeast) would also necessitate a wider spacing between the rows of dishes to avoid excessive shading, resulting in more land cost, more electrical collection system wiring, more maintenance travel time, etc. In general, this results in higher initial installation cost and higher on-going operations and maintenance expense. Either site would also require the construction of a much longer and expensive gen-tie transmission line to connect to the IV substation.

Site AS3 would also require a longer driving distance for the trucks delivering the dishes and Power Conversion Units to the site (higher cost of construction) and the construction of a much longer and expensive gen-tie transmission line to connect to the Imperial Valley substation.

TECHNICAL AREA: BIOLOGICAL RESOURCES

Data Adequacy Request 1: Please provide the qualifications of the biologists that conducted the surveys.

Response: The resumes of all biologists who participated in biological surveys on the Solar Two project are attached (see Attachment BIO-1).

Attachment BIO-1

PATRICK J. MOCK, PHD

Principal Scientist /Sr. Project Manager

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 (*Myarchus 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 Gregornio 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.

Technical Reviewer

Dr Mock provided peer review for manuscripts submitted to Conservation Biology, The Auk, Ecology, Condor, Ecological Monographs, Western Birds, *Ornis Scandinavica*,

- 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 *San Diego Bird Atlas*
- 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. American Birds 41: 1334-1339, 1987. R.W. Schreiber co-author.

Eastern brown pelicans: what does sixty years of banding tell us? Journal of Field Ornithology 59: 171-182, 1988. R.W. Schreiber co-author.

Energetics of growth and maturation in sympatric passerines that fledge at different ages. The Auk 108: 34-41, 1991. M. Khubesrian and D.M. Larcheveque co-authors.

Daily allocation of time and energy by adult western bluebirds feeding nestlings. Condor 93: 598-611, 1991.

Energetic constraints to the distribution and abundance of the California gnatcatcher. Western Birds 29:413-420.

California gnatcatcher territorial behavior. Western Birds 29:242-257. K. Preston, M. Grishaver, E. Bailey, and D. King co-authors.

California gnatcatcher vocalization behavior. Western Birds 29:258-268. K. Preston and M. Grishaver co-authors.

Dispersal capabilities of the coastal California gnatcatcher: a landscape analysis of distribution data. Western Birds 29:351-360. E. Bailey co-author.

Is the California gnatcatcher a good umbrella species for habitat reserve design? Western Birds 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. Western Birds 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

Biological Resources
Identification of Southern California habitats, flora, and fauna
Habitat mapping
Protocol surveys for arroyo toad, least Bell's vireo, and burrowing owl

Total Years of Experience

URS	1
Other Firms	6

Education

BS/2003/Biology/San Diego State University

Continuing Education

2006/California Notostracan and Anostracan Identification Course and Exam
2006/Desert Tortoise Surveying, Monitoring, and Handling Techniques Workshop
2007/Flat-tailed Horned Lizard Survey Techniques Workshop
2007/Blunt-nosed Leopard Lizard Survey Techniques Workshop

Overview

Cheryl Rustin has over seven years of relevant experience in the field of environmental consulting. She has extensive field experience in habitat mapping, general and focused wildlife and plant surveying, biological technical report production, and mitigation monitoring plan creation and implementation. Cheryl is currently a staff biologist in the San Diego office.

Project Experience

Caltrans Interstate 805 Expansion Project, San Diego, CA
Created draft Natural Environment Study reports for both north and south portions of the project. Assisted with focused species surveys including least Bell's vireo, southwestern willow flycatcher, coastal California gnatcatcher, and fairy shrimp. Compiled field notes and prepared data tables and text for use in the Environmental Assessment Report. ***(2006-2008)***

Gregory Canyon Landfill Project, San Diego County, California
Conducted protocol level surveys for the arroyo toad. ***(2007)***

Ausra Project, San Luis Obispo County, California
Conducted a site assessment for San Joaquin kit fox, burrowing owl, and assisted with protocol surveys for the blunt-nosed leopard lizard. ***(2007)***

Solar II Project, Imperial County, California
Created Biological Technical Report and NEPA Document sections. Coordinated survey teams and participated in general vegetation mapping, rare plant surveys, and wetland delineation for an approximately 8,000 acre site in the Imperial Valley. Conducted a site assessment and focused protocol surveys for flat-tailed horned lizard and burrowing owl. ***(2007-2008)***

Solar I Project and Transmission Line, San Bernardino, California
Conducted protocol level surveys for the desert tortoise. ***(2007)***

Bethel Power Plant Project, Imperial County, California
Conducted habitat assessments for burrowing owls. ***(2007)***

Dana Point Headlands Project, Dana Point, California
Assisted with protocol California gnatcatcher surveys under the supervision of a permitted biologist. ***(2007)***

Niland Power Plant Project, Niland, California
Conducted site assessment for burrowing owls. Participated in the scoping and collapsing of burrows. Composed script for construction team training video. ***(2007)***

FEMA Projects, Victorville, Monrovia, Newport Beach, California
Conducted environmental assessments of repair projects requesting funding through the FEMA program. ***(2006-2007)***

Kinder Morgan CALNEV Project, Colton, California to Las Vegas, Nevada
Assisted with the preparation of a Feasibility Study for several proposed routes in California, Arizona, and Nevada. ***(2006)***

Clean Harbors Landfill Expansion, Westmorland, California
Conducted habitat assessments for flat-tailed horned lizard and western burrowing owl and prepared associated report for client. ***(2006)***

Travel Plaza, Otay Mesa, California
Conducted protocol level surveys for the burrowing owl. ***(2006)***

Champagne Lakes, Valley Center, California
Performed protocol level surveys for the arroyo toad. ***(2006)***

Montecito Ranch, Ramona, California
Performed extensive general and focused plant and wildlife surveys and habitat mapping. Assisted with wetland delineation and vernal pool identification. ***(2000-2006)***

Passerelle, Pala, California
Performed extensive general and focused plant and wildlife surveys and habitat mapping. Focused surveys performed included least Bell's vireo and arroyo toad. ***(2003-2005)***

Pappas, Pala, California
Performed protocol level surveys for the least Bell's vireo and arroyo toad. ***(2004)***

Barrett Junction, California
Performed protocol level surveys for the least Bell's vireo and arroyo toad. ***(2004)***

Professional Associations

Golden Key International Honour Society
Horned Lizard Conservation Society
Anza Borrego Desert Foundation
Desert Tortoise Council

Area of Expertise	Restoration/Vegetation Surveys
Years of Experience	
URS	2.5
Other Firms	5
Education	BS/1999/Botany/Humboldt State University, Arcata, California BS/1999/Environmental Biology/ Humboldt State University, Arcata, California
Professional Affiliations	California Native Plant Society Southern California Botanists Society for Ecological Restoration – California California Native Grass Association California Invasive Plant Council

Overview

Mr. McDonald is a botanist and restoration ecologist with over 7 years of experience in environmental consulting. He specializes in the identification, analysis, and restoration of California vegetation. Mr. McDonald has conducted surveys of plant communities throughout California, and is experienced in reconnaissance-level, focused, and quantitative vegetation surveys, vegetation mapping, developing revegetation plans for disturbed sites, performing restoration compliance inspections, data analysis, functional analysis, authoring environmental and biological sections for a variety of documents, and has assisted in jurisdictional waters delineations. Mr. McDonald also has experience sampling marine and freshwater algae populations, sampling terrestrial non-vascular plants, and conducting bird and insect population and diversity surveys. The following describes Mr. McDonald's experience in more detail.

Project Experience

Project Botanist – Sensitive Plant Surveys, Highway 74 Ortega Highway Project, Caltrans Division 12. Conducted focused sensitive plant surveys, vegetation mapping, and general biological resource assessment for a proposed highway widening project for safety purposes. Several previously identified sensitive plant populations were observed, and new populations were located, although no new sensitive plant species were found on the site. All plant species observed were recorded. A report summarizing the methods and results of the survey was prepared and submitted, along with a report providing recommendations for avoiding sensitive plants and mitigating any potentail affects due to the proposed project.

Project Botanist for the Line 85 Natural Gas Replacement Project, Kern County -- Sempra Energy Utilities/Southern Calfornia Gas Company. Botanist for the sensitive plant surveys of the complete alignment. The company provided complete biological resources services and permitting for this approximately 21.5-mile natural gas pipeline replacement project in the Grapevine/Lebec area of southern Kern and northern Los Angeles County. Based on the field surveys, no sensitive plants were found to be affected. Results were incorporated into a Biological Technical Report. The natural gas pipeline would be buried and all areas within the affected pipeline alignment would be returned to preconstruction contours and revegetated with native species as appropriate. The project included a 1601 application to CDFG and Section 404 permit.

Botanist for a Biological Resource Assessment, City of Murrieta, Riverside County -- Baile Development Company, LLC. The proposed development consists of approximately 141 single-family detached lots and 32.7 acres of open space. A literature review, reconnaissance-level biological survey, and baseline vegetation survey was conducted of the site. Vegetation communities were identified and mapped and a habitat assessment was performed to determine the relative quality or value of the habitat types to support sensitive plant species. A biological assessment report of findings was produced. A report summarizing the methods and results of the survey was prepared and submitted.

Botanist for Focused Sensitive Plant Survey, Riverside County -- Union Pacific Railroad. Conducted sensitive plant surveys for Coachella Valley milk-vetch (*Astragalus lentiginosus* var. *coachellae*) and triple-ribbed milk-vetch (*Astragalus tricarinatus*) along railroad right-of-ways through Coachella Valley near the City of Palm Springs. The host plant (*Tiquilia palmeri*) for a sensitive insect species was also included in the surveys.

Botanist for Floristic Survey in Shaver Valley, Riverside County -- Psomas. Conducted general and sensitive plant surveys over a ten-square-mile area in the Sonoran Desert as a follow-up to a prior habitat assessment performed to determine the relative quality or value of the habitat types to support sensitive plant species.

Botanist for a Biological Assessment for Quino Checkerspot Butterfly Habitat for the Pala Mining/Reclamation Project, San Diego County -- Vulcan Materials Company. Surveys were conducted for potential Quino habitat on a portion of the approximately 700-acre site located in Pala, San Diego County. A report summarizing the methods and results of the survey was prepared and submitted.

Botanist for a Sensitive Plant Survey at the Tracy Development Site, Etiwanda, San Bernardino County -- C.A. Page Company. Conducted focused surveys for several sensitive plant species in alluvial habitat on a 100-acre site in San Bernardino County. Performed a literature review, along with a general biological resource survey, to determine the potential for the site to support sensitive species. A report summarizing the methods and results of the survey was submitted.

Botanist for Focused Sensitive Plant Surveys in Coachella Valley, Riverside County -- Parsons Brinkerhoff. Conducted focused surveys over approximately 185 acres of the Sonoran Desert for Coachella Valley milk-vetch and triple-ribbed milk-vetch prior to highway construction along the Interstate 10 freeway. Reference populations were visited to ensure blooming time and proper identification. A report summarizing the results of the survey was prepared and submitted.

Botanist for the Wetland Delineation of Mill Creek, Riverside County -- Orange County Water District. Assisted in analyzing hydrologic conditions and vegetation in areas that are potentially subject to California Department of Fish and Game and U.S. Army Corps of Engineers jurisdiction. A report summarizing the methods and results of the survey was prepared and submitted.

Area of Expertise

Wildlife Biology, Biological Resource Assessment, Desert Tortoise Surveys, Biological Monitoring and Flora and Fauna Identification

Years of Experience
URS

2.0

Education

B.S./ 2006/ Marine Biology/ California State University, Long Beach
B.S./ 2006/ Zoology/ California State University, Long Beach
Minor/ 2006/ Chemistry/ California State University, Long Beach

Overview

Mr. Pugh has had years of experience working both in the field and in the laboratory. His professional accomplishments include work in the biological assessment and identification of flora and fauna, vegetation mapping, biological monitoring, and a working knowledge of the preparation of biological documents in compliance with CEQA, California Coastal Act, California Department of Fish and Game Code, ACOE and other relevant legislation.

Certifications, Classes, Seminars, Workshops, and Special Training

- California Anostraca and Notostraca (Fairy Shrimp) Identification Class. January 30 – February 1, 2007. Certified February 9th, 2007 by USFWS.
- Desert Tortoise Council: Surveying, Monitoring, and Handling Techniques Workshop. November 4 & 5, 2006.
- Introduction to Birding Workshop: Instructor, Sylvia Gallagher (Audubon Society). September 2006 – December 2006.
- *Caulerpa taxifolia* Identification Certification under the Caulerpa Control Protocol. Certified February 12th, 2007 by U.S. Department of Commerce, National Marine Fisheries Service.

URS Project Experience

- **Staff Biologist, Solar I Desert Tortoise Presence/Absence Surveys, San Bernardino County, CA.** Field Biologist for a 15,000 acre solar/thermal generating facility. Performed protocol desert tortoise surveys, vegetation community mapping, rare plant surveys, and Waters of the US and state delineations.
- **Staff Biologist, Solar II Flat-Tailed Horned Focused Surveys, Imperial County, CA.** Field Biologist for a 7000 acre solar/thermal generating facility. Performed protocol Flat tail horned lizard surveys, vegetation community mapping, rare plant surveys, and Waters of the US and state delineations.
- **Staff Biologist, Mission College California Gnatcatcher (CAGN) Focused Surveys, Los Angeles County, California.** Assisted permitted biologist Rick Bailey (permit TE-101151-0) with USFWS protocol surveys for CAGN. Duties included assistance with incidental bird, reptile, mammal, and amphibian identification, as well as assistance with detecting CAGN within a 1.8-acre patch of coastal sage scrub. February 2007 – March 2007.
- **Staff Biologist, Potential Vernal Pool Assessments for Various Road Widening Projects, Riverside County, California.** Performed site assessments in which pools of standing water were evaluated as to whether or not they could support vernal pool species (i.e., fairy shrimp). Surveys were conducted at three different locations during and immediately after a recent rain storm. February 2007.
- **Staff Biologist, Santa Ana River Mitigation Bank Restoration & Remediation**

Action Plan, Orange County, California. Assisted in the production of the Remediation and Restoration Plan for the Santa Ana River Mitigation Bank. Duties included site visits and assessments, consultation with our Botanist and Project Manager for remediation plans, and document production. February 2007.

- **Staff Biologist, Clinton Keith Road Widening BTR, Riverside County, California.** Performed a biological assessment of the entire road widening project footprint and prepared a biological technical report (BTR) and evaluation of potential impacts to sensitive wildlife resources. December 2006.
- **Staff Biologist, South Merced Specific Plan BTR and EIR, Merced County, California.** Assisted in the production of both the BTR and Biological Resources Section of the EIR for the South Merced Specific Plan. Duties included assessment of potential impacts to sensitive wildlife and plant species, presentation of mitigation and avoidance measures for sensitive resources with a moderate to high potential to occur within the study area, and coordination with our GIS department to produce figures depicting project baseline conditions. December 2006.
- **Staff Biologist, San Bernardino County General Plan, San Bernardino County, California.** Assisted in the production of both the Biological Resources Section of the San Bernardino General Plan. Duties included assessment of potential impacts to sensitive wildlife and plant species, coordination with our GIS department to produce figures depicting County baseline conditions, and preparation of a specific and detailed report on existing wildlife corridors and potential impacts to those essential linkages. November 2006 – December 2006.
- **Staff Biologist, LBVI and CAGN Monitoring, Prima Deshecha Landfill, Sukut Construction, Orange County, California.** Monitoring of wildlife during construction within Zone 1 Phase C2 of the Prima Deshecha Landfill. Species of concern included Least Bell's Vireo (*Vireo bellii pusillus*) and California Gnatcatcher (*Polioptila californica californica*). Duties also included monitoring of construction activities to insure their compliance with CDFG regulations. July 2006 – October 2006.
- **Staff Biologist, Chevron Mahala Oil Field Abandonment Project, San Bernardino County, California.** Conducted pre- and post-construction surveys for an oil well abandonment project in Chino Hills, California. An assessment of biological baseline conditions and potential impacts to existing sensitive biological resources was made before consultation with the client on how to avoid sensitive biological and jurisdictional resources within the project footprint. August 2006 – November 2006.
- **Staff Biologist, BNSF Railway Construction, San Bernardino County, California.** Assisted in the Biological Assessment (BA) through literature searches and detailed species accounts. July 2006 - ongoing.
- **Staff Biologist, San Bernardino Kangaroo Rat Trapping, San Bernardino County, CA.** Prepared the final report for the San Bernardino Valley Water Conservation District on the results of the San Bernardino Kangaroo Rat (*Dipodomys merriami parvus*) trapping survey conducted in the Wildwood Creek floodplain, Yucaipa, CA. July 2006.

URS

Gregory Hoisington, M.S.

Ecologist

Areas of Expertise

Biological resource assessment and identification; Environmental Documentation; Planning, Compliance, and Permitting

Years of Experience

With URS: 2 Years

With Other Firms: 2 Years

Education

MS, Biology, 2004, California State University, Long Beach.

BS, Ecology and Environmental Biology, 2001, California State University Long Beach.

Overview

Mr. Hoisington's professional experience includes interdisciplinary projects in biological resource assessment and identification, environmental document preparation, environmental planning, compliance, permitting, and construction monitoring. Greg has led natural resource field surveys for fauna and flora species, wetlands and waters determinations, and for sensitive plant and wildlife species. Mr. Hoisington's experience includes preparation of biological and environmental documents for compliance with NEPA, CEQA, CEC, Endangered Species Acts, and other relevant legislation. Greg has also prepared permit applications and participated in informal and formal consultation with regulating agencies including CDFG, USFWS, NMFS, ACOE, and California Coastal Commission.

Project-Specific Experience

Chevron San Ardo Crude Pipeline, Coalinga, CA.
Performed biological monitoring for the California tiger salamander, California red- legged frog, and San Joaquin kitfox during geotechnical drilling investigations along a proposed 57-mile heated crude pipeline.

Solar Power Plant AFC and EIS, Imperial County, CA. Field Biologist for a 7000 acre solar/thermal generating facility. Performed protocol Flat tail horned lizard surveys, vegetation community mapping, rare plant surveys, and Waters of the US and state delineations.

Solar Power Plant AFC and EIS, San Bernardino County, CA. Field Biologist for a 15,000 acre solar/thermal generating facility. Performed protocol desert tortoise surveys, vegetation community mapping, rare plant surveys, and Waters of the US and state delineations.

Southern California Edison, Palmdale, CA.
Performed vegetation community mapping along a 43 mile transmission line proposed for upgrades. Compiled data and vegetation maps for submission to the California Public Utility Commission.

Seales Mineral Project, Tronas, CA
Performed site reconnaissance and biological permit compliance analysis for a borax and sodium sulfate mining operation that impacts on avian species protected by state and federal ESAs, MBTA, and CDFG Code Sections 3500 and 3800 *et seq*. Presented data and fatal flaws analysis to perspective buyers of the mining operation.

Pacific Gas and Electric, North Baja Natural Gas Pipeline, Southern California and Western Arizona
Led field monitoring of experimental vegetative seeding plots and bi-annual botanical surveys for revegetation along an 87 mile pipeline

corridor pursuant to the CDFG Streambed Alteration Permit, USFWS BO, and the FERC and California State Lands Commission (CSLC)-approved FEIS requirements. Compiled and analyzed all data and authored bi-annual botanical reports.

TransCanada and Imperial Irrigation District, Southern CA
Performed field surveys for listed flora and fauna species and Wetlands/Waters of the U.S. along an 80-mile and separate 45-mile proposed liquefied natural gas pipeline. Authored the Biology and Hydrology sections for the Federal Energy Regulatory Commission filing, responded to data requests/comments, and resubmitted the sections for certification.

U.S. Air Force, Edwards Air Force Base, Lancaster, CA
Prepared and implemented a field research plan to address predation of the desert tortoise by the common raven. Performed population density estimates of ravens, movement patterns, and nest searches for tortoise remains.

Calpine Energy, Riverside, CA
Prepared a biological resources mitigation implementation and monitoring plan (BRMIMP) as well as a worker environmental awareness plan (WEAP). Assisted with biological resource monitoring for construction activities associated with an Electric Generating Facility installation. Performed construction monitoring for sensitive biological resources.

Florida Power and Light, Blythe, CA
Led field surveys to document CDFG jurisdictional streambeds along a 67-mile project alignment. Conducted field biological surveys to determine species composition and diversity of desert wash woodland and creosote bush scrub annuals, perennials, shrubs, and trees. Compiled and analyzed data to create resource databases (botanical, vertebrate and wetland databases) and produced graphical representations of biological data in tables and graphs. Assisted with preparation of technical impact evaluations, Biological Assessment, CDFG Streambed Alteration Permit, California Energy Commission Data Requests, and Mitigation and Monitoring plans. Performed field evaluation and permitting of U.S. waters determinations based on CDFG code 1600, and Section 404 of the Clean Water Act.

PPM Energy, Inc., Jucumba, San Diego County, CA
Performed site feasibility surveys and flora/fauna sampling activities to identify common and sensitive wildlife and plant species on BLM-administered land proposed for a wind-energy development project. Identified required biological surveys, planned biological sampling events, identified requisite permitting sequence and scheduling, identified potential stakeholders, and identified relevant environmental studies required for NEPA/CEQA compliance. Developed avian field sampling protocols including point count observation areas and coverage, and completed avian data collection at all project observation locations every

two weeks for one year.

Specialized Training

Flat Tailed Horned Lizard Monitor Training – Administered by Bureau of Land Management, El Centro, CA. April 30, 2007

Caulerpa taxifolia Identification Training – Administered by NMFS, Long Beach, CA. March 8, 2007

Project Management Training (PM100) March 2006 Tetra Tech EC, Inc.

Project Management Training (PM200) April 2006 Tetra Tech EC, Inc.

CEQA 16-Hour Training Workshop – Successful CEQA Compliance, UCLA Extension Course

40-Hour HAZWOPER, December 2004

8-Hour HAZWOPER Refresher Jan 2006

38-Hour Army Corp of Engineers Wetland Delineation and Management Training Program, Richard Chinn Environmental Training

Nuclear Health Physics Radiation Protection Training Program, 1990 Institute for Resource Management (IRM)

NAUI Advanced Scuba Diver and California State University, Long Beach AAUS Scientific Research Diver

Publications

Hoisington, G. and C. Lowe. 2005. Distribution, abundance, and population structure of the round stingray, *Urolophus halleri,* near a thermal discharge at Seal Beach, CA. Marine Environmental Research.

Lowe, C., G. Moss, **G. Hoisington**, J. Vaudo, D. Cartamil, M. Marcotte, Y. Papastamatiou. 2007. Caudal spine shedding periodicity and site fidelity of round stingrays, *Urobatis halleri* (Cooper), at Seal Beach, California: implications for stingray-related injury management. Bulletin of the Southern California Academy of Sciences.

Areas of Expertise

Biological Resources
Aquatic, Terrestrial, and Wetland Biology/Ecology
Plant Physiological Ecology

Total Years of Experience

	2
URS	<1
Other Firms	0

Education

BS/2003/Biology/Loyola University Chicago
MS/2007/Environmental Health Sciences; Environmental Biology/UCLA

Supplemental Education/Training

Wetland Delineation Training, Wetland Training Institute (2007)
FTHL Protocol Training Workshop, Bureau of Land Management (2007)

Overview

Shanti Santulli has an education and research background in aquatic and plant ecology. Recent research and work experience include determining the water loss due to transpiration of the invasive species *Arundo donax* along the Santa Clara River. Shanti also has experience in technical report production, statistical analysis, and project coordination. Currently, she conducts biological resource surveys including vegetation mapping, habitat assessment, and rare plant and animal surveys. She is currently a staff biologist in the San Diego Office.

Project Experience

Projects

Directoría de Desarrollo Comunitario
In charge of wetland delineation, Jurisdictional Determination, and Joint Permit Application for submission to USACE for a proposed Multipurpose Center in the community of El Maní. (2007)

The Puerto Rico Highway and Transportation Authority (PRHTA)
Completed wetland delineation, Jurisdictional Determination, and Joint Permit Application for submission to USACE for a proposed road extension, "Conector Las Piedras." (2007)

Gregory Canyon Landfill
Assisted in arroyo toad surveys and biotechnical report production. Produced GPS Photolink and Google Earth images of surveys. *(2007)*

Solar II
Performed vegetation mapping and flat-tailed horned lizard habitat assessment at location in Plaster City, CA. Also received training and conducted FTHL protocol surveys. *(2007)*

Solar Power Plant AFC, San Luis Obispo County, CA
Biologist on survey team for Application for Certification for an 180MW thermal generating facility located within San Luis Obispo County. Several sensitive species in project area. Performed vegetation mapping and habitat assessment at location in San Luis Obispo County, CA. (2007)

SANDAG/I-805 Widening Project
Co-conducted sensitive species surveys including least Bell's vireo, California

gnatcatcher, and southwestern willow flycatcher along a 1000-foot buffer for the expansion of I-805 from the Mexican Border to the 805/I-5 merge in San Diego, CA. (2007)

Coastal Rail Trail
Coordinated and conducted vegetation mapping, habitat assessment, rare plant, least Bell's vireo, and California gnatcatcher surveys within project area in San Diego, CA. (2007)

Research
M.S. Thesis Project: UCLA. "The Potential Impact of the Invasive Species *Arundo donax* on Water Resources along the Santa Clara River: Seasonal and Diurnal Transpiration." Field study determining the water loss due to transpiration of *Arundo donax* for each season in two different soil moisture regimes. Statistical analysis of results. In preparation for publication. Advisor: Richard Ambrose, Ph.D. **(2004 – 2007)**

Field studies on the invasive species, *Arundo donax,* along the Santa Clara River under the direction of Gretchen Coffman, Ph.D. candidate at UCLA. Research methods: soil sampling, measuring plant growth and biomass, soil grain analysis, observing competition with native species. **(2004 – 2005)**

Data entry, figure and table production, and statistical analysis for: Ambrose, R.F., R.R. Vance, N. Wenner. 2006. Wetland Restoration Monitoring Report for Navy Base Ventura County, Mugu Lagoon: July 2001 to September 2005. Report to the Naval Station Ventura County, Point Mugu. **(2006)**

Undergraduate Research: Loyola University Chicago. "Elevated Atmospheric CO_2 Effects on Predatory Fish in Detritus Based Ecosystems." Advisor: Nancy Tuchman, Ph.D. **(2001 – 2003)**

Awards

2002 and 2003 Loyola University Chicago Department of Biology Certificate of High Achievement for the presentation of the Research Project entitled "Elevated CO_2 Effects on Predatory Fish in Detritus Based Ecosystems."

Publications

Abstract: Tuchman, N.C., B. Swedo, S. Abichandani, S.T. Rier, and R.G. Wetzel. 2002. Elevated atmospheric CO_2 alters leaf nutritional quality: Impacts on three trophic levels in detritus based aquatic food webs. Abstract for 50th Annual meeting, North American Benthological Society, Pittsburgh, Pennsylvania. (06/2002)

Areas of Expertise

Botany
Rare Plant Surveys
Vegetation Mapping
Least Bell's Vireo Presence/Absence Surveys
Nesting Surveys
Quino Checkerspot Butterfly Surveys
Producing Biological Technical Reports

Total Years of Experience 6
URS <1
Other Firms 6

Education

B.S./1997/Ecology, Behavior, and Evolution, University of California, San Diego

Registration/Certification

Overview

Erika Alfaro has over six years experience in field environmental consulting. Her experience includes conducting general biological surveys, plant identification, vegetation mapping, sensitive plant surveys, and biological technical report production. Ms. Alfaro also has experience conducting presence/absence surveys for Quino checkerspot butterfly, least Bell's vireo, burrowing owl, and Belding's savannah sparrow. She has also monitored habitat restoration sites by collecting and analyzing both qualitative and quantitative data.

Project Experience

Palomar College North Education Center. Ms. Alfaro's duties for this project included conducting least Bell's vireo presence/absence surveys along areas proposed for vegetation removal and within 500 feet of the project boundary. Surveys involve determining the presence or absence of the species. If present, behavioral and nesting activities are monitored and recorded.

San Pasqual Streambed Restoration. A streambed enhancement project has been proposed in San Pasqual Valley, San Diego County. The project entails the restoration of approximately 2.3 miles of sediment-choked streambed from approximately the Narrows on the San Dieguito River to within 1 mile of the State Route 78 bridge over Santa Ysabel Creek. Ms. Alfaro's duties for this project included conducting least Bell's vireo presence/absence surveys along areas proposed for vegetation removal and within 500 feet of the project boundary. Surveys involve determining the presence or absence of the species. If present, behavioral and nesting activities are monitored and recorded.

64.2-acre Gabrych Pit and 8-acre Historic Borrow Pit Restoration. A sand and gravel mining operation and access road were proposed within the boundaries of a 64.2-acre mining lease site located in eastern Riverside County. Ms. Alfaro's duties for this project included conducting a general biological survey and focused surveys for burrowing owl and Coachella Valley Milk-vetch. The survey area included the project area and a 500-foot (150-meter) buffer area around the 64.2-acre mining pit and access road as required by the California Department of Fish and Game.

Presence/Absence Surveys for the Quino Checkerspot Butterfly for the San Diego County Water Authority Mission Trails Flow Regulatory II, Pipeline

Tunnel, and Vent Demolition Project. E. Alfaro performed presence/absence surveys for the Quino checkerspot butterfly (*Euphydryas editha quino*) during the 2006 flight season within a 7.75-acre portion of the San Diego County Water Authority Mission Trails Flow Regulatory Structure II pipeline Tunnel, and Vent Demolition Project area.

Presence/Absence Surveys for the Quino checkerspot butterfly for the Otay Lakes "V-Parcel". E. Alfaro conducted adult Quino checkerspot butterfly (QCB) focused surveys on the Otay Lakes "V-Parcel" under contract to the U.S. Fish and Wildlife Service.

Goat Canyon Enhancement. Ms. Alfaro's duties included monitoring Belding's savannah sparrows in the vicinity of a portion of Monument Road undergoing improvements. The behavior of male and female Belding's savannah sparrow were monitored and male territories were mapped. Tijuana Estuary Tidal Restoration Program. Ms. Alfaro's duties included conducting census surveys at the Tijuana Estuary for Belding's savannah sparrows during the spring of 2004 and 2005 and
conducting botanical surveys for salt marsh bird's beak (*Cordylanthus maritimus* ssp. *maritimus*), estuary sea blite (*Sueda esteroa*), and Coulter's salt-marsh daisy (*Lasthenia glabrata* ssp. *coulteri*).

Friendship Marsh, Borderfield State Park. The Friendship Marsh is located within Borderfield State Park, Imperial Beach, and is the first phase of a multiple phase project known as the Tijuana Estuary Tidal Restoration Project. The site comprises 20 acres that were constructed as experimental units. Ms. Alfaro's duties include the collection of qualitative and quantitative data for this restoration site during periodic monitoring surveys in addition to the preparation of technical reports discussing monitoring survey results.

Black Mountain Pipeline. The City of San Diego constructed two new pipelines to serve the communities of Rancho Peñasquitos and Mira Mesa. Ms. Alfaro's duties included monitoring construction crews and monitoring for the presence of sensitive species. During weekly surveys for least Bell's vireo behavioral and nesting activities were monitored and recorded. In addition to the focused surveys, Ms. Alfaro monitored construction activities on-site and construction noise levels at the edge of a known least Bell's vireo territory. Also, Ms. Alfaro monitors erosion control on-site.

Professional Associations

Awards

Publications

Areas of Expertise

Habitat Restoration
Mitigation Monitoring
Vegetation Mapping
Botanical Surveys
Technical Report Writing
Biological Constraints Analysis

Total Years of Experience

	4
URS	<1
Other Firms	4

Education

BS/1998/Ecology, Behavior, and Evolution/University of California, San Diego
2007/Desert Tortoise Handling Workshop/Desert Tortoise Council

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 with four years of professional experience working as a biologist, restoration ecologist, project manager, and/or project crew supervisor on over 60 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, sensitive species surveys (floral and faunal), and technical report writing. Mr. Amin is also experienced in technical report writing, client/agency interaction, and project management. He has worked on projects for all branches of the military, private developers, utility companies, local, State, and Federal agencies. He is familiar with the 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).

Project Experience

Gregory Canyon Landfill Restoration– Pala, CA. Biologist assisting with the writing of the restoration and enhancement plan for the approximately 1,700 acre project site. Restoration activities include restoring over 100 acres of riparian vegetation along the San Luis Rey River, along with the restoration of over 100 acres of floodplain habitat, directly benefiting the least Bell's vireo, southwestern willow flycatcher, and arroyo toad, among other wildlife. **(2008-present)**

Centex Homes Hawks Pointe Mitigation and Monitoring – Fullerton/La Mirada, CA. Restoration ecologist in charge of regular monitoring and reporting to client and agencies. Project consisted of the creation/restoration of approximately 13 acres of coastal sage scrub adjacent to occupied coastal California gnatcatcher habitat. The high quality of the restoration resulted in continued occupation of the project site with gnatcatchers. **(2006-2008)**

Ryland Homes Oak Valley Gateway (Sycamore Heights) Mitigation and Monitoring – Beaumont, CA. Restoration ecologist/Project Manager in charge of monitoring and reporting to agencies. Project consisted of the creation of a 0.42 acre water quality wetland complex to mitigate for a housing development and treat

storm water before it was discharged into the nearby creek. Wetland, riparian transition, and ephemeral wash habitats were created to assist in the treatment of project created run-off. **(2006-2008)**

City of Lake Forest Concourse Park Mitigation and Monitoring – Lake Forest, CA. Restoration ecologist/project manager in charge of mitigation monitoring and reporting to agencies. Project consisted of the restoration of a 0.08 acre drainage swale to compensate for park construction impacts. Target vegetation was mulefat scrub and was achieved one year ahead of schedule. **(2006-2008)**

Palmer Investments Los Valles Golf Course Mitigation – Los Valles, CA. Restoration biologist and project manager in charge of biological issues relating to the construction of the project. Tasks overseen include, writing successful proposal, writing successful augments for additional work including oak tree survey update, and Migratory Bird Treaty Act nesting surveys. Future work remaining includes implementation oversight and five years of monitoring and reporting. **(2007-2008)**

Hawkeye Investments, Hasley Canyon Biological Resources Assessment – Val Verde, CA. Project manager and biologist in charge of overall project, including vegetation mapping, jurisdictional delineation, oak tree survey, coastal California gnatcatcher, southwestern willow flycatcher, least Bell's vireo, and arroyo toad surveys for the approximately 275 acre site. **(2006-2008)**

Vista Unified School District Rancho Guajome Wetlands Creation – Vista, CA Biologist in charge of 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)**

Revegetation and Erosion Control – Fort Irwin, CA. Project biologist in charge of regular 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 strategies. **(2005-2006)**

San Diego Metropolitan Waste Water District Mt. Elbrus Canyon Revegetation and Erosion Control Study – San Diego, CA. Biologist in charge of the revegetation/monitoring of a canyon impacted by the installation and subsequent inspection of sewer lines in the canyon bottom. **(2004-2006)**

San Diego Metropolitan Waste Water District Chocolate Canyon Revegetation and Erosion Control Study – San Diego, CA. Biologist 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)**

URS

Eric A. Bailey

Project Biologist

Overview

Mr. Bailey has over seventeen years of experience as an environmental biologist. His responsibilities include focused surveys for California gnatcatcher, least Bell's vireo, southwestern willow flycatcher, arroyo southwestern toad, and desert tortoise; vegetation mapping; and technical report preparation in conformance with CEQA, NEPA, and ESA.

Areas of Expertise

Biological Assessment
Construction Monitoring
Endangered Species Surveys

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).

Project Specific Experience

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.

Eagle Crest Avian Mitigation Monitoring and Cowbird Removal, The Koll Company. Participated in avifaunal monitoring of Cloverdale Creek and removal of cowbirds.

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.

Miramar Road Vernal Pool Salvage, Bob Baker Enterprises, San Diego, California. Collected seed, mulch, and topsoil from vernal pools to be lost to development. Material collected used for habitat restoration and distributed to San Diego State University Biology Department, U.S. Fish and Wildlife Service, and Santa Ana Botanic Garden.

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.

***Brodiaea filifolia* Mitigation Monitoring Program, The Baldwin Company.** Managed a field effort to collect data on individual plant survivorship under a variety of test conditions

Lawrence Canyon, Coast Federal Bank. Conducted focused surveys for California gnatcatcher and mapped vegetation communities. Prepared a letter report quantifying the gnatcatcher population on site and detailing probable use areas.

Construction Monitoring

California Gnatcatcher Nest Monitoring for Dana Point Headlands Development. Monitored nests to prevent construction related impacts and brown-headed cowbird parasitism.

Open Space Management for San Elijo Hills Development. Monitored public use of natural open space conservation area. Recommended strategies for maintaining habitat quality. Conducted yearly census of California gnatcatcher population on-site. Produced year-end report of conditions on site, management actions taken, and recommendations for future management actions.

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 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.

Endangered/Sensitive Species Surveys

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.

Constraints Study for the Motoyama Property, Kurano and Associates. Researched sensitive species known in the project area and conducted a constraints level survey. Produced a report detailing biological resources detected and potentially occurring on site.

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 willowy 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.

California State University, San Marcos, Loop of the Oceanside to Escondido Commuter Rail Project, Myra L. Frank and Associates. Conducted sensitive species surveys and habitat delineation for the proposed commuter rail. Prepared a biological technical report for the site.

University Commons Residential Development Project, City of San Marcos, California. Conducted focused surveys for California gnatcatcher. Prepared a biological technical report for the EIR process.

Daley Rock Quarry, Daley Corporation and County of San Diego, California. Conducted sensitive-species surveys for the project. Evaluated proposed noise impacts to least Bell's vireo. Prepared a biological technical report.

Homeporting Avifaunal Surveys, U.S. Navy, Southwest Division. Participated in weekly surveys of waterbirds in north-central San Diego Bay. Quality checked database on Microsoft Excel spreadsheet.

North County Landfills, County of San Diego, California. Conducted comprehensive field surveys for sensitive species on two proposed landfill sites. Performed focused surveys for California gnatcatcher, arroyo southwestern toad, southwestern pond turtle, and least Bell's vireo. Delineated boundaries of three least Bell's vireo territories.

Marine Corps Base Camp Pendleton Firing Range Project P633, U.S. Navy, Southwest Division. Conducted focused surveys for arroyo southwestern toad. Recorded a population of 12 vocalizing males near the site.

Town Center North Commercial Development, Collins Development Company. Conducted focused surveys for least Bell's vireo. Delineated three pairs on site.

Pala Road Bridge Widening, County of Riverside, California. Conducted focused surveys for least Bell's vireo and southwestern willow flycatcher.

Miramar Landfill Pipeline Project, Santa Fe Pacific, San Diego, California. Conducted focused surveys for least Bell's vireo.

Marine Corps Air Station El Toro, U.S. Navy, Southwest Division. Conducted focused surveys for arroyo southwestern toad.

Rancho San Diego California Gnatcatcher Population Census, Rancho San Diego Partners. Organized field effort to census gnatcatcher population within an approximate area of 2,000 acres. Produced a report that analyzed population fluctuations over seven years.

Smith Encinitas California Gnatcatcher Surveys, Dorothea Smith. Conducted gnatcatcher surveys on 5-acre site and produced a letter report.

Meadowlark Estates California Gnatcatcher Survey, Consultants Collaborative. Conducted gnatcatcher surveys on approximately 180-acre site and produced a letter report.

Fanita Ranch, City of Santee, California. Conducted focused surveys for California gnatcatcher and cactus wren.

Michelle Balk

Balk Biological Consulting
P.O. Box 235316
Encinitas, CA 92023-5316
760-672-4559 cell
mlbalk@gmail.com

Skills Summary

Professional field botanist specializing in the rare plants of Southern California

Professional Profile

Skilled in surveying in a broad range of vegetation communities:

- Coastal scrubs and chaparrals
- Deserts
- Woodlands and forests (including riparian systems)
- Alkali playas and vernal pools

Experienced in surveying in a wide variety of locations:

- From Santa Barbara and Kern Counties south through San Diego and Riverside Counties
- From the coastal sea bluffs and sand dunes east through the mountains and deserts
- Experienced with Baja California, Mexico flora

Comfortable working in difficult environments:

- Rugged terrain
- Extreme heat
- Crabby field partners

Able to communicate results of surveys in biological reports that are:

- Provided in a timely manner
- Clearly written

Reliable and competent with general field tasks including:

- Using GPS units
- Interpreting topographic and aerial photographic maps

Work History

March 2006-present, Biologist, Balk Biological Consulting, Encinitas, California

March 2001-March 2006, Biologist/Botanist/Environmental Specialist, Dudek & Associates, Inc., Encinitas, California

Co-instructor for botany courses at Rancho Santa Ana Botanic Garden, Claremont, California: Survey *of the Sunflower Family (Asteraceae): Introduction to the Fall Bloomers* (October 2005, October 2006)*;* Survey *of the Sunflower Family (Asteraceae): Introduction to the Spring Bloomers* (March 2007), *Southern California Winter Plant Identification for Field Biologists* (February 2006), and *Rare Plant Identification and Survey Techniques for Southern California* (March 2006)

Education

Master of Science in Biology, emphasis in Ecology and Evolution (1999); University of Akron; Akron, Ohio

Bachelor of Science in Zoology (1997); Iowa State University; Ames, Iowa

URS

A. Gilda Barboza

Biologist

Overview

Ms. Barboza graduated from UCLA in June, 2004 with a double B.A. in Geography/Environmental Studies and International Development Studies. She has worked extensively and in depth on numerous environmental and conservation issues. She has experience in analyzing and problem solving through field methods and has experience with bio-resource management, remote sensing, plant identification, and environmental policy.

Areas of Expertise

Vegetation Management

Years of Experience

With URS: > 1 Year
With Other Firms: 3 Years

Education

B.A/Geography and Environmental Studies/2004/University of California, Los Angeles
B.A./International Development Studies/2004/University of California, Los Angeles

Project Specific Experience

Field Research

Field Assistant and Lab Coordinator, Effects of Arundo donax on Riparian Ecosystems, [City], CA, UCLA, 2004-2007, $100K: Worked with research group on large-scale field experiment examining the influence of nutrients, water, defense mechanisms, and light availability of the invasion of *Arundo donax* in riparian ecosystems of Mediterranean-type climates. Involvement in project included gathering plant growth and biomass measurements; collection of soil and plant tissue samples for nutrient analyses; biomass sampling; plant identification; soil grain size analyses; leaf area measurements; soil moisture and ground water monitoring; water potential measurements; and fire study monitoring; plant identification; and data entry.

Vegetation Mapping

Vegetation Specialist, Santa Clara River Floodplain Restoration Feasibility Study, Ventura County, CA, Stillwater Sciences, 2005, [Cost]: Assisted project team in mapping vegetation and collecting associated data in the field along the Santa Clara River in Ventura Country, CA. The survey was done utilizing a modified version of the CNPS Vegetation and Habitat Rapid Assessment protocol.

Languages

Bilingual in Spanish and English

Contact Information

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Gilda_barboza@urscorp.com

BRITTANY BENSON

Biologist

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.

Areas of Expertise

Botany
Plant Taxonomy of Southern California
Botanical Surveying and Habitat Identification
Rare Plant Surveying and Identification
Habitat Restoration
Wetland Delineation
Dudleya

Total Years of Experience 6
URS 3
Other Firms 3

Education

MS/2001/Systematic Botany/San Diego State University
BS/1995/Biology/San Diego State University
2005/Wetland Delineation Training/Wetland Training Institute

Registration/Certification

N/A

Overview

Darren Burton has six years of relevant experience in botany, plant taxonomy, and vegetation surveys, and is an expert on the flora of Southern California. He has extensive field experiences in vegetation mapping, habitat verification and ground-truthing, plant identification, and rare plant surveys, as well as in conducting vegetation transects and performing wetland delineations. Mr. Burton currently serves as the lead Botanist for URS' San Diego Office, and is in charge of vegetation surveys for several currently ongoing projects, each of which include accurate identification and mapping of habitat types, comprehensive regional species lists, and working closely with the in-house GIS group to produce maps, as well as writing all pertinent documents and communicating valuable information between clients and colleagues. He has worked with the Military Planning Group at URS' San Diego Office to help develop accurate vegetation maps and locate rare plant populations on military-owned land. Additionally, he also frequently serves as botanist for numerous FEMA projects in San Diego County, which involve identification of critical habitat used in firebreak analyses. Mr. Burton has a wide breadth of knowledge of the flora of California and he has often been able to use his knowledge in order to achieve project compliance in a timely manner.

Project Experience

Current Projects:

Marine Corps Air Station at Miramar, San Diego, CA – This project is an erosion and habitat restoration project located in an area of active military training. Responsibilities include managing and coordinating all aspects of implementation of erosion control and re-establishment of native vegetation at two sites located within the station grounds. Also in charge of preparing all relevant deliverable documents and communicating with the client and subcontractor.

City of San Diego, Mira Sorrento Parkway, San Diego, CA – 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. Responsibilities include identifying and reporting all matters regarding native habitat restoration to the client, meeting with the client and subcontractors to go over habitat mitigation concerns, and writing and delivering all relevant reports to the client.

Caltrans, State Route 805, San Diego, CA - This project involves conducting biological surveys along areas that may be affected by a freeway widening project. Responsibilities include identifying and mapping all vegetation habitat types within the study area along State Route 805, within the specified study site, and coordinating field work for subconsultants. Also conducted jurisdictional waters delineation and assisted with rare bird surveys of California gnatcatcher and Least Bell's vireo.

San Elijo Hills, San Marcos, CA - This project involves 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. Responsibilities involve vegetation transect data collection within native plant mitigation areas and quantitative and qualitive analyses of those data. Also produce accompanying document reports and maps, both quarterly and yearly.

Previous Projects:

Parcel C, Otay Land Co., Chula Vista, CA - Responsibilities included identifying the vegetation habitat types and creating a list of the plant species within the study area. Also conducted rare plant surveys and mapped existing locations of rare plants. Produced accompanying document report and maps.

York Long Point Associates, Rancho Palos Verdes, CA - Conducted are plant surveys, identified areas requiring possible mitigation, and drafted memo report.

Nursery Products, Riverside Co., **CA -** Conducted vegetation habitat and rare plant surveys, and assisted with listed wildlife surveys. Assisted in producing accompanying document report and maps.

Lakeside Land Company, Lakeside, CA - Vegetation transect data collection, habitat mitigation monitoring, and updating recommendations for client regarding habitat restoration and appropriate species lists for upland and riparian communities. Assisted in producing accompanying document report and maps.

Sloan Canyon, El Cajon, CA - Vegetation transect data collection, habitat mitigation monitoring, and updating recommendations for client regarding vegetation resorations activities. Assisted in producing accompanying document report and maps.

Dana Point Headlands, Dana Point, CA - Responsibilities included conducting plant transects, mapping vegetation types, and monitoring habitat restoration activities. Assisted in producing accompanying document report and maps.

Alpine Vegetation-Fire Break Analysis, City of Alpine, CA/FEMA - Vegetation community mapping and creating a list of the plant species within the study area. Assisted in producing accompanying document report.

San Marcos Vegetation-Fire Break Analysis, City of Chula Vista, CA/FEMA - Vegetation community mapping and creating a list of the plant species within the study area.

Chula Vista Vegetation-Fire Break Analysis, City of San Marcos, CA/FEMA - Vegetation community mapping and creating a list of the plant species within the study area. Assisted in producing accompanying document report.

Duke Energy South Bay LLC, Chula Vista, CA - Responsibilities included identifying and mapping the vegetation habitat types within the study area and any plant species of special management concern. Also conducted jurisdictional waters delineation and assisted with rare bird surveys of Least Bell's Vireo. Assisted in producing accompanying maps and document reports.

Caltrans, State Route 52, San Diego, CA - Responsibilities included identifying and mapping all vegetation habitat types within the study area along State Route 52, between Highways 805 and 125, and coordinating field work for visiting colleagues. Produced vegetation, rare plant, and wetland maps. Also conducted jurisdictional waters delineation. Wrote accompanying document reports. Assisted with rare bird surveys of Least Bell's Vireo.

Caltrans, State Route 11, Chula Vista, CA - Vegetation surveys, mapping locations of rare plants within the study area of the Otay Mesa area near the San Ysidro border crossing region, and coordinating field work with subconsultants. Worked with GIS group to produce vegetation and rare plant maps and wrote document report for client.

Parcel A Skeet Range, Flat Rock Land Company, Chula Vista, CA - Vegetation community mapping and creating a list of all plant species within the study area; rare plant surveys and mapped existing locations of rare plants. Produced accompanying document report and maps.

Enpex/MCAS Miramar, San Diego, CA - Vegetation community mapping within the study area and identification of plant species of special management concern.

Parcel D Proctor Valley, Otay Land Co., Jamul/Chula Vista, CA - Vegetation community mapping and creating a list of plant species within the study area. Also conducted rare plant surveys and mapped existing locations of rare plants.

Professional Associations

Areas of Expertise

Biology, Environmental Permitting
10(a) Recovery Permit for all listed Fairy Shrimps (TE-115725)
Knowledge of native flora and fauna in the San Diego County area
Experience and training in wetland delineation of rivers and tributaries in the arid southwest.
General Survey and Identification of native plants and animals of San Diego County.
Mapping of vegetation communities according to the Holland Code (1986).

Total Years of Experience 3
URS 3
Other Firms 0

Education

BA/2003/Environmental Biology/University of Colorado-Boulder,

Registration/Certification

U.S. Fish and Wildlife Service Recovery Permit 115725-0
All listed Branchiopod Species

Overview

Ms. Howard is a biologist with experience in working with sensitive plant and animal species of southern California, especially San Diego County. She has a background in the behavior and genetics of fish and mammal species, and has participated in research projects in these areas. She also has experience in habitat assessment, field surveys, and construction monitoring, and is now expanding into environmental permitting and regulations.

Project Experience

Wildlife Surveys

Birds
Coastal California gnatcatcher

805 Protocol Surveys for California Gnatcatcher - Involved in planning, coordinating, and observation time for protocol surveys of California Gnatcatcher along the 805 freeway in San Diego, California. ***(2006)***

805 Vegetation Mapping and Wetland Delineation - Accumulated 1.5 hours of direct observation time of California gnatcatchers while conducting vegetation mapping and wetland delineation of the 805 area. Observed gnatcatchers in different habitat types under varying degrees of disturbance, including isolated patches of coastal sage scrub and maritime succulent scrub. **(2006)**

Caltrans SR-52 Surveys - Observed California gnatcatchers and other species while conducting biological surveys of the 52 Highway. ***(2005)***

Caltrans SR-11 Surveys - Observed gnatcatchers while conducting general surveys of the SR-11 project area. ***(2005)***

Flat Rock Land Company Village 3 Parcel A project - Accumulated 5 hours of direct observation time of gnatcatchers while conducting general wildlife surveys, and while performing construction monitoring of the project area. ***(2004-2005)***

Dana Point Headlands LLC project - Accumulated 1.5 hours of observation

time while performing vegetation surveys and construction monitoring of the headlands site. ***(2005)***

SONGS Biological Surveys - Accumulated 0.5 hours of observation time of gnatcatchers while performing general wildlife surveys on costal portions of MCB Camp Pendleton. ***(2004-2005)***

Basilone Road Re-Alignment Surveys - Accumulated 0.5 hours of observation time of gnatcatchers while conducting biological surveys of the inland portions of MCB Camp Pendleton. ***(2004)***

Least Bell's Vireo

SANDAG 805 Protocol Surveys - Conducting protocol surveys for Least Bell's Vireo and other riparian species along the 805 freeway in several locations, including the Otay, Sweetwater, Penesquito, Rose, and San Clemente waterways. ***(2006-Ongoing)***

Caltrans SR-52 Protocol Surveys - Conducted protocol surveys at two separate locations for least Bell's vireo and other riparian avian species. Identified and mapped vireo territories. ***(2005)***

Oak Valley Protocol Surveys - Conducted protocol surveys for least Bell's vireo on the San Timeteo creek. ***(2005)***

Duke Chula Vista Vireo Assessment survey - Performed surveys for least Bell's vireo along the Otay river. Identified territories and mapped locations of vireos located near proposed impact areas. ***(2005)***

Lakeside Land vireo assessment surveys - Surveyed progress of riparian habitat restoration and identified changes in least Bell's vireo populations in the area. ***(2004-2005)***

Chula Vista Crossings construction monitoring. Surveyed riparian areas adjacent to construction area for sensitive avian species. Identified migrant least Bell's vireo and tracked movements of this individual over several weeks. ***(2005)***

FEMA Big Tujunga Dam Protocol surveys - Assisted in protocol surveys for vireos and other sensitive avian species. ***(2005)***
Burrowing Owls

Caltrans SR-11 Burrowing Owl habitat assessment - Conducted Consortium protocol surveys for burrowing owls in the SR-11 project area. Observed reproductive progress of identified owls over spring season. ***(2005)***

Caltrans SR-7 Burrowing Owl Passive Relocation and Monitoring - Identified burrowing owls in Imperial County, CA. Passively relocated owls from proposed impact areas to safe areas during the non-breeding season. Used fiber-optic scope to investigate potential owl burrows. Constructed artificial burrows for relocated owls. Monitored progress of owls while highway constructed.

Accumulated hundreds of hours of direct owl observation contact time during project. ***(2004-2005)***

Kinder-Morgan Concord to Sacramento Pipeline Project - Investigated potential burrowing owl habitat in the San Joaquin valley. Used fiber-optic scope to assess breeding status of potentially impacted owl burrows. Observed behavior of identified owl burrows of concern. ***(2005)***

Invertebrates

Successfully passed the USFWS test for Quino
Quino Checkerspot Butterfly ***(2006)***

805 Quino Checkerspot Butterfly Surveys - Assisted in QCB surveys in the vicinity of the 805 freeway in San Diego, California. ***(2006)***

Flat Rock Land Company Village 3 Parcel A Protocol Surveys - Participated in protocol survey for QCB as an assistant for Jim Rocks (TE-063620) and Brian Lohstroh (TE-063608). Was able to observe Quino during survey for one hour before it left the area. ***(2004)***

SR-11 Quino Checkerspot Butterfly Protocol Surveys - Participated in three protocol surveys for QCB in the East Otay Mesa area as an assistant for Brian Lohstroh. Did not observe Quino, but gained familiarity with several other Lepidoptera of southern California. Acquired four hours of experience identifying butterflies under protocol conditions. ***(2005)***

Gregory Canyon Quino Checkerspot Butterfly Protocol Surveys - Participated in three protocol surveys for QCB in the Pala area as an assistant for Brian Lohstroh. Did not observe Quino, but identified nearly 20 species of Lepidoptera under protocol survey conditions. Acquired nine hours of experience identifying butterflies in Quino suitable habitat. ***(2005)***

Otay Land Company Parcel D Biological Surveys - Conducted general surveys for wildlife in the Jamul mountins with Brian Lohstroh in an area known to support Quino. Did not observe quino, but acquired six hours of experience surveying Lepidoptera in Quino-suitable habitat areas. ***(2005)***

Fairy Shrimp
Education

Fairy Shrimp Identification Course—Mary Schug Belk, M.S. Learned taxonomy of *Anostraca* and *Notostraca* species of California. Passed identification exam at end of course.

Field Experience

805 Wet Season Vernal Pool Surveys - Planned and conducted protocol surveys for listed fairy shrimps in suitable habitat near the 805 freeway in San Diego, California. ***(2006)***

Southern California Edison SONGS wet season vernal pool assessment - Involved in surveys for listed fairy shrimp species near SONGS site on Camp Pendleton, California. Spent 22.5 hours with permitted biologists surveying *Branchinecta lindahli*, *B. sandiegonensis*, and *Strephtocephalus woottoni*. Spent an additional 1.5 hours assisting in laboratory identification of voucher specimens collected for this project. ***(2005)***

Caltrans SR-11 wet season vernal pool assessment - Involved in surveys for listed fairy shrimp species in Otay Mesa, California. Spent 21.0 hours with permitted biologists surveying for *S. woottoni*. Spent and additional 0.5 hours in the laboratory assisting in identification and accessioning of these specimens. ***(2005)***

Caltrans SR-11 and SR-52 dry season vernal pool surveys - Involved in conducting protocol dry season surveys of vernal pools in Otay Mesa and Claremont, California. Helped D. Christopher Rogers collect soil samples for cyst analysis of fairy shrimp species. ***(2005)***

Reptiles and Amphibians

Metropolitan Water District Desert Tortoise surveys - Conducted field work to identify sensitive plant and wildlife species in the Mojave Desert. Observed tortoise during surveys, identified other tortoise signs. ***(2004-2005)***

Gregory Canyon Arroyo Toad surveys - Involved in surveys for arroyo toad, *Bufo californicus*, along the San Luis Rey river near Pala, CA. Observed several male toads calling and visually identified both arroyo toad and western toad, *Bufo bureaus*. ***(2005)***

San Mateo Exotic Predator Control - Removed exotic species, including bullfrogs, *Rana castebeiana*, and crayfish *Procambarus clarkii*, from San Mateo lagoon to improve habitat for arroyo toad and tidewater goby. Conducted surveys for and identified arroyo toad adults and larvae as part of this project. ***(2004-2005)***

Mammals

Education

Bat Ecology and Field Techniques—Dave Johnston, Ph.D. and Joe Szewaczak, Ph.D., September, 2004. Learned about field identification, natural history, and acoustical monitoring techniques of Chioptera species of California.

Field Experience

Disease Ecology of Prairie Dogs - Assisted in disease ecology study of bubonic plague in prairie dogs and other grassland rodents. Involved in trapping, anesthesia, blood collection, flea collection, tissue collection, behavioral observation, and laboratory processing of samples. Trained in Animal Care

techniques and trapping procedure for these species. Gained experience with Tomahawk live traps. ***(2003)***

Environmental Permitting and Regulation

CalNev Petroleum Pipeline Upgrade - Involved in gathering necessary planning documents and HCP plans from cities, private landowners, the Department of Defense, and the Federal Government for a 300 mile pipeline alignment in southern California and Nevada. Coordinated with various agency officials to initiate formal Consultation for the project. ***(2006)***

FEMA Hurricane Katrina Temporary Housing Relief Project - Worked as part of the environmental review team for the Louisiana Joint Field Office. Conducted site visits to proposed temporary housing sites to assess for existing resources and hazards. Prepared abbreviated NEPA documentation as part of the review process. Coordinated directly with construction contractors, FEMA officials, and the Army Corps of Engineers to develop plans for temporary housing sites. ***(2005)***

Caltrans SR-11 Biological Surveys and Report, Participated in a wide range of biological surveys for a proposed road alignment in Otay Mesa, California. Wrote Natural Environment Survey (NES) report for California Department of Transportation (Caltrans). Worked with existing planning documents, including the MSCP and USFWS critical habitat areas in the Otay Mesa area to determine the impacts of the proposed project on natural areas. ***(2005)***

Southern California Edison Oak Valley Biological Report - Involved in planning biological surveys for a proposed electrical substation building and line reconductoring project in Beaumont, CA. Met with client in the field to discuss needs of the project, and helped plan the appropriate surveys. Wrote biotechnical report for the proposed project.

Flat Rock Land Company Biotechnical Report - Involved in biological surveys for a proposed development in Chula Vista, California. Wrote biotechnical report, and oversaw revisions to meet requirements of the City of Chula Vista MSCP Subarea Plan.

City of San Marcos Twin Oaks Valley Road Extension - Helped write Biological Assessment (BA) of a proposed road extension. Helped monitor wetland restoration area used as mitigation for this project.

Wetland Delineation

SANDAG 805 Biological Surveys, San Diego California - Conducted wetland delineation of rivers and tributaries within the boundaries of the Interstate 805 Right-of-Way. ***(2006)***

Caltrans State Route 52, Santee, California,. Conducted wetland delineation along the San Diego river and various unnamed tributaries flowing under the freeway. Coordinated GIS mapping of these areas and reporting of results.

(2005)

Caltrans SR-11, Otay Mesa, California,. Conducted wetland delineation of five unnamed tributaries within a proposed road alignment. ***(2005)***

Flat Rock Land Company Village 3 Parcel A, Chula Vista, CA - Conducted wetland delineation along the Otay River. ***(2005)***

Gregory Canyon Landfill - Conducted wetland delineation of the San Luis Rey river and two unnamed tributaries. ***(2004)***

Brown property - Assisted in wetland delineation for a man-made lake in Racho Santa Fe, California. ***(2004)***

Habitat Restoration

Sloan Canyon Sand Mine, San Diego, CA, Vegetation Restoration monitoring - Conducted vegetation monitoring using the point-intercept method, recorded improvement for a multi-phase restoration project. ***(2004)***

San Elijo Hills LLC., San Diego, CA, Riparian Vegetation Restoration Monitoring - Conducted vegetation monitoring using the point-intecept method, and made recommendations for improvement. ***(2004-Ongoing)***

Construction Monitoring

SDUSD Golden Hill School Project - Monitored restoration area associated with construction of new school. ***(2004-2005)***

SDUSD Thurgood Marshall School - Monitored erosion control area and potential restoration site associated with the construction of a new school. ***(2005)***

Professional Associations

Member, Western Section of the Wildlife Society

Areas of Expertise

Terrestrial and Global Change Biology/Ecology
Botanical Taxonomy
Experimental Design and Management

Total Years of Experience

	8
URS	1
Other Firms	7

Education

MS/2005/Ecology/San Diego State University
BS/1997/Geology/Botany/California State Polytechnic University
Wetland Delineation Training/2006/Wetland Training Institute Inc.
Desert Tortoise Surveying, Monitoring, and Handling Techniques Workshop/2006/Desert Tortoise Council
Fairy Shrimp of California Identification Course/2007/Mary Schug Belk

Registration/Certification

N/A

Overview

Glen Kinoshita is a biologist and botanist for URS. He has a strong interest in the flora and fauna of southern California, participating in ecosystem research in southern California chaparral through San Diego State University and native plant surveys through the California Native Plant Society. He also has a strong background in terrestrial ecological research in the southern California and arctic Alaskan geographical regions focusing on the effects of global climate change. He has also participated in atmospheric research projects in Antarctica and paleobotanical research in late Miocene flora in the Los Angeles and San Bernardino counties of southern California. Mr. Kinoshita has since furthered his professional experiences to include rare and endangered invertebrate, bird, and reptile surveys, sub-meter global positioning systems and habitat restoration.

Project Experience

Botanical and Ecological Projects

AUSRA
Performed blunt nosed leopard lizard surveys at site near Paso Robles, CA. *(2007-present)*

Stirling Energy Systems
Performed rare plant and desert tortoise, and flat tailed horned lizard surveys at sites near Barstow, CA and El Centro, CA. *(2007-present)*

Gregory Canyon
Performed surveys for arroyo toad and assisting in implementation of native habitat restoration near Pala, CA. *(2006-present)*

SANDAG 805
Performed rare plant and bird surveys along 805 freeway in San Diego, CA *(2006-present)*

Nobel Drive Preserve
Performed wetland delineations in potential areas in San Diego, CA. *(2006-present)*

Otay Land Company
Performed rare plant and vegetation survey at location at San Diego, CA. *(2006-*

present)

Point View Properties.
Performed rare plant survey in a continuation of an existing monitoring program at Rancho Palos Verdes, CA. *(2006-present)*

Dana Point Headlands
Performed rare plant surveys, habitat and restoration monitoring, and construction monitoring at site near Dana Point, CA. *(2006-present)*

Wind Implementation Monitoring Program
Surveyed vegetation within wind energy program area at Palm Springs, CA. *(2006-2007)*

Lakeside Land Company
Surveyed vegetation related to San Diego River floodway restoration project. *(2006-present)*

Nobel Drive Preserve
Performed rare plant survey in vernal pool location of San Diego, CA. *(2006-present)*

Nursery Products
Performed survey of rare plants at location near Barstow, CA *(2006-2007)*

Patterns and Controls of Temporal Variation in CO_2 Sequestration and Loss from Arctic Ecosystems
Measured ecophysiological effects of simulated climate change on arctic tundra ecosystem near Barrow, AK. *(1999-2001)*

Atmospheric and Geophysical Projects

Atmospheric Research Observatory
Served as station science technician at South Pole, Antarctica for the National Oceanic and Atmospheric Administration. *(2003-2005)*

Educational Projects

Partnerships Involving the Scientific Community in Elementary Schools.
Participated in science outreach programs to introduce new curricula in K-6 classrooms in San Diego County. *(2000-2003)*

Undergraduate Mentoring in Environmental Biology. Mentored undergraduate environmental sciences students in ecological projects in Barrow, Alaska and San Diego, California. *(2001-2003)*

Teachers Experiencing the Arctic and Antarctic. Mentored a high school environmental science teacher on ecological projects in Barrow, Alaska. (2001-2003)

Paleontological Projects

San Bernardino County Museum.
Sorted and catalogued paleobotanical specimens from excavations in Los Angeles, San Bernardino, and Riverside counties in southern California, determined geological and stratigraphic interpretations from museum collections. *(1996-1997)*

Field Science Experience

Experimental design, point, plot, and transect vegetation surveys, ecosystem photosynthesis measurements, plant taxonomy, morphology, physiology, ecosystem micrometeorological measurements, vegetation mapping, GIS application with ArcView software and submeter GPS field usage with Trimble equipment. Biostatistical software experience with Systat and SAS packages.

Other Equipment and Scientific Research Experience

Gas chromatography, Infrared gas analyzers, Campbell Scientific and other data acquisition systems, meteorological data acquisition systems, various small-scale hardware, electrical, and electronic diagnosis and repair, handling of compressed gases, helium research balloon launching, scientific sample shipping and inventory, electronic database maintenance, snow and atmospheric air sampling, logistical experience with US National Science Foundation support organizations.

Professional Associations

Ecological Society of America
California Native Plant Society
American Association for the Advancement of Science

Publications/Presentations/ Papers Presented

Kinoshita, GY, WC Oechel, G Vourlitis, SJ Hastings, RC Zulueta. 2006. The Effects of Elevated Soil Temperature and Water Table Manipulation on Arctic Tundra Carbon Flux. In manuscript.

Kinoshita, GY. 2002. PISCES: Partnerships Involving the Scientific Community in Elementary Schools. NSF GK-12, Washington DC.

Kinoshita, GY. 2002. Affect of Three Seasons of Elevated Soil Temperature and Water Table Manipulation on the Coastal Arctic Tundra Ecosystem near Barrow, Alaska. NSF-LAII, Seattle, Washington.

Kinoshita, GY. 2002. Results of Three Growing Seasons of Elevated Soil Temperature and Water Table Manipulation in the Arctic Tundra Ecosystem at Barrow, Alaska. poster at NSF-LAII, Salt Lake City, Utah.

Kinoshita, GY. 2002. Current Ecosystem Research in Arctic Alaska. NSF-TEA, New Hampshire.

Kinoshita, GY. 2002. An Elevated Soil Temperature and Water Table Manipulation in the Arctic Tundra Ecosystem at Barrow, Alaska. NSF-LAII, Victoria, British Columbia, Canada.

Kinoshita, GY. 2002. An Elevated Soil Temperature and Water Table Manipulation in the Arctic Tundra Ecosystem at Barrow, Alaska. Ecological Society of America, Snowbird, Utah.

Kinoshita, GY. 2002. Preliminary Results of an *in situ* Manipulation of Water Table and Elevated Soil Temperatures on the Arctic Coastal Tundra Ecosystem

CO_2 Fluxes at Barrow, Alaska. NSF-LAII, Seattle, Washington.

Kinoshita, GY. 2002. An Experiment to Determine the Effects of *in situ* Manipulation of Soil Moisture and Temperature on Net Ecosystem CO_2 Flux at Barrow, Alaska. Arctic Research Consortium of the United States, San Francisco, California.

Professional History

URS Corporation, Biologist, San Diego, California, 2006-present.
National Oceanic and Atmospheric Administration, Physicist, Boulder, Colorado, 2003-2005.
San Diego State University, Field Science Technician, San Diego, California, 1998-2003.

URS

Matthew J. Wartian, Ph.D.

Ecologist

Senior Ecologist

Areas of Expertise

Restoration Ecology; Native Coastal Ecosystems; Statistical, Digital, and Graphical Data Analyses; and Community and Ecosystem Ecology,

Years of Experience

With URS: <1 Year

With Other Firms: 5 Years

Education

Ph.D., Biology, 2006, University of California, Los Angeles

B.S., Biology, 2001, California State University, Long Beach

Minor, Chemistry, 2001, California State University, Long Beach

Overview

Dr. Matt Wartian has extensive experience in marine and terrestrial coastal ecosystems. Matt has designed and implemented multi-year research projects analyzing, monitoring, and restoring native coastal ecosystems. Furthermore, Dr. Wartian has supported the University of California Los Angeles (UCLA), Sempra Energy, Pacific Gas and Electric (PG&E), and the City of Los Angeles Department of Public Works Bureau of Sanitation Watershed Protection Division with several long term private and public funded restoration projects in southern California. Dr. Wartian's extensive teaching experience at UCLA has facilitated the development of strong communication skills that enable him to convey technical information in an effective and intelligible manner.

Experience

Pacific Gas and Electric; North Baja Natural Gas Pipeline, Southern California and Western Arizona; Consulting Ecologist

Supported the design and implementation of a 5-year experimental restoration program that assessed natural re-vegetation of native desert plant communities. Study plots were established in both of the major native cover types found along the pipeline right-of-way (ROW). These two cover types were Sonoran creosote bush scrub and desert dry wash woodland, including Sonoran microphyll woodland. Treatment plots along the ROW received two different seed mixes and two different application rates. Control plots were established in undisturbed areas immediately adjacent to the ROW. Data was and is being collected over a 5-year period to statistically compare treatment plots to control plots. Study questions included: (1) Is there a differential re-vegetation response for supplemental seeded plots compared to unseeded study plots as quantified by several variables (i.e., herbaceous seed supplement, woody seed supplement, high application rate seed supplement, low application rate seed supplement and so forth)? (2) Is there a differential re-vegetation response between ROW and immediately adjacent undisturbed area as measured by woody plant species composition, native plant species composition, growth and regeneration of woody plants, cover of woody plants, cover of herbaceous plants, and cover of non-native plant species?

Sempra Energy Resources; La Rosita Transmission Line Project, Southern California; Consulting Ecologist

Supported development and implementation of a habitat restoration plan which adequately provides the strategy, maintenance regime, and monitoring schedule for restoration of native desert habitat in the vicinity of the recently-constructed La Rosita Transmission lines. This area

includes special status rare plants, Flat-tailed Horned Lizards, and Burrowing Owls. The plan includes control of invasive tamarisk species along the right-of-way (ROW) for both the Intergen and the Sempra transmission lines and a clearly defined area adjacent to the Imperial Valley substation, owned and operated by San Diego Gas & Electric (SDG&E). This project included compensatory restoration off the ROW to enhance native desert habitat. Initial restoration plans had called for direct restoration of areas disturbed by construction, which was determined to be impractical due to the high use of the area by the Border Patrol vehicles. Consequently, an area designated by the BLM is being restored by removing tamarisk and providing follow-up removal services for three years. This restoration plan is designed to meet the requirements of the ROW terms and conditions for BOTH the Sempra AND the Intergen transmission lines.

City of Los Angeles Department of Public Works Bureau of Sanitation Watershed Protection Division; Design Plan for a Constructed Wetland Habitat at Augustus Hawkins Natural Park; Consulting Ecologist

Supported development of design criteria and objectives for the construction plan for the City's first storm water treatment wetland. Design criteria and objectives were derived from established standards in the SWRCB Proposition 13 Non-point Source Pollution Grant Program and Regional Water Quality Control Board's (RWQCB) Watershed Management requirements. The following design objectives were incorporated into the plan: (1) improve urban storm water flood protection, (2) create a balance between water reclamation and minimum water volume necessary to support the protection and enhancement of fish and wildlife habitat, (3) establish a functional wetland and aquatic habitat in a heavily urbanized area and underserved community, (4) control vectors that represent public health and safety concerns (e.g., mosquitoes), (5) improve runoff water quality and reduce non-point source pollution in the Compton Creek Watershed ,which is tributary to the Los Angeles River, and (6) improve public safety while enabling ease of maintenance.

UCLA, Mugu Lagoon, Pt. Mugu Naval Air Weapons Station; Graduate Student Researcher

Assisted with field studies to assess differences among restored and natural areas of southern California estuaries. Performed percent cover of salt marsh vegetation and surveys of invertebrate and avian fauna. The results of which indicated that restoration of wetlands often provides suitable habitat for highly mobile species, such as migratory birds, however, ecosystem function is dependent upon sediment characteristics, such as grain size and nutrient concentrations as well as species composition and richness.

UCLA, Newport Beach Back Bay, Newport Beach, California; Graduate Student Researcher

Participated in a study of nitrogen fixation and denitrification within sediments of southern California estuaries. Collected sediment and water samples within inter-tidal zones to determine the spatial and temporal differences in ecosystem services provided by bacteria on and within estuarine mud flats.

UCLA, Newport Beach Back Bay, Newport Beach, California; Graduate Student Researcher

Worked as a team member to assess the factors that affect macroalgal blooms within southern California estuaries. Collected samples of macroalga, *Enteromorpha intestinalis*, along with water, sediment, and vegetation samples to better understand the relative importance of physical and biological factors that regulate the abundance of bloom-forming algal species.

California State University Long Beach, Palos Verdes; Graduate Student Researcher

Performed field studies that examined the physical and biological factors that determine distributions of inter-tidal invertebrate species and the relative abundance of inter-tidal and sub-tidal macroalgal species, e.g, the giant kelp, *Macrocystis pyrifera*. Percent cover of organisms was surveyed along gradients of physical disturbance and human use in order to determine correlations of said factors with the relative abundance and richness of species.

UCLA, California Ecosystems; Graduate Student Teacher.

Lectures, laboratory, and field trips introduced students to an array of southern California ecosystems focusing on community composition within sage scrub, chaparral, riparian, wetland, coniferous forest, and desert communities. Laboratory and field trips included plant identification and taxonomy along with the ecological factors that determine distributions of plant communities and species (e.g., temperature, humidity, soil type, and exposure to solar radiation).

UCLA, California Field Ecology; Graduate Student Teacher.

Introduced students to an array of field techniques used to survey and sample terrestrial and inter-tidal communities of central and southern California including; costal sage scrub, rocky inter-tidal, estuarine, chaparral, and desert communities. Survey methods included percent cover, line intercept, timed surveys, and behavioral surveys along with analysis techniques and scientific report writing.

UCLA, Introduction to Ecology and Behavior; Graduate Student Teacher.

Lectures and laboratory work to examine behavior and ecological interactions of organisms within native California ecosystems. Students performed ecological and behavioral field studies of southern California flora and fauna.

Awards

2001-2002. Certificate of Distinction in Teaching awarded by the UCLA Life Science Division

2004-2005. Certificate of Distinction in Teaching awarded by the UCLA Life Science Division

2001, 2002, 2003, and 2004. Department of Ecology and Evolutionary Biology Dean's Commendation for Excellence in Teaching

National Science Foundation Grant

UCLA Latin American Studies Center Doctoral Student Research Grant

President's Honor List, California State University, Long Beach

Dean's Honor List, California State University, Long Beach

Specialized Training

NAUI Open Water SCUBA certification
American Academy of Underwater Sciences SCUBA certification
Emergency Medical Technician and related first responder certifications

Publications

Fong P, Smith TB, Wartian MJ (2006) Protection by epiphytic cyanobacteria maintains shifts to macroalgal-dominated communities after the 1997-98 ENSO disturbance on coral reefs with intact herbivore populations. Ecology 87: 1162-1168.

Fong P, Smith TB, Wartian MJ (2003) Ephemeral macroalgal blooms on eastern tropical Pacific reefs: Investigating the roles of nutrients, herbivory, and chemical defenses of epiphytic cyanobacteria. Oral presentation at 10th International Coral Reef Symposium, 2003, Japan.

Wartian MJ, Fong P, Smith TB (2002) Bottom-up regulation of macroalgal growth on an eastern tropical Pacific reef. Poster presented at Western Society of Naturalists meeting, 2002, Monterey, California.

Wartian MJ, Fong P (in prep) Upwelling-driven bottom-up regulation of tropical eastern Pacific coral reef community dynamics.

Wartian MJ, Fong P (in prep) Top-down and bottom-up regulation of community structure and resilience on tropical eastern pacific coral reefs in upwelling and non-upwelling regions

Wartian MJ, Fong P (in prep) Upwelling drives seasonal changes in top-down and bottom-up regulation of tropical eastern Pacific coral community dynamics

Wartian MJ, Fong P, Wartian AN (in prep) Top-down and bottom-up regulation of algal community development on upwelling and non-upwelling coral reefs of the tropical eastern Pacific

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Areas of Expertise

Listed Species Surveys, Monitoring, Habitat Assessment and Research
Knowledge of native fauna and flora of southern California
Technical Report Writing
Wetland Delineation of rivers and tributaries in the arid southwest
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 9.5
URS 7
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-135968-0
California Gnatcatcher (Presence/Absence Surveys)

Overview

Ms. Theresa Miller is a Wildlife Biologist with more than 7 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 develops technical reports and planning documents. Specializing in environmental projects, she has written many biological resources evaluations for NEPA/CEQA and been involved in many major environmental impact reports (EIRs), environmental assessments (EAs), environmental impact statements (EISs), biological assessments (BAs), biological technical reports, and hazard mitigation plans. Her project experience has involved task management, GIS/GPS analyses, GIS modeling, database development, and risk assessments for hazard mitigation planning for numerous public and private agencies.

Project Experience

BIOLOGY/ ENVIRONMENTAL PLANNING PROJECTS

Solar Power Plant 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, vegetation mapping, and rare plant surveys were conducted over majority of project area.

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.

Nursery Products Composting Facility Initial Study (IS)/Mitigated Negative Declaration (MND)/Environmental Impact Assessment (EIR), San Bernardino, CA. 2006. Biology Task Manager for the proposed development of a 160-acre biosolids/green waste composting facility in San Bernardino County. Coordinated and lead field team for USFWS protocol desert tortoise surveys and rare plant surveys, and prepared biotechnical report as well as biology section of EIR.

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 (*Felis concolor*), bobcat (*Felis rufus*), coyote (*Canis latrans*), and southern mule deer (*Odocoileus hemionus fulignata*). Managed database and directed GIS logistics. Prepared report and GIS mapping of results. Conducted California gnatcatcher protocol surveys and identified territories throughout study area.

SANDAG On-Call Environmental Services/I-805 Widening Project, San Diego County, CA. 2005-ongoing. Ms. Miller 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. (***approx $4M***)

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.

Meadow Valley Generating Plant EIS, Southern Nevada. 2003. Field

biologist conducting desert tortoise and rare plant surveys for a 1,000 MW, gas-fired combined cycle power plant proposed in Southern Nevada. Identified tortoise burrows and sign.

Solar Power Plant AFC, San Luis Obispo County, CA. Lead biologist/task anager for biological surveys in support of Application for Certification for an 180MW thermal generating facility located within San Luis Obispo County. Surveys for several listed species, rare plant surveys and vegetation mapping of the site.

Solar Power Plant 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.

Larkspur Power Facility AFC Amendment, San Diego County, CA. Biologist for the Post Certification Amendment for Diamond Generating Corporation (a subsidiary of Mitsubishi) to the California Energy Commission to modify the Existing Larkspur Energy Facility in Otay Mesa, City of San Diego, to add a third 45MW LM6000. The normal power plant rating will be 135MW. Prepared biological technical report, project facilitation with the California Energy Commission and oversaw regulatory oversight from various technical resource area agency involvements.

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. ***(Ongoing) (approx $300k)***

Dana Point Headlands, California Gnatcatcher Monitoring. Assisted in the monitoring of gnatcatcher nest sites throughout territory located within and adjacent the project site.

Viejas Band of Kumeyaay Indians, Debris Removal from Pond at Mar-Tar-Awa Campground. **2006**. Biology task leader to assist FEMA with CEQA/NEPA compliance. Evaluated biological impacts of removal of silt, sediment, and debris from the pond to restore pond to its pre-disaster size, shape, and depth. Determined need for USFWS Section 7 consultation because the project was a post-disaster hazard mitigation project funded through the FEMA Public Assistance program.

County of San Diego, Central Avenue Flood Control Improvement Project, National City, CA. 2006. Biology task leader to assist FEMA with CEQA/NEPA compliance. Conducted biological evaluation to determine biological impacts and need for Section 7 Consultation with USFWS for FEMA

HMGP- related project to upgrade the drainage facilities in Central Avenue and to alleviate flooding up to and including a 100-year runoff event.

Big Tujunga Dam Seismic Retrofit Biological Assessment, Big Tujunga, CA. 2006 - 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. Prepared Biological Assessment as part of the CEQA/NEPA and Section 7 documents. Worked closely with USFWS to achieve completion an approved BA. Key issues included construction and dam operational impacts to Santa Ana Sucker and Arroyo Toad Designated Critical Habitat.

SR-52 Widening Project. San Diego, CA. 2006. - Conducted least Bell's vireo surveys along SR-52 right-of-way and identified several territories. Also observed several California gnatcatcher territories. Prepared biological technical report on sensitive species.

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.

Range Management Plan Amendment/EIS, McGregor Range, Socorro, New Mexico. 2005. Technical writer responsible for alternatives and environmental consequences analyses for special status species, vegetation, wildlife, and livestock grazing sections for an EIS for the McGregor Range Management Plan Amendment. The RMPA/EIS determined impacts based on a forecast of 15 years of range management and improvements.

EIS and Biological Assessment, Resource Management Plan Revision and EIS, Socorro, New Mexico. 2006. Technical writer responsible for impacts analyses on special status species, vegetation, wildlife and livestock grazing sections for an EIS and BA for the Socorro BLM Field Office Resource Management Plan Revision.

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.

San Mateo Creek and Lagoon, San Onofre, CA. 2005. - Biologist on team to perform 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. Conducted diurnal and nocturnal eradication with the aid of seine nets, dip nets, and frog gigs.

Avian Surveys, Cal Energy Power Plant, California Energy Commission, California, Salton Sea, CA. 2004. - Field coordinator and team leader for shorebird flyover and wildlife diversity/abundance surveys at the Salton Sea, for expansion of a Geothermal Power Plant. This included several seasons of data collection and analysis. Over 90 species of birds were identified during the surveys.

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

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.

San Elijo Hills Development Project, San Diego, CA. 2001 - Assisted in protocol California gnatcatcher surveys. Construction monitoring during brushing of property.

Questhaven Road Realignment, San Diego, CA. 2001. - Performed wetland delineation and protocol California gnatcatcher surveys.

Melrose Drive Extension Project, San Diego, CA. 2000. - Assisted in protocol California gnatcatcher surveys, prepared Biological Resources Technical Report and regional vegetation map.

Otay Land Co. Proctor Valley Project, San Diego, CA - Performed sensitive species, vegetation and Waters of the U.S. surveys for the proposed Otay Land Co. project in Proctor Valley. It was a large residential development to construct 821 "urban units" on approximately 325 acres. The project area included large areas of sensitive habitat and supported several threatened or endangered species.

GIS ANALYSIS/MODELING/DATABASE DEVELOPMENT PROJECTS

McClellan Palomar Airport Noise Compatibility Study, County of San Diego, CA. 2005. - GIS Specialist responsible for creating existing, 5-year, and 10-year projected GIS land use databases. The databases were then used to help evaluate noise conditions and help in GIS/noise modeling efforts. Over 400 GIS man-hours were used to create, update, and generate these all-encompassing databases and complete analysis for preparation of the supporting Part 150 FAA document. The final product was also converted to Global Environment Management System format for use at the airport facility. GIS models, exhibits, and materials were focal points for community planning meetings/forums.

Otay/Kuchamaa GIS Database Development, Biological Monitoring Plan, and Cultural Resource Study, Bureau of Land Management, California. 2003. - GIS Specialist responsible for creating a geospatial, FGDC-standard GIS database. GIS data from over 30 private and public agencies were integrated. Over 130 data layers were compiled, reviewed, corrected, and integrated to form one consolidated, easy-to-use database for planners, biologists, archaeologists, and other specialists within the Bureau of Land Management (BLM). A complete data dictionary, including complete FGDC standard metadata, was completed for the project. Also managed installation and training for all staff at three BLM offices. Following completion of the database, a biological monitoring plan and cultural resource document were prepared. This project won the Association of Environmental Professionals' 2002 "Outstanding Environmental Solution" award.

Western Riverside HCP, Castle and Cook. 2002. - Provided review of document, data, and the GIS modeling process used in the preparation of the Western Riverside MSHCP. Also provided GIS analysis, vegetation mapping and graphics for comparison with previous vegetation and corridor linkage information.

Coastal Rail Trail, City of San Diego, CA. 2002. - GIS Specialist/Planner in support of development of the second-half of the Coastal Rail Trail. The project is tasked with completing a bicycle/pedestrian multi-use trail from Del Mar south to the Santa Fe Depot. The project was later condensed, due to funding limitations to segments from Carmel Valley Road near Del Mar south to Gillman Drive. SANDAG, Caltrans, FHWA, City of San Diego, San Diego Bicycle Coalition, San Diego Mountain Bikers Association, Friends of Rose Park, Audubon Society, Native Plant Society, the University Community Planning Group, and the Council District Office were all key players involved with the project. An environmental assessment and 30% engineering were the products of Phase I of the project. Phase II will consist of Final engineering and Design, slated for 2006, once funding becomes available.

Soil Erosion Surveys, GIS/GPS Database Collection and Plan Development, Naval Air Station, Miramar, San Diego, CA. 2004. - GIS Specialist in support of creating a complete geospatial GIS database of soil/erosion/restoration areas for the undeveloped portions of NAS Miramar. After being devastated by the 2003 San Diego Wildfires, the Base was concerned with erosion, runoff and potential for restoration for the lands burned. The project included surveying 14,000ac. of soil, using hand-held PDAs equipped with maps and soil information for field crews. Teams used GPS/GIS technologies to record and map data collected. A complete Work Plan and Final Report were generated as part of this project.

GIS Database Development and Support, San Diego Unified School District, California. 2004. - Provided GIS support in creating a complete geospatial GIS database for ongoing analysis and Phase I environmental site assessments for 30 proposed school sites. Over 30 environmental and manmade constraint layers were incorporated. A complete historical survey of potential hazardous sites was also researched and mapped into the GIS. Over 120 exhibits were generated for ongoing environmental, Phase I, and public-outreach efforts.

County Trails Assessment, County of San Diego, CA. 2003. - Provided GIS

and technical writing support for the San Diego Trails Assessment assisting the County of San Diego (County) with preparation of a long-range strategy for non-motorized recreational trails. The effort included completion of a comprehensive trails system assessment. The County's existing, planned, and proposed trails were documented, along with types of trails (hiking, equestrian, and biking), user groups, and frequency of use. An evaluation was conducted to determine future trail demand, public attitudes and level of support, types of trails required, and design criteria. An opportunities and constraints analysis was conducted documenting existing physical and environmental constraints, including land uses, recreation, Multiple Species Conservation Program (MSCP) lands, sensitive ecosystems, and public lands. The environmental approach describing required National Environmental Policy Act and California Environmental Quality Act documentation was also included. Alternative trail systems were evaluated with regard to environmental, public demand, and financial conditions. All conditions were mapped with GIS.

Cal Energy Power Plant, California Energy Commission, California. 2003. - Served as GIS Specialist for preparation of an application for certification (AFC) for submittal to the California Energy Commission (CEC) for construction and operation of the Salton Sea Unit 6 (SSU6) geothermal plant power-generation facility in Imperial County, California. The SSU6 is a proposed, nominally rated, 175-megawatt (MW) merchant power plant. Ancillary facilities and three transmission line alternatives were analyzed. Over 120 GIS exhibits analyzing over a dozen technical disciplines were also created.

OTHER GIS ANALYSIS/MODELING/DATABASE DEVELOPMENT PROJECTS

Meadow Valley Generating Project EIS, **Southern Nevada** - GIS Specialist for 1,000 MW, gas-fired combined cycle power plant proposed in Southern Nevada. Generated GIS exhibits of impacts analysis.

GIS Specialist, CSS Monitoring Program, City of San Diego, CA - Provided GIS analysis, vegetation mapping and sensitive species location digitizing for the California gnatcatcher MSCP Reserve Habitat Monitoring project. Developed vegetation and sensitive species location graphics for each of nine study areas located throughout San Diego County. Supplied City of San Diego with updated sensitive species location data to use in updating the MSCP.

GIS Specialist, Otay Land Co. Proctor Valley Project, San Diego, CA - Provided GIS analysis and vegetation/Waters of the U.S. digitizing for the proposed Otay Land Co. project in Proctor Valley. It was a large residential development to construct 821 "urban units" on approximately 325 acres. The project area included large areas of sensitive habitat and supported several threatened or endangered species.

FLOOD MODELING PROJECTS

Federal Emergency Management Agency Post-Fire Floodplain Mapping, San Diego, Riverside, San Bernardino, Los Angeles, and Ventura Counties, California - GIS Specialist supporting floodplain assessment, database

generation of reaches affected, and mapping of approximately 770,000 acres of presidential declared disaster burn areas in Southern California. Emergency reaches were identified and tabulated. HEC-GEORAS hydraulic models were then generated and incorporated into GIS for 5- and 100-year flood zones. Data for over 5 counties were analyzed, field verified, H&H modeled, and mapped for upload onto the Federal Emergency Management Agency website in 3 weeks. Over 100 maps were generated in only 2 days.

Floodplain Management Study and Plan, Viejas Indian Reservation, California - GIS Specialist responsible for floodplain modeling, mapping, and drainage system assessment. The contract also required stormwater management support, reporting, and data presentation. Floodplain modeling included historical flood information, complete topographic survey, and computer simulations/models of studied flood classes, calibrating and verifying the hydrological model to historic floods, and establishing a design flood behavior. HEC-GEORAS hydraulic models were generated through GIS.

Technical Assistance Assessment of Disaster Related Infrastructure – Santa Clara & San Ildefonso Pueblos, FEMA - Performed GIS hydrologic modeling for Santa Clara and San Ildefonso Pueblos, located in Northern New Mexico, after the Cerro Grande Fire of 2000. ACOE's HEC-GeoHMS was integrated with ArcView GIS to delineate watersheds based on GPS point-locations. Stream networks were also determined using this program with 3-D Analyst. Utilized Spatial Analysis to determine percent slope and future potential for fire in areas that were burned. Digitized streams into project area determined from aerial surveys. Provided several graphics for each task.

Chollas Creek Wetlands Management Plan, San Diego County, California - GIS Specialist responsible for obtaining GIS data overlays, including data mapped for the MSCP study purpose and updated information. Worked with biologists to create a GIS database that included creek conditions, existing wetlands and sensitive biological resources, parcels and ownership, and planned development projects. With a HEC2 model created for this project and through intensive GIS modeling, sites along the creek needing wetlands management were identified. Also participated in development of presentation material for three community meetings using GIS/HEC-RAS three-dimensional models and information.

ROADWAY PROJECTS

State Route 56/Interstate 5 Interconnections, City of San Diego, California - Staff Biologist/Planner responsible for technical reports in environmental and preliminary engineering tasks relating to the "connectors" project for Interstate 5 and State Route 56. 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. These two key connectors are needed to handle increased travel demand and increased development in the vicinity. The project is highly publicized due to the fact that the proposed southbound Interstate 5 to eastbound State Route 56 connector would be a four-story "flyover" ramp adjacent to an environmentally sensitive lagoon and several residential communities.

Interim Improvements for the Interstate 5-State Route 56 Interconnections, City of San Diego, California - Staff Biologist/Planner and GIS Specialist for initial environmental clearance and preliminary engineering for the Interim Improvements relating to the interconnection project for Interstate 5 and State Route 56. Interim Improvements included road widening, restriping, retaining wall, additional drainage/bioswale installation, and replantings. This project was key to interim traffic congestion problems arising from the opening of State Route 56.

Sorrento Valley Road EIR, City of San Diego, California - GIS Task Manager for the equal evaluation of three distinct alternatives for a 3-mile segment of Sorrento Valley Road which is closed and in disrepair since 1994, while a new pump station and a major Caltrans intersection at I-5 was constructed. The project borders the Los Peñasquitos Lagoon, which is managed by State Parks and under the joint coastal jurisdiction of the City of San Diego and the State Coastal Commission. All CEQA issues were evaluated ad mapped in GIS with special emphasis on traffic and noise impacts as well as biological permitting and mitigation.

Mira Sorrento Place Road Extension, City of San Diego, California - Staff Biologist for the civil design and environmental compliance studies associated with this road extension. Principal issues for evaluation included soils and slope stability, surface water hydrology, construction impacts, and cultural resources. Also helped prepare land use analysis technical report.

EMERGENCY RESPONSE/EMERGENCY PLANNING PROJECTS

Federated States of Micronesia (FSM) Multi-State Hazard Mitigation Plan, Federal Emergency Management Agency (FEMA), Government of FSM/National Emergency Management Office (NEMO). 2005. - GIS Specialist/Planner for the multi-state FSM Hazard Mitigation Plan. As a recognized jurisdiction that is eligible under compact with the U.S. for FEMA funding, the FSM government hired URS to help prepare the Plan. The FSM is made up of four states, Pohnpei, Kosrae, Chuuk, and Yap covering over 1,000,000 miles of ocean including over 605 islands. Assisted with extensive public outreach efforts held throughout the islands during the project. Prepared Hazard Mitigation Plan including public meeting materials and preparation, working group participation and data collection, agency and interested-party site visits and interviews and more. Prepared hazard maps using GIS and data collected from FSM and websites. The Plan included a complete risk assessment, vulnerability analysis, and separate mitigation strategies for each State.

Multi-Jurisdictional Hazard Mitigation Plan, Federal Emergency Management Agency (FEMA), Office of Emergency Services (OES), County of San Diego, CA. 2004. - GIS Specialist and Planner for San Diego County's Multi-Jurisdictional Multi-Hazard Mitigation Plan. Plan preparation, GIS analysis and HAZUS-99/HAZUS-MH modeling, public outreach efforts, and individual jurisdiction support. The Plan (including a separate *"For Official Use Only"* attachment for manmade hazards) was over 750 pages, included production of

over 100 maps for 18 jurisdictions and the County, and covered 4,264 square miles. Risk assessment, vulnerability analysis, and mitigation strategies were generated for each jurisdiction. Participated in and prepared maps and materials for all working group meetings, encompassing public officials/staff, fire/police/emergency personnel, public/private organizations and citizens; over two dozen individual jurisdictional meetings, and all public meetings held over the two-year project life. Prepared hazard maps and performed loss estimation analysis for Risk Assessment. *This project won the Association of Environmental Professionals' 2004 "Outstanding Environmental Document" award.*

Viejas Band Hazard Mitigation Plan, Federal Emergency Management Agency (FEMA), State of California. 2005. - GIS Specialist and Planner in charge of planning and GIS-related efforts for developing the Viejas Band Multi-Hazard Mitigation Plan. Performed GIS analysis and HAZUS-99/HAZUS-MH modeling, participated in and prepared maps and materials for all working group meetings. The Plan included a complete risk assessment, vulnerability analysis, and mitigation strategy.

Twenty-seven (27) Single Jurisdiction Hazard Mitigation Plans, Federal Emergency Management Agency (FEMA)/Office of Emergency Services (OES), Individual Jurisdictions within County of Maricopa, AZ. 2004. - Provided peer review for the twenty-seven (27) separate single-jurisdictional DMA 2000 plans for the cities within Maricopa County, Arizona. GIS review included analysis of GIS HAZUS 99/HAZUS-MH modeling results. Reviewed compilation of results for risk analysis/loss estimation portions of document.

Concow Maidu of Mooretown Rancheria Hazard Mitigation Plan, Federal Emergency Management Agency (FEMA)/Office of Emergency Services (OES), State of California. 2005. - Provided peer review and assistance in development of the Hazard Mitigation Plan. GIS support included GIS HAZUS 99/HAZUS-MH modeling and risk assessment. Peer reviewed compilation of all results for risk assessment and mitigation portions of document preparation.

Statewide Hazard Mitigation Plan, Federal Emergency Management Agency (FEMA)/Office of Emergency Services (OES), State of Arizona. 2004. - Provided peer review for the State-wide Plan. GIS Peer review included GIS HAZUS 99/HAZUS-MH modeling results. Peer reviewed compilation of all results for risk analysis/loss estimation portions of document preparation.

Ventura County Hazard Mitigation Plan, Federal Emergency Management Agency (FEMA)/Office of Emergency Services (OES), State of California - Provided GIS support for the county-wide Plan. GIS support included hydrologic and GIS HAZUS 99/HAZUS-MH modeling.

Urban Area Security Initiative, City of San Diego/Federal Emergency Management Agency (FEMA). 2005. - Provided GIS support in the analysis and compilation of a wide-variety of complex, highly confidential source data for the completion of the Urban Area Security Initiative (UASI). This project included analysis of potential hazardous materials release/weapons of mass destruction analysis, including morbidity, mortality, and damage assessments.

California Firestorm 2003 Modeling/Mapping, Federal Emergency Management Agency (FEMA)/California Office of Emergency Services (OES), Los Angeles, San Bernardino, Ventura, Riverside, San Diego Counties; California - GIS Specialist in support of floodplain assessment, database generation of reaches affected, and mapping of approximately 770,000 acres of presidential declared disaster burn areas in Southern California. Emergency reaches were identified and tabulated. HEC-GEORAS hydraulic models were then generated and incorporated into GIS for 5- and 100-year flood zones. Data for over 5 counties were analyzed, field verified, H&H modeled, and mapped for upload onto the Federal Emergency Management Agency website in 3 weeks. Over 100 maps were generated in only 2 days.

Technical Assistance Assessment of Disaster Related Infrastructure – Santa Clara & San Ildefonso Pueblos, FEMA. 2002. - Performed GIS hydrologic modeling for Santa Clara and San Ildefonso Pueblos, located in Northern New Mexico, after the Cerro Grande Fire of 2000. ACOE's HEC-GeoHMS was integrated with ArcView GIS to delineate watersheds based on GPS point-locations. Stream networks were also determined using this program with 3-D Analyst. Utilized Spatial Analysis to determine percent slope and future potential for fire in areas that were burned. Digitized streams into project area determined from aerial surveys. Provided several graphics for each task.

Professional Associations

Association of Environmental Professionals, Member, (2000–Present)
Women's Environmental Council, Member, (2002 Present)
Wildlife Society Member, (2001 – Present)
California Geographic Information Association, Member, (2001-Present)
ESRI Regional Arc User Group, (2001-Present)
Desert Tortoise Council Member, (2002-Present)

Lech Naumovich

Botanist, Restoration Ecologist, GIS specialist

EDUCATION/TRAINING

2001 Master's Degree, School of Forestry and Environmental Studies, Yale University
1998 Bachelor's Degree, Biology, Chemistry, Philosophy, University of Wisconsin
1998 Student Conservation Association Associate, USFS, Kamas, UT
1998 Firefighter's Red Card, USFS
2002 Post graduate Fulbright Scholar, Agricultural University of Wroclaw, Poland
2007 CNPS Releve and Rapid Assessment Workshop, California Native Plant Society

PROFESSIONAL EXPERIENCE

2006-Present Director, Golden Hour Restoration Institute, Berkeley, CA
2006-Present Conservation Analyst, East Bay CNPS, Walnut Creek, CA
2006-Present Independent Biological Consultant
2005-2006 Biological Technician and Restoration Coordinator, USARC – Fort Hunter Liggett, CA
2003-2005 Biological Technician, Restoration Technician, BLM – Fort Ord, CA

Mr. Naumovich has 8 years of experience performing field-based surveys for plants, vegetation types, and habitat types. His projects are mostly centered in the Bay Area of California, but he has performed surveys throughout California, notably California deserts, Northern California, the Sierra Nevada, and the Central Coast. His primary expertise is in the field of botany and ecology surveys and then subsequent descriptions of properties and areas for biological conservation, development, and other related activities. Mr. Naumovich is well versed in the CDFG requirements for rare plant surveys and proper reporting methodology in CEQA and NEPA documents. Mr. Naumovich is familiar with laws and regulations pertaining to California's Endangered Species Act as well as the Federal ESA.

Mr. Naumovich has worked with a wide variety of personnel varying from consultants to agency employees to non-profits to land trusts and developers. He has many years experience on federal lands including USFS, BLM, and NPS. He is familiar with operating policies and procedures including JSA's and Hazard Analysis. Mr. Naumovich has experience and training in working in extreme environments for prolonged periods, including desert and alpine areas.

URS

Jessie Golding

Biologist

Overview

Ms. Golding is a biologist with experience in community ecology and aquatic biology. She has field experience in many different aquatic ecosystems, including the mangroves of Panama and the algae of the California coast. Ms. Golding is skilled at population surveys, seedling monitoring, California grassland species identification, and has extensive knowledge of California wildlife. She has been involved with a variety of ecological research projects through the University of California, Berkeley. In addition, she has worked with large conservation organizations like the San Diego Zoological Society.

Areas of Expertise

Ecology
Aquatic Biology

Years of Experience

With URS: <1 Year
With Other Firms: 2 Years

Education

BA/Integrative Biology/2007/University of California, Berkeley
BA/Environmental Earth Science/2007/University of California, Berkeley

Registration/Certification

HAZWOPER
CPR/First Aid

Project Specific Experience

Environmental Impact Analysis

Biologist, Northern California Winter Floods, Federal Emergency Management Agency (FEMA), Mendocino, Sonoma, Contra Costa, Santa Cruz Counties, CA, 2007, $NA: Conducted environmental site assessments, including characterization of habitat at project sites to determine suitability for federally listed species, and prepared impact analysis for projects funded by FEMA. Consulted informally with the U.S. Fish and Wildlife Service (USFWS).

Wetlands

Biological Research Technician, Mangrove Seedling Dynamics and Forest Disturbance Patterns in Panama, Smithsonian Tropical Research Institute, Colon, Panama, 2007, NA:
Monitored and identified mangrove seedlings to determine recruitment patterns in various habitats. Participated in mangrove surveys and population census. Provided technical support for mapping forest canopy gaps caused by lightening strikes. Assisted in canopy gap surveys to determine canopy re-growth rates and species composition.

Aquatic Biology

Biological Science Technician, The Effect of Physical Factors on *Pelvetiopsis limitata* Embryo Survival, Department of Integrative Biology, Berkeley, CA, 2007, NA:
Participated in design and implementation of field experiments to mimic the physical effects of climate change. Assisted with population census of common brown alga at Bodega Marine Reserve. Designed and implemented mollusk grazing experiments to determine the role of grazing on embryo mortality rate.

Biology

Biological Science Technician, Biodiversity Measurements on Multiple Scales in California Native Grassland, Department of Integrative Biology, Berkeley, CA, 2007, NA:
Conducted vegetation surveys and recorded species occurrences over different spatial scales in California native grasslands, analyzed soil nitrogen content using ion exchange resin beads. Assisted in application of experimental treatments.

Biological Science Technician, Rainforest Seedling Dynamics, Department of Integrative Biology, Berkeley, CA, 2007, NA:
Created digitized map coordinates from original data for use in study of rainforest seedling dynamics

Biological Laboratory Technician, French Polynesia Terrestrial Arthropods: a biodiversity survey and inventory, Department of Environmental Science and Policy Management, Berkeley, CA, 2005-2007, NA:
Conducted laboratory work including DNA extraction from arthropod specimens, PCR and gel electrophoresis. Analyzed computerized DNA sequence results

Wildlife Biology

Wildlife Emergency Care Center Volunteer, Project Wildlife, San Diego, CA, 2001-2002, NA:
Assisted with emergency care and handling of injured, sick or orphaned wildlife, primarily baby, fledgling, and adult birds as well as small mammals, reptiles and amphibians

Professional Societies/Affiliates
[Click **here** and type Professional Societies/Affiliates]

Awards
[Click **here** and type Year/Award Name/Awarded by]

Languages
Latin – translational and scientific

Specialized Training
[Click **here** and type Year/Training Course]

Security Clearance
[Click **here** and type Security Clearance Level]

Publications
[Click **here** and type "Article Name", Publication, Vol #, Month, Year]

Chronology
10/07 - Present: URS Corporation, Biologist, Oakland, CA

7/07 – 8/07: Smithsonian Tropical Research Institute, Biological Research Technician, Colon, Panama
1/07 – 9/07: University of California, Berkeley, Biological Research Technician, Berkeley, CA
9/05 – 5/07: University of California, Berkeley, Biological Laboratory Technician, Berkeley, CA
8/06 – 5/07: University of California, Berkeley, Student Technical Assistant, Berkeley, CA
6/04 – 8/04: San Diego Zoological Society, Visitor Assistance Officer, San Diego, CA
7/01 - 7/02: Project Wildlife, Emergency Care Center Volunteer, San Diego, CA
9/01 – 11/01: San Diego Zoological Society, Intern, San Diego, CA
3/00 – 6/02: San Diego Audubon Society, Volunteer, San Diego, CA

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URS

Miao Ling He

Biologist

Overview

Ms. He is a biologist with 7 years experience in environmental science and natural resource management. She is skilled in vegetation monitoring and mapping, plant identification, ecological restoration, invasive species management, and ecological research. Ms. He has conducted rare plant and vegetation community surveys in the San Francisco Bay Area and Sierra Nevada. She has also conducted fish, invertebrate, soil, water quality, and geomorphological surveys, created maps and conducted analyses with Geographic Information Systems (GIS), and performed statistical analyses with different statistical software. She worked with agencies, non-profit organizations, contractors, and volunteers to restore and enhance plant and wildlife habitats.

Areas of Expertise

Natural Resource Management
Plant Ecology
Plant Identification
Ecological Restoration and Monitoring
GIS

Years of Experience

With URS: 3 months
With Other Firms: 7 Years

Education

MS/Range Management/2007/University of California, Berkeley
BA/Geography & Mathematics/2000/San Francisco State University

Project Specific Experience

Natural Resource Management

Biologist, Napa-Sonoma Marshes Wildlife Area (NSMWA) Land Management Plan (LMP), Department of Fish and Game, 2007, $?K: Currently writing the property description and management overview, and environmental setting sections of the LMP for NSMWA. LMP compiles and summarized existing information on acquisition history, land use history, vegetation, wildlife and fish resources, and past and present restoration/enhancement projects in the NSMWA, identifies sensitive areas within the wildlife area, and provides management recommendations.

Stewardship Coordinator, Crissy Field Tidal Marsh and Dune Restoration Project, San Francisco, CA, Golden Gate National Recreation Area, 2003-2005, NA: Coordinated and led volunteer programs and habitat restoration projects. Coordinated and led rare plant and vegetation monitoring at Crissy Field. Conducted fish, soil, water quality, invertebrate, and geomorphological surveys. Provided GIS and GPS support to Crissy Field and other projects in the Presidio. Recorded field activities into the GGNRA Restoration Database, and utilized the database as a tool for information extraction and planning of future restoration activities. Trained and supervised Americorp interns and seasonal field staff. Performed ecological research based on conservation needs.

Biological Science Technician, Eucalyptus Understory Diversification Pilot Study, San Francisco, CA, Golden Gate National Recreation Area, 2001, $2K: Assisted in site preparation, treatment application, and re-vegetation for the study site.

Restoration & GIS Contractor, Environmental Assessment of Mountain Lake, San Francisco, CA, Golden Gate National Recreation Area, 2000, $2.5K: Surveyed and mapped Eucalyptus trees

and invasive plant species at Mountain Lake. Created map figures for the Environmental Assessment report.

Restoration & GIS Contractor, Fort Baker Eucalyptus Removal Project, Marin County, CA, Golden Gate National Recreation Area, 2000, $1.5K: Surveyed and mapped Eucalyptus trees at Fort Baker, and created GIS maps.

Restoration & GIS Contractor, Inspiration Point Serpentine Grassland Restoration Project, CA, Golden Gate National Recreation Area, 2000, $1.5K: Surveyed and mapped non-native trees at Inspiration Point., and created GIS maps for the project.

Environmental Compliance Projects

Biologist, I-680 Sunol Grade Southbound HOV Widening Project, Alameda and Santa Clara Counties, CA, Caltrans, 2007, $?K: Currently writing the Comprehensive Mitigation and Monitoring Plan for the Sunol Grade Southbound Project and preparing permit compliance documents such as compliance timeline and compliance tracking spreadsheets.

Biologist, Chevron Pipeline Maintenance Project, Richmond, CA, Chevron Pipe Line Company (CPLC), 2007, $62K: On behalf of CPLC, I coordinated and developed an off-site mitigation project with the Urban Creek Council (UCC) to compensate for impacts to riparian vegetation at a Chevron pipeline maintenance site. I also drafted the mitigation agreement.

Biologist, Geotechnical Investigation for the San Antonio Backup Pipeline (SABPL) Project, Alameda County, CA, San Francisco Public Utilities Commission, 2007, $?K: Conducted field review of the proposed geotechnical investigation sites and wrote the biological resources section of the environmental clearance for the SABPL Geotechnical Investigation. Conducted environmental monitoring during the geotechnical investigation.

Biologist, Uvas Creek Bridge Replacement Project, Santa Clara Counties, CA, Caltrans, 2007, $?K: Drafted the Nationwide Permit application for the Uvas Creek Bridge Replacement project.

Research Projects

Graduate Student Researcher, Yosemite Toad Project, Sierra and Stanislaus National Forests, University of California, Berkeley, 2005-2007, NA: Designed and implemented research on the effects of different sampling intensities on characterizing plant community metrics. Applied multivariate statistical techniques to analyze data and presented results in poster format. Plan and conduct field work, including vegetation sampling, plant identification, plant biomass and soil sample

collection, piezometer installation and measurement, and spatial data collection with GPS unit.

Graduate Student Researcher, Watershed project at the Sierra Foothill Research & Extension Center, University of California, Berkeley, 2006-2007, NA: Conducted vegetation surveys, collected soil and biomass data for a watershed scale project to evaluate the effects of different management practices (i.e. livestock grazing and prescribed burning) on the annual grassland/oak woodland plant community. Analyzed data using Generalized Linear Models (GLMs), and prepared a report.

Professional Societies/Affiliates

Society for Conservation Biology (SCB), Berkeley Chapter

Awards

2005/ Employee of the Month**,** Golden Gate National Recreation Area
2006/ Range Management Graduate Fellowship, University of California, Berkeley

Languages

Bilingual in Chinese and English

Publications

M. L. He, and B. Allen-Diaz. 2007. "Efficient Sampling Intensity For Mountain Meadows", Poster presented at the SER/ESA Joint 2007 Conference.

Ward, K.M., Ablog, M. and M. L. He. 2004. Monitoring and Adaptive Management of a Restored Marsh Subject to Periodic Tidal Closure. Talk presented at 2nd annual meeting of the California Estuarine Research Society. March 24, 2004.

Ward, K.M., Ablog, M. and M. L. He. 2003. Developing Biological Criteria for Mechanical Excavation of a Restored Marsh Subject to Periodic Tidal Closure. Poster presented at Esturine Research Federation Conference, September 2003, and 6th Biennial State of the Estuary Conference, October 22, 2003.

Chronology

09/07 - Present: URS Corporation, Biologist, Oakland, CA
08/05 – 08/07: University of California, Berkeley, Graduate Student Researcher, Berkeley, CA
06/03 – 8/01: Natural Park Service, Crissy Field Stewardship Coordinator, San Francisco, CA
03/01 – 06/03: National Park Service, Assistant Restoration Manager, San Francisco, CA
11/00 – 03/01: National Park Service, Biological Science Technician, San Francisco, CA

04/00 – 11/00: National Park Service/Golden Gate National Parks Conservancy, Restoration & GIS Contractor, San Francisco and Marin County, CA
02/00 – 08/00: National Park Service, Ecological Restoration Intern, San Francisco, CA

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Areas of Expertise	Biological Resources Protocol surveys for burrowing owls, big horn sheep, CA least tern and western snowy plover
Total Years of Experience URS Other Firms	5 >1 5
Education	B.S./2001/Earth Systems/CSU Monterey Bay
Registration/Certification	GIS/GPS certified 1999
Overview	Shelly Vogel is a biologist for URS in the San Diego office. She has participated in numerous field projects in CA, in addition to work in South Dakota, Australia and Greece. She has a strong background in fieldwork and is trained on various equipment/software programs to include: GIS/GPS, seafloor mapping, accupar, theodolite training, radio-telemetry training, trapping and handling wildlife.
Project Experience	**Large Mammal Tracking, Coachella Valley, CA (2007).** Worked as part of a team to monitor installed and temporary drinkers at the Coachella Canal. Recorded presence of target species (big horn sheep, mule deer and burro) to establish abundance and frequency of use. **Avian Research, Pt. Mugu, Imperial Valley and Catalina Island, CA (2007 & 2004). Tetra Tech EMI, Biologist (2007).** Participated in nest searches, monitoring of CA least tern and western snowy plover colonies, chick provisioning and predator control. **Wildlife Research Institute, Biologist (2007).** Conducted burrowing owl surveys to help establish a HCP for the Imperial Valley Irrigation District. Determined presence of burrows and burrowing owls within transect boundaries. **Smithsonian Institute & UC –Riverside, Field Assistant (2004).** Monitored resident populations of Orange-crowned Warblers to maintain population index data. Participated in nest searches, mistnetting and banding. Assisted in behavioral observations and canopy insect sampling procedures. **Reintroduction of Imperiled Species, Fort Pierre, South Dakota (2003).** Turner Endangered Species Fund, Biological Tech II: Collection and recording of biological data for the purpose of restoring and reintroducing compromised species. Fed quarantined/captive animals and maintained soft release pens and quarantine facilities. Performed population counts of prairie dogs to determine abundance and success rate of post-released animals. Data collection of fox track plate surveys, coyote scat line surveys, mark and recapture/small mammal trapping. Assisted in medical procedures and processing of statistical data for species population index. **Meso-mammal Research, Point Lobos, CA (2003).** California State Parks, Biological Tech I: Participated in a field project for the IMAP (Inventory Monitoring & Assessment Program) division of the California State Parks. Used scat identification and tomahawk traps to identify, bait and capture meso-mammals. Performed velocity readings for stream monitoring and macrofauna

samples were collected for assessment purposes.
Pinniped Research, Ano Nuevo & San Simeon, CA (2003 & 2000). University of Santa Cruz, Biological Tech II (2003). Examined physiological changes and success rate of elephant seal weaners. Performed live-trapping, weighing and tagging of elephant seal weaners.

CSU Monterey Bay, Quantitative Field Methods Intern (2000). Determined physiological and environmental correlations between departure dates of weaners in northern and southern locations of California. Collected and recorded population index data Ran comparative analysis of Northern/Southern elephant seal pups.

Sea Otter Research, Moss Landing, CA (2002). California Fish & Game, Biological Tech I: Maintained population census of resident sea otters . Contributed in focal observations and radio-telemetry tracking . Assisted in carcass retrieval and/or otters infected with parasitic disease.

Ecological Survey, Moss Landing, CA (2002). CSU Monterey Bay, Marine Science Intern: Worked as a team to identify and classify small mammals, birds and vegetation in an on-going investigation to monitor the health of coexisting species with industrial run off. Conducted point-counts and focal observations to record various taxa . Recorded and monitored data to catalog change in abundance or behavior.

Comparison of Vegetation Growth and Fire Sites, Seaside, CA (2000). CSU Monterey Bay, Quantitative Field Methods Intern: Examined biomass of vegetation in relation to soil and climate conditions. Measured abiotic variables at two comparative sites. Dried and weighed biomass of chaparral species from study locations.

Various Wetland Organisms, Moss Landing, CA (1999). Elkhorn Slough Foundation, Intern: Compared biotic and abiotic conditions to correlate distribution and abundance of a key indicator species and their food source. Measured abiotic variables. Sorted and identified excavated samples of invertebrate to establish distribution pattern.

CSU Monterey Bay, Quantitative Field Methods Intern. Investigated diversity and preferred habitat of bivalves. Ran transects along southern and northern embankments of Elkhorn Slough . Conducted random sampling, systematic sampling and stratified random sampling.

Habitat Assessment, Big Sur, CA (1999). California State Parks, Biological Tech I: Prepared information to assist park officials with non-native plant eradication and its effect on migrating monarch butterflies. GIS/GPS mapping of vegetation and colonization of monarch butterflies. Used accupar in eucalyptus groves to establish light intensity under tree canopy.

Professional Associations

Wildlife Conservation Society

MICHAEL K. WOOD

Senior Biologist, Project Coordinator

EDUCATION/TRAINING

1989	Master's Degree, Ecology and Systematic Biology San Francisco State University.
1981	Bachelor's Degree, Ornamental Horticulture California Polytechnic State University, San Luis Obispo.
1990	Basic Wetland Delineation Training, Wetland Training Institute
1990	OSHA Hazardous Materials Worker 40-hour training
1994	Advanced Wetland Delineation, Wetland Training Institute

PROFESSIONAL EXPERIENCE

2001-present	Independent Biological Consultant, Walnut Creek.
1998-2001	Sycamore Associates LLC. Walnut Creek. Owner/Principal.
1992-1998	Independent Biological Consultant, San Francisco.
1989-1992	Ogden Environmental and Energy Services, San Diego and San Francisco.
1987-1989	Independent Biological Consultant.
1986-1989	Research Assistant, Instructor. San Francisco State University.

Mr. Wood has over 18 years of experience performing field-intensive evaluations of wetland and upland habitats throughout California. His primary expertise lies in the fields of botany, wetland ecology and habitat restoration, performing and supervising botanical and wildlife surveys and wetland delineations, conducting impact assessments, developing, implementing and monitoring habitat restoration programs, and resource conservation planning.

Mr. Wood brings to his projects a wide range of expertise in vegetation ecology, soils and geology, fire ecology, wetland ecology, environmental policy and permitting, as well as experience conducting pre-Phase 1 assessments of hazardous sites. He has successfully assisted residential and commercial developers, federal, state and local governmental agencies, planners, and non-profit organizations in understanding and managing the constraints and opportunities posed by regulated biological resources. His strong technical background enables him to be an effective member within interdisciplinary teams.

Mr. Wood was a co-owner of a dynamic environmental consulting company in the East Bay. As a principal, Mr. Wood participated in all aspects of day-to-day business operations, including client relations, marketing, technical oversight, quality control, agency negotiation, hiring and training, and supervising a staff of 20 employees and numerous subconsultants.

Mr. Wood has worked throughout California, Oregon, Hawaii, and Guam. He is also familiar with the vegetation and wildlife of western Europe, East Africa, Australia, Mexico, Argentina, and the Malaysian peninsula. He is fluent in German and has a working knowledge of Spanish. Mr. Wood is the developer of CalBiota, the first comprehensive electronic database of California's plants, wildlife, insects, lichens, and fungi developed specifically for use by biological consultants.

Mr. Wood regularly teams with associates providing specialized expertise in environmental permitting and regulatory compliance, mitigation, CEQA/NEPA, endangered and other special-status wildlife species, anadromous fish and aquatic resources, entomology, construction and long-term monitoring, and arboriculture.

Areas of Expertise

NEPA and CEQA Compliance
Environmental and Land Use Planning
Regional and International Planning
Visual Resources
Endangered Species Compliance/Biological Conservation
Oceanographic Sampling
Military Planning

Years of Experience

	4
URS	<1
Other Firms	3+

Education

MA/2004/Urban Planning/University of California, Los Angeles
BA/1998/Environmental Studies/University of California, Santa Barbara
BA/1998/Philosophy/University of California, Santa Barbara

Overview

Seth Hopkins has 4 years of environmental planning experience. He is experienced in the preparation of CEQA compliant documents including AFC, Initial Studies, Negative Declarations, and Environmental Impact Reports, as well as resource agency and entitlement permit preparation. Before joining URS Corporation, he was a Military Planner at Onyx Group, Inc., San Diego and a Marine Science Educator at Hawaii Pacific University. Mr. Hopkins holds Bachelors Degrees in Environmental Studies and Philosphy, and a Masters in Urban Planning with an emphasis on Regional and International Development.

Project Experience

Land Use and Planning Documentation

Bethel 1 Hybrid Power Station Initial Study, El Centro, CA (2007)
Completed an initial study to identify potential environmental impacts and/or fatal flaws, and determine the necessity of an Environmental Impact Report for the Bethel 1 Hybrid Power Facility. This facility will be a hybrid solar/ biomass power facility of 49.5MW in phase one, increasing to 99MW in phase two.

Coastal Rail Trail Initial Study, City of San Diego, CA (2007-present)
Currently working on an initial study that will identify potential environmental impacts and/or fatal flaws, and determine the necessity of an Environmental Impact Report for the Coastal Rail Trail. The Coastal Rail Trail is a series of bike paths connecting the coastal cities of Oceanside, Carlsbad, Encinitas, Solana Beach and San Diego.

Larkspur 3 Energy Facility AFC Amendment, San Diego, CA (2007).
Completed several resource area sections for the Amendment, including Land Use, Agriculture, and Socioeconomics. The project includes an Amendment to the 2001 Application for Certification to add a General Electric (GE) LM6000-PC Sprint® natural gas combustion turbine generator (CTG) to the existing Larkspur Energy Facility which currently contains two CTG units. The nominal power plant rating will be increased from 94MW to 141MW.

Consultation on Property Acquisition and Development, Rancho Mirage, CA (2007)
Investigated and reported on the environmental constraints facing the development of several parcels of commercial land within the city of Rancho Mirage, CA.

Pursued a development agreement with the economic development and planning departments of the City of Rancho Mirage for lands within a specific area targeted for mixed use development.

Environmental Studies

City of San Diego Flood Mitigation Plan, San Diego, CA (2007).
Assisted in the preparation of the City of San Diego Flood Mitigation Plan (FMP). The FMP focuses on identifying the flood hazards and risk assessment including a vulnerability analysis, capabilities assessment, and mitigation plan. The plan targets repetitive loss properties, critical facilities, and infrastructure throughout the City of San Diego. The plan complies with all FEMA regulations and guidelines and increases the likelihood of future grant funding for flood mitigation projects from FEMA.

Bethel 1 Hybrid Power Station Alternate Fuel Study, El Centro, CA (2007)
Investigated and reported on the available quantities, locations, and properties of various forms of biomass fuel throughout Riverside, Imperial and San Diego counties. Determined biomass fuel properties and suitability for energy production.

Biological Surveys

Bethel 1 Hybrid Power Station Biological Surveys, El Centro, CA (2007)
Investigated and reported on the presence of endangered or threatened species/ habitats within the project area that could be affected by project development. Survey focused on the Burrowing Owl, a California Species of Special Concern.

Coastal Rail Trail Biological Surveys, City of San Diego, CA (2007-present)
Conducted Least Bell's Vireo, presence/absence and monitoring surveys. Assisted with presence/absence surveys for Coastal California Gnatcatcher. Assisted Wetland delineation and vegetation mapping efforts.

US Highway 101 and SR46 East Interchange Project Visual Impact Assessment, City of Paso Robles and Caltrans, CA (2007)
Conducted a Visual Impact Assessment to identify any impacts to the visual environment resulting from the proposed widening of the US 101 Highway, the additional lanes or on-off ramp termini.

Interstate 805 Corridor Project Biological Surveys, City of San Diego, CA (2007)

Conducted Least Bell's Vireo, presence/absence and monitoring surveys. Assisted with presence/absence surveys for Coastal California Gnatcatcher.

Arroyo toad surveys(2007)
Assisted monitoring and presence/absence surveys in Gregory Canyon.

Least Bell's Vireo surveys
Experience conducting presence/absence and monitoring surveys for least Bell's vireos in San Diego County, CA.

Coastal California Gnatcatcher surveys Assisted with presence/absence surveys throughout San Diego County.

Military Planning

Naval Base Ventura County, Encroachment Action Plan, Ventura, CA (2006)
Conducted various analyses to identify potential future sources of encroachment facing the operations of NBVC.

Naval Base Ventura County, Activity Overview Plan, Ventura, CA (2005)
Completed a master planning document for NBVC that planned for present and future activities and operations for NBVC Point Mugu and Port Hueneme. Included plans to integrate civilian activities in Port Hueneme.

Marine Science

Hawaii Pacific University, Marine Science Lab Field Assistant, (1999-2001)
Assisted marine science lab activities and exercises. Taught oceanographic sampling techniques, small boat handling and navigation. Collected biological samples for use in lab exercises. Maintained scientific equipment and research vessels.

Hazardous Materials Handling

High Technology Solutions, Inc., Kaneohe, HI, (2001)
Managed hazardous materials and supervised use of HAZMAT by military personnel at the Kaneohe Bay Marin Corps Base, HI.

Professional Societies

American Planning Association

Professional History

URS Corporation, Environmental Specialist, San Diego, California, 2007-Present.

Onyx Group, Military Planner, San Diego, California, 2004-2006.

No Borders/ Sin Fronteras, International Economic Development/ Poverty Abatement Strategist, Los Angeles, California, 2003-2004.

High Technology Solutions, HAZMAT Manager, 2001

Hawaii Pacific University, Marine Science Field Lab Assistant, Kaneohe Bay, Hawaii, 1999-2001.

Countries and Territories Worked In

United States, Mexico, and Italy.

Language Proficiency

English, Spanish

Citizenship

United States

TECHNICAL AREA: BIOLOGICAL RESOURCES

Data Adequacy Request 2: Please provide a list of contacts for habitat compensation and management.

Response: Some ongoing discussion with Daniel Steward at the BLM El Centro Office (760-337-4400) starting in May, 2008 regarding management for the flat-tailed horned lizard has occurred. It was suggested that a flat-tailed horned lizard monitoring program be implemented for this species. The protocol for this program is outlined in the document titled *Robust Pradel Mark-Recapture Protocol for Monitoring Flat-tailed Horned Lizards on Sentinel Plots* authored by Tyler Grant at the USFWS. Monetary compensation for flat-tailed horned lizard habitat, according to the BLM, will likely be calculated at a 1:1 ratio.

TECHNICAL AREA: BIOLOGICAL RESOURCES

Data Adequacy Request 3: Please provide a discussion of the educational programs to be used to enhance employee awareness during construction and operation.

Response: All staff working onsite will be required to participate in a training program to help them recognize and avoid potential sensitive biological resources. All construction and operation workers will learn about what to do if they encounter a sensitive resource and potential penalties for unauthorized disturbance of sensitive species or habitats. The training program will be developed by a qualified biologist as the Project moves through regulatory review.

Completion and implementation of a Worker Environmental Awareness Program (WEAP) will likely be a condition of certification. The WEAP will be implemented by a qualified biologist and include protective measures such as speed limits on site, the prohibition of guns and dogs on site, directions on covering excavations at night, clean up of food-related trash and the storage of herbicides.

TECHNICAL AREA: BIOLOGICAL RESOURCES

Data Adequacy Request 4: Please provide any preliminary correspondence between the applicant and state and federal agencies.

Response: Correspondence between URS and representatives from the CEC, BLM, USFWS, RWCB, CDFG and USACE is attached (see Attachment BIO-2).

Attachment BIO-2

Patrick Mock /SanDiego/URSCorp
09/25/2008 10:36 AM

To robert.r.smith@usace.army.mil, lori.minares@usace.army.mil
cc Corinne Lytle/SanDiego/URSCorp@URSCorp, "Joy Nishida" <JNishida@energy.state.ca.us>
bcc
Subject Fw: SES Solar Two: DA needs for Biological Resources

Mr. Smith and Ms. Minares:

Joy Nishida (see email below) requested that I contact the USACE regarding potential permit requirements for the SES Solar Two Power Project located west of El Centro, north of Interstate 8. In the AFC document prepared for the CEC review, URS concluded that that the flood flow channels were potential Waters of the State, but not federal jurisdictional waters due to a lack of connection to a navigable waters. A figure from the AFC document is attached and the relevant text is provided below.

Please provide direction as to whether a USACE regulatory process may be required.

The AFC document is at the following website:
http://www.energy.ca.gov/sitingcases/solartwo/documents/applicant/afc/index.php

Please reply with any questions or additional information that you may require.

Jurisdictional Delineation Results

A number of well-defined washes cross the Project site and off-site transmission line. Several of these washes were created by runoff from off-site flows that are directed by culverts under I-8. Other smaller washes convey on-site runoff and eventually connect to the larger washes. Several areas of the site, including much of the northeastern corner, exhibit sheet-flow conditions in areas where well-defined natural channels do not occur. The majority of the runoff crossing the site flows from south and west, eventually reaching the railroad tracks along the northern Project boundary. Washes that reach the railroad tracks then flow under existing trestles or follow along the railroad berm towards the east. The majority of the larger washes on-site have been degraded by extensive ORV usage.

None of the washes that occur on-site or along the off-site transmission line connect to USACE-defined navigable waters. Therefore, none of the washes associated with the Project would be considered under federal jurisdiction. Several washes do, however, display defined bed and banks and may be considered Waters of the State under Section 1600 of the California Fish and Game Code. Because most of the public land on which the Project site occurs is administered by the BLM, it is at BLM's discretion as to whether or not a 1602 agreement would be required for this Project. Any state jurisdictional washes that occur within the privately owned parcels on-site would require 1602 agreement before any disturbance. A map illustrating the potential Waters of the State within the Project boundary and along the off-site transmission line and water line can be found on Figure 3, Potential Waters of the State.

Figure 3 - Potential Waters of the State.pdf

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Principal Scientist
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----- Forwarded by Patrick Mock/SanDiego/URSCorp on 09/25/2008 09:46 AM -----

"Joy Nishida" <JNishida@energy.state.ca.us>
09/25/2008 09:11 AM

To <Patrick_Mock@URSCorp.com>
cc
Subject Fwd: Fw: SES Solar Two: DA needs for Biological Resources

Pat,

As the biologist assigned to this project, Rick York directed me to answer your questions. The reason to contact the agencies is to discuss what the project is and what the possible impacts are. From this information, the agencies can give you an idea of what permits may be required. The Energy Commission requires contact with various agencies for data adequacy, even if you believe these agencies may not have jurisdiction over any aspect of the Project.

I don't have a contact for RWQCB, but for the USACE, you'll need to contact Lori Minares (760) 602-4832. She is somewhat familiar with the project and despite what you may believe regarding the jurisdictionality of the ephemeral washes, the AFC stated that the waters from the site drain to the Salton Sea, which is under Corps jurisdiction. You'll need to discuss the possibility of having to do a wetland delineation with the Corps.

The CDFG contact is Craig Weightman (760) 200-9158. If the Corps doesn't take jurisdiction of the ephemeral washes on the Project site, then it is under the jurisdiction of the State. According to Craig, even though the Project is on BLM land, you still may be required to get a Streambed Alteration Agreement with CDFG. You'll need to give these agencies a call and provide the Energy Commission a summary of what was discussed, who was contacted, and when this discussion took place. The agencies can get a copy of the AFC by contacting our Project Manager, Christopher Meyer.

I hope this answers your questions.

Joy

Joy Nishida
California Energy Commission
Siting, Transmission, and Environmental Protection Division
Biological Resources Unit
1516 Ninth Street, MS 40
Sacramento, CA 95814-5512

(916) 654-3947
JNishida@energy.state.ca.us

----- Message from "Rick York" <Ryork@energy.state.ca.us> on Thu, 25 Sep 2008 08:19:44 -0700 -----

To: "Joy Nishida" <JNishida@energy.state.ca.us>

Subject: Fwd: Fw: SES Solar Two: DA needs for Biological Resources

I'm going to ask that you answer his questions. Thanks. Rick

>>> <Patrick_Mock@URSCorp.com> 9/24/2008 6:42 PM >>>

Rick:

Can you please provide us direction as to what type of correspondance you need from CDFG, ACOE and RWQCB regarding the Solar II AFC?

Do you want us to send the AFC document to each agency? Doesn't the CEC coordinate directly with state agencies as part of the AFC process?
There are no ACOE jurisdictional waters associated with the Solar II site. Do we still get ACOE involved?

Please reply ASAP, as we are trying to close out outstanding CEC Data Requests.

Thank you,

Pat

Patrick J. Mock, PhD, CSE, CWB®
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----- Forwarded by Patrick Mock/SanDiego/URSCorp on 09/24/2008 06:31 PM -----

Patrick Mock /SanDiego/URSCorp
09/25/2008 11:20 AM

To cweightman@dfg.ca.gov
cc Corinne Lytle/SanDiego/URSCorp@URSCorp, "Joy Nishida" <JNishida@energy.state.ca.us>
bcc
Subject Fw: SES Solar Two: DA needs for Biological Resources

Figure 3 - Potential Waters of the State.pdf

Mr. Weightman:

Joy Nishida (see email below) requested that I contact the CDFG regarding potential permit requirements for the SES Solar Two Power Project located west of El Centro, north of Interstate 8. In the AFC document prepared for the CEC review, URS concluded that that the flood flow channels were potential Waters of the State, but not federal jurisdictional waters due to a lack of connection to a navigable waters. A figure from the AFC document is attached.

Please provide a list of what CDFG permit processes may be required.

The AFC document is at the following website:
http://www.energy.ca.gov/sitingcases/solartwo/documents/applicant/afc/index.php

Section 5.6 is the Biological Resources assessment.

Please reply with any questions or additional information that you may require.

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----- Forwarded by Patrick Mock/SanDiego/URSCorp on 09/25/2008 11:06 AM -----

"Joy Nishida" <JNishida@energy.state.ca.us>
09/25/2008 09:11 AM

To <Patrick_Mock@URSCorp.com>
cc
Subject Fwd: Fw: SES Solar Two: DA needs for Biological Resources

Pat,

As the biologist assigned to this project, Rick York directed me to answer your questions. The reason to contact the agencies is to discuss what the project is and what the possible impacts are. From this information, the agencies can give you an idea of what permits may be required. The Energy Commission requires contact with various agencies for data adequacy, even if you believe these agencies may not have jurisdiction over any aspect of the Project.

I don't have a contact for RWQCB, but for the USACE, you'll need to contact Lori Minares (760) 602-4832. She is somewhat familiar with the project and despite what you may believe regarding the jurisdictionality of the ephemeral washes, the AFC stated that the waters from the site drain to the Salton Sea, which is under Corps jurisdiction. You'll need to discuss the possibility of having to do a wetland delineation with the Corps.

The CDFG contact is Craig Weightman (760) 200-9158. If the Corps doesn't take jurisdiction of the ephemeral washes on the Project site, then it is under the jurisdiction of the State. According to Craig, even though the Project is on BLM land, you still may be required to get a Streambed Alteration Agreement with CDFG. You'll need to give these agencies a call and provide the Energy Commission a summary of what was discussed, who was contacted, and when this discussion took place. The agencies can get a copy of the AFC by contacting our Project Manager, Christopher Meyer.

I hope this answers your questions.

Joy

Joy Nishida
California Energy Commission
Siting, Transmission, and Environmental Protection Division
Biological Resources Unit
1516 Ninth Street, MS 40
Sacramento, CA 95814-5512

(916) 654-3947
JNishida@energy.state.ca.us

----- Message from "Rick York" <Ryork@energy.state.ca.us> on Thu, 25 Sep 2008 08:19:44 -0700 -----

To: "Joy Nishida" <JNishida@energy.state.ca.us>

Subject: Fwd: Fw: SES Solar Two: DA needs for Biological Resources

I'm going to ask that you answer his questions. Thanks. Rick

>>> <Patrick_Mock@URSCorp.com> 9/24/2008 6:42 PM >>>

Rick:

Can you please provide us direction as to what type of correspondance you need from CDFG, ACOE and RWQCB regarding the Solar II AFC?

Do you want us to send the AFC document to each agency? Doesn't the CEC coordinate directly with state agencies as part of the AFC process?

There are no ACOE jurisdictional waters associated with the Solar II site. Do we still get ACOE involved?

Please reply ASAP, as we are trying to close out outstanding CEC Data Requests.

Thank you,

Pat

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----- Forwarded by Patrick Mock/SanDiego/URSCorp on 09/24/2008 06:31 PM -----

Corinne Lytle/SanDiego/URSCorp

09/23/2008 09:25 PM

To Angela Leiba/SanDiego/URSCorp@URSCorp

cc Patrick Mock/SanDiego/URSCorp@URSCORP

Subject Re: Fw: SES Solar Two: DA needs for Biological Resources

Hi Pat,

Where are we on this? Is it something that can be completed and have the response finalized tomorrow?

Thanks,

Corinne Lytle
Environmental/Visual Specialist
URS Corporation
1615 Murray Canyon Road
Suite 1000
San Diego, CA 92108
www.urscorp.com
tel: 619.294.9400 ext. 1176
direct: 619.243.2876

Patrick Mock /SanDiego/URSCorp
09/25/2008 11:15 AM

To jcarmona@waterboards.ca.gov
cc Corinne Lytle/SanDiego/URSCorp@URSCorp, "Joy Nishida" <JNishida@energy.state.ca.us>
bcc
Subject Fw: SES Solar Two: DA needs for Biological Resources

Figure 3 - Potential Waters of the State.pdf

Mr. Carmona:

Joy Nishida (see email below) requested that I contact the RWQCB regarding potential permit requirements for the SES Solar Two Power Project located west of El Centro, north of Interstate 8. In the AFC document prepared for the CEC review, URS concluded that that the flood flow channels were potential Waters of the State, but not federal jurisdictional waters due to a lack of connection to a navigable waters. A figure from the AFC document is attached.

Please provide a list of what RWQCB permit processes may be required.

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http://www.energy.ca.gov/sitingcases/solartwo/documents/applicant/afc/index.php

Please reply with any questions or additional information that you may require.

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"Joy Nishida" <JNishida@energy.state.ca.us>
09/25/2008 09:11 AM

To <Patrick_Mock@URSCorp.com>
cc
Subject Fwd: Fw: SES Solar Two: DA needs for Biological Resources

Pat,

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I hope this answers your questions.

Joy

Joy Nishida
California Energy Commission
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1516 Ninth Street, MS 40
Sacramento, CA 95814-5512

(916) 654-3947
JNishida@energy.state.ca.us

----- Message from "Rick York" <Ryork@energy.state.ca.us> on Thu, 25 Sep 2008 08:19:44 -0700 -----

To: "Joy Nishida" <JNishida@energy.state.ca.us>

Subject: Fwd: Fw: SES Solar Two: DA needs for Biological Resources

I'm going to ask that you answer his questions. Thanks. Rick

>>> <Patrick_Mock@URSCorp.com> 9/24/2008 6:42 PM >>>

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Thank you,

Pat

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Corinne Lytle/SanDiego/URSCorp

09/23/2008 09:25 PM

To Angela Leiba/SanDiego/URSCorp@URSCorp

cc Patrick Mock/SanDiego/URSCorp@URSCORP

Subject Re: Fw: SES Solar Two: DA needs for Biological Resources

Hi Pat,

Where are we on this? Is it something that can be completed and have the response finalized tomorrow?

Thanks,

Corinne Lytle
Environmental/Visual Specialist
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direct: 619.243.2876
fax:619.293.7920
corinne_lytle@urscorp.com

URS

Patrick Mock/SanDiego/URSCorp
05/14/2008 07:13 PM

To Daniel_Steward@ca.blm.gov
cc Larry_LaPre@ca.blm.gov
bcc
Subject Fw: Memo RE: Solar Two Biology Survey Protocols

your server rejected the previous file as being too large. I reduced the size of the file for you.

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

-----Forwarded by Patrick Mock/SanDiego/URSCorp on 05/14/2008 07:11PM -----

To: Daniel_Steward@ca.blm.gov, "Rick York" <Ryork@energy.state.ca.us>
From: Patrick Mock/SanDiego/URSCorp
Date: 05/14/2008 04:14PM
cc: Larry_LaPre@ca.blm.gov, "gcheniae" <gcheniae@cox.net>, Angela_Leiba@URSCorp.com, Douglas Hahn/Denver/URSCorp@URSCorp, Erika Alfaro/SanDiego/URSCorp@URSCorp, Kevin Harper <marshallharper@cox.net>
Subject: Memo RE: Solar Two Biology Survey Protocols

Please see attached file.

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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Memorandum Bio Protocol 5-14-08 2.pdf

Patrick Mock/SanDiego/URSCorp
05/14/2008 04:14 PM

To Daniel_Steward@ca.blm.gov, "Rick York" <Ryork@energy.state.ca.us>
cc Larry_LaPre@ca.blm.gov, "gcheniae" <gcheniae@c
Angela_Leiba@URSCorp.com, Douglas Hahn/Denver/URSCorp@URSCorp, Erika
bcc
Subject Memo RE: Solar Two Biology Survey Protocols

Please see attached file.

Patrick J. Mock, Ph.D.
Senior Project Manager
Senior Biologist
URS Corporation
1615 Murray Canyon Road, Suite 1000
San Diego, CA 92108
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Memorandum Bio Protocol 5-14-08.pdf

Patrick Mock/SanDiego/URSCorp
05/07/2008 10:52 AM

To Daniel_Steward@ca.blm.gov
cc Angela_Leiba@URSCorp.com, <gcheniae@cox.net>
Douglas Hahn/Denver/URSCorp@URSCorp
bcc
Subject Migratory Birds Cumulative Impact Assessment on S
Solar 2

Daniel:

Per our phone conversation today, you agreed to contact FWS to informally consult regarding ESA species and request a concurrence letter that no listed species would be adversely affected by the proposed action.

You will also request from the Service a clarification as to the expected level of effort (number of field days, transects, etc) that would be wanted by the FWS should we implement a quantitative bird survey protocol (line transect method) to estimate breeding bird abundance on the Solar II site.

SES is concerned that an overly intense effort is not necessary given the lack of any regulatory mandate for this issue. Currently we are assessing this issue in a more qualitative way using our impressions of relative abundance documented during our field efforts at the site. We need to resolve the issue soon (by next week!), so we have the time in May & June to conduct the transects, should they be required.

I will follow up with the figure regarding placement of the FTHL monitoring plots for you and Todd to review and comment on.

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
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Patrick Mock/SanDiego/URSCorp
03/06/2008 11:35 AM

To Daniel_Steward@ca.blm.gov
cc Amy_Gramlich@URSCorp.com, Angela_Leiba@URSCorp.com, Cheryl_Rustin@URSCorp.com, "gcheniae"
bcc
Subject Re: Migratory Birds on Sterling Solar 2

I have a 2:30 call scheduled on the 10th and will be on the road on the 13th, but can take a call on my cell phone so long as I have cell coverage at that time.

In the mean time I have asked my staff biologist to categorize each species detected thus far as to whether it is considered to be breeding or not and estimate their relative abundance (abundant, common, uncommon, rare). I have also asked that our current field workers (rare plant surveyers) continue to document any species they detect. Presumably we will detect a few more species this year to add to our list.

Pat

Patrick J. Mock, Ph.D.
Senior Project Manager
Senior Biologist
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1615 Murray Canyon Road, Suite 1000
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Daniel_Steward@ca.blm.gov

Daniel_Steward@ca.blm.gov
03/06/2008 09:43 AM

To Peggy_Bartels@fws.gov
cc Amy_Gramlich@URSCorp.com, Angela_Leiba@URSCorp.com, Cheryl_Rustin@URSCorp.com, "gcheniae" <gcheniae@cox.net>, Lynda_Kastoll@ca.blm.gov, Patrick_Mock@URSCorp.com
Subject Re: Migratory Birds on Sterling Solar 2

Peggy and Pat,

I am free on the afternoon of the 10th and anytime on the 13th.

Daniel Steward, Resources Branch Chief
Bureau of Land Management, El Centro Field Office

1661 South 4th Street
El Centro, CA 92243
Phone: (760) 337-4424
Cell: (760)791-5602
Fax: (760) 337-4490

Peggy_Bartels@fws
.gov

03/05/2008 07:46
AM

To
Patrick_Mock@URSCorp.com
cc
Amy_Gramlich@URSCorp.com,
Angela_Leiba@URSCorp.com,
Cheryl_Rustin@URSCorp.com,
Daniel_Steward@ca.blm.gov,
"gcheniae" <gcheniae@cox.net>,
Lynda_Kastoll@ca.blm.gov,
Patrick_Mock@URSCorp.com
Subject
Re: Migratory Birds on Sterling
Solar 2

Hello Pat,

Why don't we have a conference call sometime in the upcoming weeks about the survey protocols that you are conducting? That will create a situation in which you could understand our concerns on this topic. I would not expect our concerns to alter your current protocols or studies, but I would like to determine if certain basic calculations are possible for migratory bird impacts based on the protocols that you have been conducting.

I am available this week beginning this afternoon and next week except for the 12th. Please contact me at your earliest convenience.

Thanks so very much.
Peggy Bartels
Section 7/10 Coordinator
Wildlife Biologist MS
6010 Hidden Valley Road
Carlsbad, California 92011
760.431.9440 Ext. 310 (o)
760.431.5901 (f)

Patrick_Mock@
URSCorp.com

To

03/04/2008 Daniel_Steward@ca.blm.gov
05:46 PM

cc

Patrick_Mock@URSCorp.com, Peggy_Bartels@fws.gov,
"gcheniae" <gcheniae@cox.net>,
Lynda_Kastoll@ca.blm.gov, Angela_Leiba@URSCorp.com,
Cheryl_Rustin@URSCorp.com, Amy_Gramlich@URSCorp.com

Subject

Re: Migratory Birds on Sterling Solar 2

Daniel:

I am not sure what you mean by "protocols for the biological monitoring studies". Please clairify.

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We are interested in finding out the specifics of FWS' concerns so that we can address them adequately to meet any concerns of FWS, BLM, and CEC. The Solar Two site is located outside the Desert Management Areas, hence why SES selected this site in order to avoid conflicts with the DMA plan.

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

-----Daniel_Steward@ca.blm.gov wrote: -----

To: Patrick_Mock@URSCorp.com
From: Daniel_Steward@ca.blm.gov
Date: 03/04/2008 04:44PM
cc: Peggy_Bartels@fws.gov, "gcheniae" <gcheniae@cox.net>, Lynda_Kastoll@ca.blm.gov
Subject: Migratory Birds on Sterling Solar 2

Patrick,

I recently spoke with Peggy Bartels with the Carlsbad FWS office about solar projects and migratory birds. She has informed me that the USFWS is becoming genuinly concerned about cumulative impacts of these numerous large scale solar projects on Migratory Birds. The service will possibly be comming out with some guidelines in the near future, but this project is farther along than most as far as biological studies go. We need to discuss with Peggy what we can do to best address migatory birds on the project area. Could you send us your protocols for the biological monitoring studies the project area.

Daniel Steward, Resources Branch Chief
Bureau of Land Management, El Centro Field Office
1661 South 4th Street
El Centro, CA 92243
Phone: (760) 337-4424
Cell: (760)791-5602
Fax: (760) 337-4490

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(See attached file: Solar Two Bird List and survey dates.doc)

Solar Two Bird List and survey dates.doc

URS

Patrick Mock/SanDiego/URSCorp
03/04/2008 05:46 PM

To Daniel_Steward@ca.blm.gov
cc Patrick_Mock@URSCorp.com, Peggy_Bartels@fws. "gcheniae" <gcheniae@cox.net>, Lynda_Kastoll@ca.blm.gov, Angela
bcc
Subject Re: Migratory Birds on Sterling Solar 2

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Solar Two Bird List and survey dates.doc

Patrick Mock/SanDiego/URSCorp
04/18/2007 10:52 AM

To Daniel_Steward@ca.blm.gov
cc Cheryl Delekto/SanDiego/URSCorp@URSCorp
bcc
Subject Re: FTHL trianing April 30

Daniel, URS staff will be at the April 30 workshop. Up to ten (10) URS staffers will be coming.

Thank you for all of your time and effort required to put on the workshop.

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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Daniel_Steward@ca.blm.gov

Daniel_Steward@ca.blm.gov

04/18/2007 10:39 AM

To Patrick_Mock@URSCorp.com, Doug Allen <DougA@helixepi.com>, Tim Cass <TimC@helixepi.com>, "Overstreet, Roger \(Carlsbad,CA-US\)" <roverstreet@TRCSOLUTIONS.com>, "Reynolds, Kirstie \(Carlsbad,CA-US\)" <KReynolds@TRCSOLUTIONS.com>, "Wilson, Karen \(Carlsbad,CA-US\)" <KWilson@TRCSOLUTIONS.com>, "Prohaska, Robert \(Carlsbad,CA-US\)" <rprohaska@TRCSOLUTIONS.com>, "Schafer, Debbie K. \(Carlsbad,CA-US\)" <dkschafer@TRCSOLUTIONS.com>, "Adrianne Beazley" <Adrianne.Beazley@lsa-assoc.com>, "Bresnan, Sarah" <Sarah.Bresnan@arcadis-us.com>, "Kizlinski, Matthew" <Matthew.Kizlinski@arcadis-us.com>
cc
Subject FTHL trianing April 30

Meet here at El ICentro BLM at 6:00 on April 30. Bring a4x4 vehicle and be ready for a full day in the desert (hat, water, boots etc...). I have a good spot picked out where we can find lots of lizards.

I had overwhelming intrest in the FTHL training this year (alot mor than I expected). The May 8 training is going to be very crowded, so if any of

you could be free to come down on April 30 for training, It will help training be more effective for everyone.

Daniel Steward, Wildlife Biologist
Bureau of Land Management, El Centro Field Office
1661 South 4th Street
El Centro, CA 92243
Phone: (760) 337-4424
Cell: (760)791-5602
Fax: (760) 337-4490

Patrick Mock/SanDiego/URSCorp
04/15/2007 01:29 PM

To daniel_steward@ca.blm.gov
cc Cheryl Delekto/SanDiego/URSCorp@URSCorp
bcc
Subject FTHL surveys for Solar II site and T-Line route

Daniel:

URS has completed the intial site assessment for the Solar II site and T-Line. We did not find any areas that were deemed unsuitable for FTHL - soil substrate and potential food resources were present throughout the site. We plan on conducting 336 four-hectare one-hour plot surveys per the attached figure. We had discussed holding a survey methods workshop with you so that we can calibrate our staff with your survey methods and protocols. When we last talked, we had said that late April would be the time period for the workshop. Please check your schedule for when we can meet this month.

Thank you for your prompt attention to this matter.

Pat

Patrick J. Mock, Ph.D.
Senior Project Manager
Senior Biologist
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1615 Murray Canyon Road, Suite 1000
San Diego, CA 92108
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solar_two_bio_cells_11x1799.pdf

Patrick Mock/SanDiego/URSCorp
03/09/2007 12:39 PM

To daniel_steward@ca.blm.gov
cc Angela Leiba/SanDiego/URSCorp@URSCorp, Conn
Farmer/Denver/URSCorp@URSCorp, gcheniae@co
bcc
Subject Solar Two Project field effort

Daniel:

Here is my contact information for you.

Please contact me soon so we can coordinate our field work with BLM oversight.

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 Office
619-888-6159 Cell
619-293-7920 Fax

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Patrick Mock/SanDiego/URSCorp
05/16/2008 01:21 PM

To "Rick York" <Ryork@energy.state.ca.us>
cc <Daniel_Steward@ca.blm.gov>, <Patrick_Mock@URSCorp.com>, <Larry_LaPre@ca.blm.gov>, "gcheniae"
bcc
Subject Re: Memo RE: Solar Two Biology Survey Protocols

All areas shown in the current configuration were surveyed in 2008 and 2007.

Patrick J. Mock, Ph.D.
Senior Project Manager
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-----"Rick York" <Ryork@energy.state.ca.us> wrote: -----

To: <Daniel_Steward@ca.blm.gov>, <Patrick_Mock@URSCorp.com>
From: "Rick York" <Ryork@energy.state.ca.us>
Date: 05/16/2008 01:14PM
cc: <Larry_LaPre@ca.blm.gov>, "gcheniae" <gcheniae@cox.net>, "Kevin Harper" <marshallharper@cox.net>, "Dale Edwards" <Dedwards@energy.state.ca.us>, "Michael McGuirt" <MMcguirt@energy.state.ca.us>, <Angela_Leiba@URSCorp.com>, <Douglas_Hahn@URSCorp.com>, <Erika_Alfaro@URSCorp.com>
Subject: Memo RE: Solar Two Biology Survey Protocols

Hi Pat - Sorry, but we will not sign your attached concurrence agreement. You must realize that regulatory agencies usually do not sign such things because we have to maintain our right to be difficult. All kidding aside, I can tell you that I reviewed your bio survey protocols and it appears that you continue to abide by earlier guidance we provided more than a year ago. Also, it's good that you re-did your rare plant surveys in 2008 as others have been directed to do so on other large solar projects this year. In addition to the Carrizo project, Victorville 2 and Ivanpah had more surveys to complete in 2008 too. One question: Were the new, blue cross-hatched areas (~500 acres) been surveyed for bio and cultural resources this year? Rick

Rick York, Supervisor
Biological & Cultural Resources Unit
California Energy Commission
Energy Facilities Siting Division
Environmental Protection Office
1516 Ninth Street, Mail Stop #40
Sacramento, CA 95814
(916) 654-3945 (office)
(916) 651-8868 (fax)
e-mail: ryork@energy.state.ca.us

>>> <Patrick_Mock@URSCorp.com> 5/14/2008 4:14 PM >>>
Please see attached file.

Patrick J. Mock, Ph.D.
Senior Project Manager
Senior Biologist
URS Corporation
1615 Murray Canyon Road, Suite 1000
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619-294-9400
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Patrick Mock/SanDiego/URSCorp
01/17/2008 02:12 PM

To "Rick York" <Ryork@energy.state.ca.us>
cc Angela Leiba/SanDiego/URSCorp@URSCorp, Amy Gramlich/SanDiego/URSCorp@URSCorp
bcc
Subject AFC for SES Solar II site - rare plants

Rick,

We did rare plant surveys last year, but as you know, last year was a bust for blooming plants, especially in the desert.
Do we need to repeat the survey effort this year (i.e. in the next six to ten weeks) or can we wait until the 2009 blooming period?
Just trying to head off a potential data adequacy issue.
We will be completing the remaining horned lizard surveys in April, mostly too late for many rare plants.

Pat

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Patrick Mock/SanDiego/URSCorp
01/02/2008 09:54 PM

To "Rick York" <Ryork@energy.state.ca.us>, Larry_LaPre@ca.blm.gov, Daniel_Steward@ca.blm.
cc Angela Leiba/SanDiego/URSCorp@URSCorp, Cher Rustin/SanDiego/URSCorp@URSCorp, Jamie Nyholt/SanDiego/URSCorp@URSCorp
bcc
Subject Fw: SES Solar Two Project - Sensitive Species Data Power Link Project

Just a follow-up email regarding the Sunrise PowerLink data.

Please provide a schedule for receipt of the data.
Pat

Patrick J. Mock, Ph.D.
Senior Project Manager
Senior Biologist
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619-294-9400
619-293-7920 Fax

-----Patrick Mock/SanDiego/URSCorp wrote: -----

To: "Rick York" <Ryork@energy.state.ca.us>, Larry_LaPre@ca.blm.gov, Daniel_Steward@ca.blm.gov
From: Patrick Mock/SanDiego/URSCorp
Date: 12/13/2007 04:19PM
cc: Angela Leiba/SanDiego/URSCorp@URSCorp, Cheryl Rustin/SanDiego/URSCorp@URSCorp
Subject: Fw: SES Solar Two Project - Sensitive Species 2007 Survey Results Map

One additional item I forgot --

BLM or CEC would obtain relevant biology field data associated with the SDGE Sunrise PowerLink project.

Patrick J. Mock, Ph.D.
Senior Project Manager
Senior Biologist
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-----Forwarded by Patrick Mock/SanDiego/URSCorp on 12/13/2007 04:18PM -----

To: "Rick York" <Ryork@energy.state.ca.us>, Larry_LaPre@ca.blm.gov, Daniel_Steward@ca.blm.gov
From: Patrick Mock/SanDiego/URSCorp
Date: 12/13/2007 04:08PM
cc: Angela Leiba/SanDiego/URSCorp@URSCorp, Cheryl Rustin/SanDiego/URSCorp@URSCorp
Subject: SES Solar Two Project - Sensitive Species 2007 Survey Results Map

Attached is the figure and tables distributed at our previous meeting with Daniel Steward in November.

Per our conference call today, Daniel will provide:

1. Transect Survey Protocol for the linear components of the project.
2. Any relevant biological resource studies/assessments for the BLM lands surrounding the project area, especially for lands within one mile of the project boundaries.
3. Protocols/methods for FTHL population monitoring before & after project implementation that will be included in the mitigation & monitoring section of the AFC and NEPA document.

Thank for your prompt attention to this project

Pat

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Senior Biologist
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[attachment "solar_2_site_sensitive_species_aerial_22x34.pdf" removed by Patrick Mock/SanDiego/URSCorp]
[attachment "Plant Species Observed on the Solar II Site.doc" removed by Patrick Mock/SanDiego/URSCorp]
[attachment "Wildlife Species Observed on the Solar II Site.doc" removed by Patrick Mock/SanDiego/URSCorp]
[attachment "Potential sensitive species table.doc" removed by Patrick Mock/SanDiego/URSCorp]

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12/13/2007 04:19 PM

To "Rick York" <Ryork@energy.state.ca.us>, Larry_LaPre@ca.blm.gov, Daniel_Steward@ca.blm.
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Date: 12/13/2007 04:08PM
cc: Angela Leiba/SanDiego/URSCorp@URSCorp, Cheryl Rustin/SanDiego/URSCorp@URSCorp
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solar_2_site_sensitive_species_aerial_22x34.pdf

Plant Species Observed on the Solar II Site.doc

Wildlife Species Observed on the Solar II Site.doc

Potential sensitive species table.doc

Patrick Mock/SanDiego/URSCorp
12/13/2007 04:08 PM

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cc Angela Leiba/SanDiego/URSCorp@URSCorp, Cher Rustin/SanDiego/URSCorp@URSCorp
bcc

Subject SES Solar Two Project - Sensitive Species 2007 Sur Results Map

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"Rick York" <Ryork@energy.state.ca.us>
05/16/2008 01:14 PM

To <Daniel_Steward@ca.blm.gov>, <Patrick_Mock@URSCorp.com>
cc <Larry_LaPre@ca.blm.gov>, "gcheniae" <gcheniae@cox.net>, "Kevin Harper" <marshallharper@cox.net>, "Dale Edwards"
bcc
Subject Memo RE: Solar Two Biology Survey Protocols

History: This message has been replied to.

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Rick York, Supervisor
Biological & Cultural Resources Unit
California Energy Commission
Energy Facilities Siting Division
Environmental Protection Office
1516 Ninth Street, Mail Stop #40
Sacramento, CA 95814
(916) 654-3945 (office)
(916) 651-8868 (fax)
e-mail: ryork@energy.state.ca.us

>>> <Patrick_Mock@URSCorp.com> 5/14/2008 4:14 PM >>>
Please see attached file.

Patrick J. Mock, Ph.D.
Senior Project Manager
Senior Biologist
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"Rick York" <Ryork@energy.state.ca.us>
01/17/2008 03:24 PM

To <Patrick_Mock@URSCorp.com>
cc "Dale Edwards" <Dedwards@energy.state.ca.us>, "E Allen" <Eallen@energy.state.ca.us>, "Misa Ward" <Mward@energy.state.ca.us>,
bcc
Subject Re: AFC for SES Solar II site - rare plants

Hi Pat - Thanks for checking with us. We really appreciate you being pro-active about the rare plant surveys. We agree that '08 rare plant surveys be completed since this spring is likely to be more favorable than '07 for the annuals in particular. Let us know if you have any additional comments or questions.

Rick

Rick York, Supervisor
Biological & Cultural Resources Unit
California Energy Commission
Energy Facilities Siting Division
Environmental Protection Office
1516 Ninth Street, Mail Stop #40
Sacramento, CA 95814
(916) 654-3945 (office)
(916) 651-8868 (fax)
e-mail: ryork@energy.state.ca.us

>>> <Patrick_Mock@URSCorp.com> 1/17/2008 2:12 PM >>>

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retain, distribute, disclose or use any of this information and you should destroy the e-mail and any attachments or copies.

"Rick York" <Ryork@energy.state.ca.us>
05/11/2007 02:06 PM

To Angela_Leiba@URSCorp.com
cc "Eileen Allen" <Eallen@energy.state.ca.us>, Patrick_Mock@URSCorp.com
bcc
Subject Re: Updated protocol for Solar Two

Angela - Here it 'tis. These are just recommendations, so let us know if you have any questions. Diagrams are also being created, but are not yet available. Rick

>>> <Angela_Leiba@URSCorp.com> 5/9/2007 3:22 PM >>>
Rick,
Just checking back to see if you've come up with any guidance on tackling the "buffer zone". Let us know, thanks.

Angela Leiba, GISP
Senior Project Manager
GIS Manager/Visual Resource Specialist
URS Corporation
1615 Murray Canyon Road
Suite 1000
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tel: 619.294.9400
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angela_leiba@urscorp.com

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" height="16">"Rick York" <Ryork@energy.state.ca.us>

"Rick York" <Ryork@energy.state.ca.us>

05/04/2007 12:37 PM

ToAngela_Leiba@URSCorp.com
cc"Eileen Allen" <Eallen@energy.state.ca.us>
SubjectRe: Updated protocol for Solar Two

Angela - Sorry for not getting back to you sooner. Way too much to do and not enough hours in the day/week/month/year. Overall, bio survey plans look very good and thorough. A couple of comments/questions -How do you plan to address our Data Adequacy (DA) requirement [April 2007 version, pg. 98, section (13) (B)] that you *'provide a list of the species actually observed and those with a potential to occur within 1 mile of the project site and 1,000 feet from the outer edge of linear facility corridors'* ? I noticed that you are silent on this in your field survey discussion and you only plan to assess 1,000 feet total width, which is different from the DA requirements. Early next week, we might have some guidance for you regarding running simple transects in this 'buffer' area surrounding the project site, so please check in with us.
Rick

Rick York, Supervisor
Biological & Cultural Resources Unit
California Energy Commission
Energy Facilities Siting Division
Environmental Protection Office
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Sacramento, CA 95814
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(916) 651-8868 (fax)
e-mail: ryork@energy.state.ca.us

>>> <Angela_Leiba@URSCorp.com> 04/09/07 3:56 PM >>>

Eileen et al.,
Attached is the finalized copy of the biological survey protocol used for Solar Two. We incorporated all comments from the CEC and local BLM office. This is just for your records.
We have now completed preliminary work at Solar Two and are now looking toward Solar One. In that regard, we should have proposed biological survey protocol for Solar One to be sent to you this week.
FYI.*(See attached file: 10001-c-r.pdf)*

Eileen - Just as follow up - where is the MOU at? Has the CEC had a chance to amend it? Let me know, thanks!

Angela Leiba, GISP
Senior Project Manager
GIS Manager/Visual Resource Specialist
URS Corporation
1615 Murray Canyon Road
Suite 1000
San Diego, CA 92108
www.urscorp.com
cell: 619.888.5542
tel: 619.294.9400
fax:619.293.7920
angela_leiba@urscorp.com
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" height="16">"Roger Johnson" <Rjohnson@energy.state.ca.us>

"Roger Johnson" <Rjohnson@energy.state.ca.us>

03/14/2007 01:4

To"Eileen Allen" <Eallen@energy.state.ca.u
<Ryork@energy.state.ca.us>, <Angela_L

cc<gcheniae@cox.net>, <ehanson@stirling
<connie_farmer@urscorp.com>,
<Kristen_E_Walker@URSCorp.com>,
<Patrick_Mock@URSCorp.com>, <perry
<Reid_Farmer@URSCorp.com>, <Tricia

SubjectRe: Draft MOU for Stirling Energy System
Two Projects

8
P
M

Angela - please find attached our comments on the proposed biological resources and cultural resources survey protocols for the Stirling 2 project. Please contract Rick York at 916.654.3945 or ryork@energy.state.ca.us if you have any questions about the comments or need clarification.
Regards,

Roger E. Johnson, Manager
Siting and Compliance Office
California Energy Commission
Systems Assessment & Facilities Siting Division
1516 9th Street - M.S. 15
Sacramento, CA 95814
(916) 654-5100

>>> <Angela_Leiba@URSCorp.com> 03/13/07 3:01 PM >>>

Eileen/Roger,
Our concern is that we are rolling out bio folks for Solar Two now and wanted to get buy-off on (at minimum) the bio survey protocols for Solar
Two. Any chance of at least moving forward on that front??

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Angela

Leiba/SanDiego/UR

SCorp

To

"Eileen Allen"

03/02/2007 11:09 <Eallen@energy.state.ca.us>,

AM Duane_Marti@ca.blm.gov, "Arlene

Ichien"

<Aichien@energy.state.ca.us>,

"Caryn Holmes"

<Cholmes@energy.state.ca.us>,

"Erika Hanson "

connie_farmer@urscorp.com,

cwebb@stirlingenergy.com, David

Marx/SanDiego/URSCorp@URSCorp,

ehanson@stirlingenergy.com,

gcheniae@cox.net, Perry

Fontana/Denver/URSCorp@URSCorp,

perry_fontana@urscorp.com,

"Roger

Johnson"

<Rjohnson@energy.state.ca.us>,

Tricia

Bernhardt/Denver/URSCorp@URSCorp,

Steven_J_Borchard@blm.gov,

Lynda_Kastoll@ca.blm.gov,

rrotte@ca.blm.gov, Patrick

Mock/SanDiego/URSCorp, Reid

Farmer/SantaBarbara/URSCorp

cc

Kristen E

Walker/SanDiego/URSCorp@URSCorp

Subject

Draft MOU for Stirling Energy

Systems (SES) Solar One and

Solar

Two Projects

All,
Attached is a preliminary Draft Memorandum of Understanding (MOU) we would
like to establish between the BLM and CEC for two proposed Stirling Energy
System projects (Solar One and Solar Two). Solar One is located in San
Bernardino (a map is still under development), Solar Two is located in
Imperial County (a map is included).

As you are probably aware, both projects will need to comply with both
State CEQA and Federal NEPA permitting requirements. This MOU is being
established to hopefully eliminate redundant processes and help agree on
joint efforts, where they can be established. One of the critical paths is
to establish and agree upon survey protocols for both Biological and
Cultural Resources. Since we are already within the window of critical
biological resource field efforts, the need to have this MOU reviewed,
updated and agreed upon by both lead agencies is critical.

Please note that this is a meant to be a "Draft" MOU to get dialog

started.
We are hoping to move forward as quickly as possible to create a joint process that works as effectively as possible.

In that vain, I'm asking that everyone review and comment (to all) by March
16th. Hopefully that gives everyone time to digest the information and provide feedback on "next steps", most likely a face-to-face meeting with
key folks.

For your convenience, I've attached both word and pdf files for the MOU
itself and pdf files for the figures. Feel free to make updates in track
changes mode in the word file and send back to me. I can compile comments
and redistribute.

If you have any questions, please don't hesitate to contact me.
(See attached file: 10004-d-l.doc)(See attached file: 10004-d-l.pdf)(See
attached file: 10004-d-l-Figure 1.pdf)(See attached file: 10004-d-l-Figure
B-1.pdf)

Angela Leiba, GISP
Senior Project Manager
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[attachment "BioResources Survey Protocol Review.doc" deleted by Angela Leiba/SanDiego/URSCorp]

[attachment "Stirling_Solar_2_Cultural comments_3_14_07_rj.doc" deleted by Angela Leiba/SanDiego/URSCorp] Field Survey Guidelines For Large Solar Projects - 5-07 RY_Rv3MS.doc

Larry_LaPre@ca.blm.gov
05/15/2008 11:35 AM

To Patrick_Mock@URSCorp.com
cc Daniel_Steward@ca.blm.gov
bcc
Subject Memo RE: Solar Two Biology Survey Protocols

History: This message has been replied to.

BLM will probably provide approval or disapproval of the protocol on its own stationery, rather than using the URS cover. I don't know about CEC. I did not see CEC on the e-mail address list.

Dr. Larry LaPre
District Wildlife Biologist
California Desert District
Bureau of Land Management
22835 Calle San Juan de los Lagos
Moreno Valley, CA 92553
Phone: (951) 697-5218
Fax: (951) 697-5299
E-mail: llapre@ca.blm.gov

Larry_LaPre@ca.blm.gov
05/14/2008 06:35 AM

To patrick_mock@urscorp.com
cc
bcc
Subject cactus wrens?

History: This message has been replied to.

Pat,

I am wondering if URS is conducting any bird surveys for the Kinder Morgan pipeline in the Cajon Pass area. A freind of mine is trying to establish whether or not cactus wrens still are present in the inland area. The known locaitons in Riverside County in the City of Riverside are now extirpated. Turning attention to historical locations in San Bernardino County, do any of your biologists have recent sightings south of the San Bernardino Mountains?

This request is non-regulatory and non-political.

Dr. Larry LaPre
District Wildlife Biologist
California Desert District
Bureau of Land Management
22835 Calle San Juan de los Lagos
Moreno Valley, CA 92553
Phone: (951) 697-5218
Fax: (951) 697-5299
E-mail: llapre@ca.blm.gov

Larry_LaPre@ca.blm.gov
01/04/2008 02:35 PM

To Patrick_Mock@URSCorp.com
cc
bcc
Subject Sensitive Species Data from Power Link Project

History: This message has been replied to and forwarded.

Pat,

Helix Environmental Planning did not do any on-the-ground surveys of the transmission line intertie throught the flat-tailed horned lizard conservation area. The did look for burrowing owls on the alternative segment that runs north-south and avoids the conservation area. They assumed presence for the whole site rather than count the lizards.

Dr. Larry LaPre
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Moreno Valley, CA 92553
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Fax: (951) 697-5299
E-mail: llapre@ca.blm.gov

Larry_LaPre@ca.blm.gov
01/03/2008 04:23 PM

To Patrick_Mock@URSCorp.com
cc
bcc
Subject Re: Fw: SES Solar Two Project - Sensitive Species [
from Power Link Project

History: This message has been forwarded.

Pat,

One of the consultatns for the CPUC provided me with these maps toady. She had no text, but referred me to staff members of Helix, whom I have contacted. I am beginning to think that they did not do any on-the-ground surveys in the intertie area, but just assumed it all to be FTHL habitat. They do have some burrowing owl locations.

(See attached file: El Centro bio sh 3.pdf)(See attached file: BUOW locations Sunrise - El Centro.pdf)(See attached file: El Centro bio sh 1.pdf)(See attached file: El Centro bio sh 2.pdf)

Dr. Larry LaPre
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E-mail: llapre@ca.blm.gov

El Centro bio sh 3.pdf BUOW locations Sunrise - El Centro.pdf El Centro bio sh 1.pdf

El Centro bio sh 2.pdf

Larry_LaPre@ca.blm.gov
12/14/2007 12:10 PM

To Patrick_Mock@URSCorp.com
cc
bcc
Subject Sensitive Species

History: This message has been forwarded.

(See attached file: California BLM Sensitive Animals.pdf)(See attached file: California BLM Sensitive Plants.pdf)
Pat,

Better take the Clean Harbors Landfill off of the footer on the potentially-occurring sensitive species list. Add BLM sensitive species observed, such as Colorado Desert fringe-toed lizard. The desert horned llizard is not categorized, but is listed as a sensitive species on the map.

Dr. Larry LaPre
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Phone: (951) 697-5218
Fax: (951) 697-5299

E-mail: llapre@ca.blm.gov California BLM Sensitive Animals.pdf California BLM Sensitive Plants.pdf

Larry_LaPre@ca.blm.gov
12/14/2007 11:21 AM

To Patrick_Mock@URSCorp.com
cc
bcc
Subject Re: Fw: SES Solar Two Project - Sensitive Species 2 Survey Results Map

History: This message has been forwarded.

Hi Pat,

BLM wants to know that the burrowing owls would not be impacted by the geophysical testing. The same is generally true for the other sensitive species identified in the earlier bio surrveys, though this may not be readily apparent at this time of year.

Dr. Larry LaPre
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E-mail: llapre@ca.blm.gov

Patrick Mock/SanDiego/URSCorp
05/15/2008 12:39 PM

To Larry_LaPre@ca.blm.gov
cc
bcc
Subject Re: Memo RE: Solar Two Biology Survey Protocols

Rick York at the CEC was sent the protocol memo

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

-----Larry_LaPre@ca.blm.gov wrote: -----

To: Patrick_Mock@URSCorp.com
From: Larry_LaPre@ca.blm.gov
Date: 05/15/2008 11:35AM
cc: Daniel_Steward@ca.blm.gov
Subject: Memo RE: Solar Two Biology Survey Protocols

BLM will probably provide approval or disapproval of the protocol on its own stationery, rather than using the URS cover. I don't know about CEC. I did not see CEC on the e-mail address list.

Dr. Larry LaPre
District Wildlife Biologist
California Desert District
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Patrick Mock/SanDiego/URSCorp
05/14/2008 09:01 AM

To Larry_LaPre@ca.blm.gov
cc sbailey45@cox.net, Brian Lohstroh/SanDiego/URSCorp@URSCorp, Theresa Miller/SanDiego/URSCorp@URSCORP
bcc
Subject Re: cactus wrens?

We are doing gnatcatcher surveys where appropriate, so if CW are present we should detect them in those areas. I will check our veg mapping to see if there is any suitable habitat away from the gnatcatcher survey areas. Being a linear project, our survey coverage is represenative of the area, but certainly not comprehensive in terms of detecting rare resources beyond 1000 from the alignment. I have cc'ed my staff so they will be on lookout for CW.

Patrick J. Mock, Ph.D.
Senior Project Manager
Senior Biologist
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1615 Murray Canyon Road, Suite 1000
San Diego, CA 92108
619-294-9400
619-293-7920 Fax

-----Larry_LaPre@ca.blm.gov wrote: -----

To: patrick_mock@urscorp.com
From: Larry_LaPre@ca.blm.gov
Date: 05/14/2008 06:35AM
Subject: cactus wrens?

Pat,

I am wondering if URS is conducting any bird surveys for the Kinder Morgan pipeline in the Cajon Pass area. A freind of mine is trying to establish whether or not cactus wrens still are present in the inland area. The known locaitons in Riverside County in the City of Riverside are now extirpated. Turning attention to historical locations in San Bernardino County, do any of your biologists have recent sightings south of the San Bernardino Mountains?

This request is non-regulatory and non-political.

Dr. Larry LaPre
District Wildlife Biologist
California Desert District
Bureau of Land Management
22835 Calle San Juan de los Lagos
Moreno Valley, CA 92553
Phone: (951) 697-5218
Fax: (951) 697-5299
E-mail: llapre@ca.blm.gov

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Patrick Mock/SanDiego/URSCorp
12/13/2007 04:41 PM

To Larry_LaPre@ca.blm.gov, Daniel_Steward@ca.blm.
cc Angela Leiba/SanDiego/URSCorp@URSCorp, Cher Rustin/SanDiego/URSCorp@URSCorp
bcc
Subject Fw: SES Solar Two Project - Sensitive Species 2007 Results Map

Please clarify the NEPA process for the GeoTech field program.
Do you need a biology report in support of the GeoTech EA document?
Thanks

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

-----Forwarded by Patrick Mock/SanDiego/URSCorp on 12/13/2007 04:36PM -----

To: "Rick York" <Ryork@energy.state.ca.us>, Larry_LaPre@ca.blm.gov, Daniel_Steward@ca.blm.gov
From: Patrick Mock/SanDiego/URSCorp
Date: 12/13/2007 04:19PM
cc: Angela Leiba/SanDiego/URSCorp@URSCorp, Cheryl Rustin/SanDiego/URSCorp@URSCorp
Subject: Fw: SES Solar Two Project - Sensitive Species 2007 Survey Results Map

One additional item I forgot --

BLM or CEC would obtain relevant biology field data associated with the SDGE Sunrise PowerLink project.

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

-----Forwarded by Patrick Mock/SanDiego/URSCorp on 12/13/2007 04:18PM -----

To: "Rick York" <Ryork@energy.state.ca.us>, Larry_LaPre@ca.blm.gov, Daniel_Steward@ca.blm.gov
From: Patrick Mock/SanDiego/URSCorp
Date: 12/13/2007 04:08PM
cc: Angela Leiba/SanDiego/URSCorp@URSCorp, Cheryl Rustin/SanDiego/URSCorp@URSCorp
Subject: SES Solar Two Project - Sensitive Species 2007 Survey Results Map

Attached is the figure and tables distributed at our previous meeting with Daniel Steward in November.

Per our conference call today, Daniel will provide:

1. Transect Survey Protocol for the linear components of the project.
2. Any relevant biological resource studies/assessments for the BLM lands surrounding the project area, especially for lands within one mile of the project boundaries.
3. Protocols/methods for FTHL population monitoring before & after project implementation that will be included in the mitigation & monitoring section of the AFC and NEPA document.

Thank for your prompt attention to this project

Pat

Patrick J. Mock, Ph.D.
Senior Project Manager
Senior Biologist
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[attachment "solar_2_site_sensitive_species_aerial_22x34.pdf" removed by Patrick Mock/SanDiego/URSCorp]
[attachment "Plant Species Observed on the Solar II Site.doc" removed by Patrick Mock/SanDiego/URSCorp]
[attachment "Wildlife Species Observed on the Solar II Site.doc" removed by Patrick Mock/SanDiego/URSCorp]
[attachment "Potential sensitive species table.doc" removed by Patrick Mock/SanDiego/URSCorp]

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Daniel_Steward@ca.blm.gov
05/16/2008 11:15 AM

To Patrick_Mock@URSCorp.com
cc Larry_LaPre@ca.blm.gov, Lynda_Kastoll@ca.blm.gc
bcc
Subject Re: Fw: Memo RE: Solar Two Biology Survey Protoc

History: This message has been forwarded.

The protocol looks pretty good, but you need more detail on the linear transect method used for the linear features. This is using the guidance from the CEC on transect spacing. You should also put more detail on the techniques used for the rare plant sampling and bird surveys (transects, plot search, area search, incidiental sightings, etc....)

Daniel Steward, Resources Branch Chief
Bureau of Land Management, El Centro Field Office
1661 South 4th Street
El Centro, CA 92243
Phone: (760) 337-4424
Cell: (760)791-5602
Fax: (760) 337-4490

Patrick_Mock@URSCorp.com
05/14/2008 07:13 PM

To Daniel_Steward@ca.blm.gov
cc Larry_LaPre@ca.blm.gov
Subject Fw: Memo RE: Solar Two Biology Survey Protocols

your server rejected the previous file as being too large. I reduced the size of the file for you.

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

-----Forwarded by Patrick Mock/SanDiego/URSCorp on 05/14/2008 07:11PM -----

To: Daniel_Steward@ca.blm.gov, "Rick York" <Ryork@energy.state.ca.us>
From: Patrick Mock/SanDiego/URSCorp
Date: 05/14/2008 04:14PM
cc: Larry_LaPre@ca.blm.gov, "gcheniae" <gcheniae@cox.net>, Angela_Leiba@URSCorp.com, Douglas Hahn/Denver/URSCorp@URSCorp, Erika Alfaro/SanDiego/URSCorp@URSCorp, Kevin Harper <marshallharper@cox.net>
Subject: Memo RE: Solar Two Biology Survey Protocols

Please see attached file.

Patrick J. Mock, Ph.D.
Senior Project Manager
Senior Biologist
URS Corporation
1615 Murray Canyon Road, Suite 1000
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[attachment "Memorandum Bio Protocol 5-14-08 2.pdf" deleted by Daniel Steward/CASO/CA/BLM/DOI]

Daniel_Steward@ca.blm.gov
03/06/2008 01:11 PM

To Peggy_Bartels@fws.gov
cc Amy_Gramlich@URSCorp.com, Angela_Leiba@URSCorp.com, Cheryl_Rustin@URSCorp.com, "gcheniae"
bcc
Subject Re: Migratory Birds on Sterling Solar 2

History: This message has been replied to.

That works for me. Do you have a Call in #?

Daniel Steward, Resources Branch Chief
Bureau of Land Management, El Centro Field Office
1661 South 4th Street
El Centro, CA 92243
Phone: (760) 337-4424
Cell: (760)791-5602
Fax: (760) 337-4490

Peggy_Bartels@fws.gov
03/06/2008 12:18 PM

To
Patrick_Mock@URSCorp.com
cc
Amy_Gramlich@URSCorp.com, Angela_Leiba@URSCorp.com, Cheryl_Rustin@URSCorp.com, Daniel_Steward@ca.blm.gov, "gcheniae" <gcheniae@cox.net>, Glen_Kinoshita@URSCorp.com, Lynda_Kastoll@ca.blm.gov
Subject
Re: Migratory Birds on Sterling Solar 2

Hi Pat,

How about March 13 at 0900 hours for our conference call?

Another method we could think about that may be easier since you are conducting the vegetation surveys this year would be to classify vegetation types on-site; then use breeding territories (referenced from the

literature) to estimate on-site populations per species. We also might want to consider the differences between year populations based on annual weather conditions.

We can talk about this during our conference call.

Thanks,
Peggy Bartels
Section 7/10 Coordinator
Wildlife Biologist MS
6010 Hidden Valley Road
Carlsbad, California 92011
760.431.9440 Ext. 310 (o)
760.431.5901 (f)

Patrick_Mock@
URSCorp.com

To
03/06/2008 Daniel_Steward@ca.blm.gov
11:35 AM
cc
Amy_Gramlich@URSCorp.com, Angela_Leiba@URSCorp.com, Cheryl_Rustin@URSCorp.com, "gcheniae" <gcheniae@cox.net>, Lynda_Kastoll@ca.blm.gov, Peggy_Bartels@fws.gov, Glen_Kinoshita@URSCorp.com
Subject
Re: Migratory Birds on Sterling Solar 2

I have a 2:30 call scheduled on the 10th and will be on the road on the 13th, but can take a call on my cell phone so long as I have cell coverage at that time.

In the mean time I have asked my staff biologist to categorize each species detected thus far as to whether it is considered to be breeding or not and estimate their relative abundance (abundant, common, uncommon, rare). I have also asked that our current field workers (rare plant surveyers) continue to document any species they detect. Presumably we will detect a few more species this year to add to our list.

Pat

Patrick J. Mock, Ph.D.
Senior Project Manager
Senior Biologist

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1615 Murray Canyon Road, Suite 1000
San Diego, CA 92108
619-294-9400
619-293-7920 Fax

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(Embedded image moved to file: pic25547.gif)Inactive hide details for Daniel_Steward@ca.blm.govDaniel_Steward@ca.blm.gov

Daniel_Stewa
rd@ca.blm.go
v
(Embedded image moved to file: pic21153.gif)

03/06/2008 To
09:43 AM (Embedded image moved to file: pic21520.gif)
Peggy_Bartels@fws.gov
(Embedded image moved to file: pic29790.gif)

cc
(Embedded image moved to file: pic14924.gif)
Amy_Gramlich@URSCorp.com, Angela_Leiba@URSCorp.com, Cheryl_Rustin@URSCorp.com, "gcheniae" <gcheniae@cox.net>, Lynda_Kastoll@ca.blm.gov, Patrick_Mock@URSCorp.com
(Embedded image moved to file: pic30188.gif)

Subject
(Embedded image moved to file: pic21763.gif)
Re: Migratory Birds on Sterling Solar 2

(Embedded image moved to file: pic04940.gif)
(Embedded
image moved
to file:
pic20851.gi
f)

Peggy and Pat,

I am free on the afternoon of the 10th and anytime on the 13th.

Daniel Steward, Resources Branch Chief
Bureau of Land Management, El Centro Field Office
1661 South 4th Street
El Centro, CA 92243
Phone: (760) 337-4424
Cell: (760)791-5602
Fax: (760) 337-4490

Peggy_Bartels@fws.gov
03/05/2008 07:46 AM

To
Patrick_Mock@URSCorp.com

cc
Amy_Gramlich@URSCorp.com, Angela_Leiba@URSCorp.com, Cheryl_Rustin@URSCorp.com, Daniel_Steward@ca.blm.gov, "gcheniae" <gcheniae@cox.net>, Lynda_Kastoll@ca.blm.gov, Patrick_Mock@URSCorp.com

Subject
Re: Migratory Birds on Sterling Solar 2

Hello Pat,

Why don't we have a conference call sometime in the upcoming weeks about the survey protocols that you are conducting? That will create a situation in which you could understand our concerns on this topic. I would not expect our concerns to alter your current protocols or studies, but I would like to determine if certain basic calculations are possible for migratory bird impacts based on the protocols that you have been conducting.

I am available this week beginning this afternoon and next week except for the 12th. Please contact me at your earliest convenience.

Thanks so very much.
Peggy Bartels
Section 7/10 Coordinator
Wildlife Biologist MS

6010 Hidden Valley Road
Carlsbad, California 92011
760.431.9440 Ext. 310 (o)
760.431.5901 (f)

Patrick_Mock@
URSCorp.com

To
03/04/2008 Daniel_Steward@ca.blm.gov
05:46 PM
cc
Patrick_Mock@URSCorp.com, Peggy_Bartels@fws.gov,
"gcheniae" <gcheniae@cox.net>,
Lynda_Kastoll@ca.blm.gov, Angela_Leiba@URSCorp.com,
Cheryl_Rustin@URSCorp.com, Amy_Gramlich@URSCorp.com
Subject
Re: Migratory Birds on Sterling Solar 2

Daniel:

I am not sure what you mean by "protocols for the biological monitoring studies". Please clairify.

URS staff has spent a lot of field time out on the site from early March through to mid-July (see attached list of survey dates). So we covered the spring migration period OK. We will be back out onsite again this spring for rare plants and to finish up the remaining horned lizard surveys. We have not done any Fall or Winter site visits since migratory birds were not previously brought up as being an issue at the Solar Two site. As you can see from the attached bird list, the bird useage of the site by migrant birds is fairly limited, which is not surprising since there is much more attractive habitats elsewhere in the project vicinity (Salton Sea, agricultural fields, etc.).

We are interested in finding out the specifics of FWS' concerns so that we can address them adequately to meet any concerns of FWS, BLM, and CEC. The Solar Two site is located outside the Desert Management Areas, hence why SES selected this site in order to avoid conflicts with the DMA plan.

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

-----Daniel_Steward@ca.blm.gov wrote: -----

To: Patrick_Mock@URSCorp.com
From: Daniel_Steward@ca.blm.gov
Date: 03/04/2008 04:44PM
cc: Peggy_Bartels@fws.gov, "gcheniae" <gcheniae@cox.net>, Lynda_Kastoll@ca.blm.gov
Subject: Migratory Birds on Sterling Solar 2

Patrick,

I recently spoke with Peggy Bartels with the Carlsbad FWS office about solar projects and migratory birds. She has informed me that the USFWS is becoming genuinly concerned about cumulative impacts of these numerous large scale solar projects on Migratory Birds. The service will possibly be comming out with some guidelines in the near future, but this project is farther along than most as far as biological studies go. We need to discuss with Peggy what we can do to best address migatory birds on the project area. Could you send us your protocols for the biological monitoring studies the project area.

Daniel Steward, Resources Branch Chief
Bureau of Land Management, El Centro Field Office
1661 South 4th Street
El Centro, CA 92243
Phone: (760) 337-4424
Cell: (760)791-5602
Fax: (760) 337-4490

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(See attached file: Solar Two Bird List and survey dates.doc)

(See attached file: Solar Two Bird List and survey dates.doc)(Embedded image moved to file: pic18662.gif) (See attached file: Solar Two Bird List and survey dates.doc) pic25547.gif pic21153.gif pic21520.gif pic29790.gif pic14924.gif pic30188.gif pic21763.gif pic04940.gif pic20851.gif pic18662.gif Solar Two Bird List and survey dates.doc

Daniel_Steward@ca.blm.gov
03/06/2008 09:43 AM

To Peggy_Bartels@fws.gov
cc Amy_Gramlich@URSCorp.com, Angela_Leiba@URSCorp.com, Cheryl_Rustin@URSCorp.com, "gcheniae"
bcc
Subject Re: Migratory Birds on Sterling Solar 2

History: This message has been replied to.

Peggy and Pat,

I am free on the afternoon of the 10th and anytime on the 13th.

Daniel Steward, Resources Branch Chief
Bureau of Land Management, El Centro Field Office
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Peggy_Bartels@fws.gov
03/05/2008 07:46 AM

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Subject Re: Migratory Birds on Sterling Solar 2

Hello Pat,

Why don't we have a conference call sometime in the upcoming weeks about the survey protocols that you are conducting? That will create a situation in which you could understand our concerns on this topic. I would not

expect our concerns to alter your current protocols or studies, but I would like to determine if certain basic calculations are possible for migratory bird impacts based on the protocols that you have been conducting.

I am available this week beginning this afternoon and next week except for the 12th. Please contact me at your earliest convenience.

Thanks so very much.
Peggy Bartels
Section 7/10 Coordinator
Wildlife Biologist MS
6010 Hidden Valley Road
Carlsbad, California 92011
760.431.9440 Ext. 310 (o)
760.431.5901 (f)

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URSCorp.com

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From: Daniel_Steward@ca.blm.gov
Date: 03/04/2008 04:44PM
cc: Peggy_Bartels@fws.gov, "gcheniae" <gcheniae@cox.net>, Lynda_Kastoll@ca.blm.gov
Subject: Migratory Birds on Sterling Solar 2

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(See attached file: Solar Two Bird List and survey dates.doc)

Solar Two Bird List and survey dates.doc

Daniel_Steward@ca.blm.gov
03/04/2008 04:44 PM

To Patrick_Mock@URSCorp.com
cc Peggy_Bartels@fws.gov, "gcheniae" <gcheniae@co
Lynda_Kastoll@ca.blm.gov
bcc
Subject Migratory Birds on Sterling Solar 2

History: This message has been replied to and forwarded.

Patrick,

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Fax: (760) 337-4490

Daniel_Steward@ca.blm.gov
01/11/2008 03:19 PM

To Patrick_Mock@URSCorp.com
cc
bcc
Subject Monitoring plot protocol.

History: This message has been forwarded.

Here is the protocol we used last season. I think you can ignore the boundry sweeps. We are working with Tyler Grant on developement of this protocol and it still has a few revisions to go.

(See attached file: Robust Pradel protocol.doc)

Daniel Steward, Resources Branch Chief
Bureau of Land Management, El Centro Field Office
1661 South 4th Street
El Centro, CA 92243
Phone: (760) 337-4424
Cell: (760)791-5602
Fax: (760) 337-4490 Robust Pradel protocol.doc

Daniel_Steward@ca.blm.gov
01/09/2008 09:57 AM

To Patrick_Mock@URSCorp.com
cc
bcc
Subject more FTHL info

History: This message has been forwarded.

(See attached file: FTHL abundance & site occupancy06-FINAL.pdf)(See attached file: Grant and Doherty 2007.pdf)

Daniel Steward, Resources Branch Chief
Bureau of Land Management, El Centro Field Office
1661 South 4th Street
El Centro, CA 92243
Phone: (760) 337-4424
Cell: (760)791-5602
Fax: (760) 337-4490

FTHL abundance & site occupancy06-FINAL.pdf Grant and Doherty 2007.pdf

Daniel_Steward@ca.blm.gov
01/09/2008 09:55 AM

To Patrick_Mock@URSCorp.com
cc
bcc
Subject FTHL Info

History: This message has been forwarded.

Here is some of the BLM monitoring reports you requested.

(See attached file: Tyler_Grant_Thesis_FINAL.pdf)

Daniel Steward, Resources Branch Chief
Bureau of Land Management, El Centro Field Office
1661 South 4th Street
El Centro, CA 92243
Phone: (760) 337-4424
Cell: (760)791-5602

Fax: (760) 337-4490 Tyler_Grant_Thesis_FINAL.pdf

Daniel_Steward@ca.blm.gov
04/18/2007 10:39 AM

To Patrick_Mock@URSCorp.com, Doug Allen <DougA@helixepi.com>, Tim Cass <TimC@helixepi "Overstreet, Roger \(Carlsbad,CA-US\)"
cc
bcc
Subject FTHL trianing April 30

History: This message has been replied to.

Meet here at El ICentro BLM at 6:00 on April 30. Bring a4x4 vehicle and be ready for a full day in the desert (hat, water, boots etc...). I have a good spot picked out where we can find lots of lizards.

I had overwhelming intrest in the FTHL training this year (alot mor than I expected). The May 8 training is going to be very crowded, so if any of you could be free to come down on April 30 for training, It will help training be more effective for everyone.

Daniel Steward, Wildlife Biologist
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Phone: (760) 337-4424
Cell: (760)791-5602
Fax: (760) 337-4490

Peggy_Bartels@fws.gov
03/13/2008 08:52 AM

To Patrick_Mock@URSCorp.com
cc
bcc
Subject Re: Conference Call tomorrow

Hi Pat,

The conference call will be very short. We would like to address the survey protocols.

Thanks,
Peggy Bartels
Section 7/10 Coordinator
Wildlife Biologist MS
6010 Hidden Valley Road
Carlsbad, California 92011
760.431.9440 Ext. 310 (o)
760.431.5901 (f)

Patrick_Mock@URSCorp.com

03/13/2008 08:42 AM

To Peggy_Bartels@fws.gov
cc
Subject Re: Conference Call tomorrow

I did not plan on a conference call for four hours. I will be available for about 30 minutes.

Is there an agenda or documents that will focus the discussion.

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

-----Peggy_Bartels@fws.gov wrote: -----

To: Patrick_Mock@urscorp.com
From: Peggy_Bartels@fws.gov
Date: 03/12/2008 04:28PM
cc: Amy_Gramlich@URSCorp.com, Angela_Leiba@URSCorp.com, Cheryl_Rustin@URSCorp.com, "gcheniae" <gcheniae@cox.net>, Lynda_Kastoll@ca.blm.gov, Peggy_Bartels@fws.gov, Glen_Kinoshita@URSCorp.com, Daniel_Steward@ca.blm.gov
Subject: Conference Call tomorrow

Hi Patrick and Others,

Please join us for the conference call tomorrow.

Call the phone number (**866-763-2732**) and enter the passcode (**8565940**) for the phone conference call on Thursday, March 13 from 9:00 - 12:00 PM.

Thanks,

Peggy Bartels
Section 7/10 Coordinator
Wildlife Biologist MS
6010 Hidden Valley Road
Carlsbad, California 92011
760.431.9440 Ext. 310 (o)
760.431.5901 (f)

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Peggy_Bartels@fws.gov
03/12/2008 04:28 PM

To Patrick_Mock@urscorp.com
cc Amy_Gramlich@URSCorp.com, Angela_Leiba@URSCorp.com, Cheryl_Rustin@URSCorp.com, "gcheniae"
bcc
Subject Conference Call tomorrow

History: This message has been replied to.

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760.431.9440 Ext. 310 (o)
760.431.5901 (f)

Peggy_Bartels@fws.gov
03/06/2008 03:24 PM

To Patrick_Mock@URSCorp.com
cc Amy_Gramlich@URSCorp.com, Angela_Leiba@URSCorp.com, Cheryl_Rustin@URSCorp.com,
bcc
Subject Re: Migratory Birds on Sterling Solar 2

Hi Pat,

Thanks so much for your quick response to our concern.

Talk to you later.
Peggy Bartels
Section 7/10 Coordinator
Wildlife Biologist MS
6010 Hidden Valley Road
Carlsbad, California 92011
760.431.9440 Ext. 310 (o)
760.431.5901 (f)

Peggy_Bartels@fws.gov
03/06/2008 03:19 PM

To Daniel_Steward@ca.blm.gov
cc Amy_Gramlich@URSCorp.com, Angela_Leiba@URSCorp.com, Cheryl_Rustin@URSCorp.com, "gcheniae"
bcc
Subject Re: Migratory Birds on Sterling Solar 2

Hi,

You can join the conference call on Thursday, March 13 at 0900 hours by dialing the phone number below and entering the pass code.

All you need to do now is send the participants an email with this phone number (**866-763-2732**) and passcode
(**8565940**) for the phone conference call on Thursday, March 13 from 9:00 - 12:00 PM.

Thanks,
Peggy Bartels
Section 7/10 Coordinator
Wildlife Biologist MS
6010 Hidden Valley Road
Carlsbad, California 92011
760.431.9440 Ext. 310 (o)
760.431.5901 (f)

Peggy_Bartels@fws.gov
03/06/2008 01:40 PM

To Daniel_Steward@ca.blm.gov
cc Amy_Gramlich@URSCorp.com, Angela_Leiba@URSCorp.com, Cheryl_Rustin@URSCorp.com, "gcheniae"
bcc
Subject Re: Migratory Birds on Sterling Solar 2

History: This message has been replied to.

Hi Daniel,

I will obtain a number from our admin assistant and get back to you this afternoon.

Thanks,
Peggy Bartels
Section 7/10 Coordinator
Wildlife Biologist MS
6010 Hidden Valley Road
Carlsbad, California 92011
760.431.9440 Ext. 310 (o)
760.431.5901 (f)

Daniel_Steward@ca.blm.gov

03/06/2008 01:11 PM

To Peggy_Bartels@fws.gov
cc Amy_Gramlich@URSCorp.com, Angela_Leiba@URSCorp.com, Cheryl_Rustin@URSCorp.com, "gcheniae" <gcheniae@cox.net>, Glen_Kinoshita@URSCorp.com, Lynda_Kastoll@ca.blm.gov, Patrick_Mock@URSCorp.com
Subject Re: Migratory Birds on Sterling Solar 2

That works for me. Do you have a Call in #?

Daniel Steward, Resources Branch Chief
Bureau of Land Management, El Centro Field Office
1661 South 4th Street
El Centro, CA 92243
Phone: (760) 337-4424

Cell: (760)791-5602
Fax: (760) 337-4490

Peggy_Bartels@fws
.gov

03/06/2008 12:18
PM

To
Patrick_Mock@URSCorp.com
cc
Amy_Gramlich@URSCorp.com,
Angela_Leiba@URSCorp.com,
Cheryl_Rustin@URSCorp.com,
Daniel_Steward@ca.blm.gov,
"gcheniae" <gcheniae@cox.net>,
Glen_Kinoshita@URSCorp.com,
Lynda_Kastoll@ca.blm.gov
Subject
Re: Migratory Birds on Sterling
Solar 2

Hi Pat,

How about March 13 at 0900 hours for our conference call?

Another method we could think about that may be easier since you are conducting the vegetation surveys this year would be to classify vegetation types on-site; then use breeding territories (referenced from the literature) to estimate on-site populations per species. We also might want to consider the differences between year populations based on annual weather conditions.

We can talk about this during our conference call.

Thanks,
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Wildlife Biologist MS
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760.431.9440 Ext. 310 (o)
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Patrick_Mock@
URSCorp.com

To

03/06/2008 Daniel_Steward@ca.blm.gov
11:35 AM

cc

Amy_Gramlich@URSCorp.com, Angela_Leiba@URSCorp.com, Cheryl_Rustin@URSCorp.com, "gcheniae" <gcheniae@cox.net>, Lynda_Kastoll@ca.blm.gov, Peggy_Bartels@fws.gov, Glen_Kinoshita@URSCorp.com

Subject

Re: Migratory Birds on Sterling Solar 2

I have a 2:30 call scheduled on the 10th and will be on the road on the 13th, but can take a call on my cell phone so long as I have cell coverage at that time.

In the mean time I have asked my staff biologist to categorize each species detected thus far as to whether it is considered to be breeding or not and estimate their relative abundance (abundant, common, uncommon, rare). I have also asked that our current field workers (rare plant surveyers) continue to document any species they detect. Presumably we will detect a few more species this year to add to our list.

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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Daniel_Steward@ca.blm.govDaniel_Steward@ca.blm.gov

Daniel_Stewa
rd@ca.blm.go
v
(Embedded image moved to file: pic21153.gif)

03/06/2008 To
09:43 AM (Embedded image moved to file: pic21520.gif)
Peggy_Bartels@fws.gov
(Embedded image moved to file: pic29790.gif)

cc
(Embedded image moved to file: pic14924.gif)
Amy_Gramlich@URSCorp.com, Angela_Leiba@URSCorp.com, Cheryl_Rustin@URSCorp.com, "gcheniae" <gcheniae@cox.net>, Lynda_Kastoll@ca.blm.gov, Patrick_Mock@URSCorp.com
(Embedded image moved to file: pic30188.gif)

Subject
(Embedded image moved to file: pic21763.gif)
Re: Migratory Birds on Sterling Solar 2

(Embedded image moved to file: pic04940.gif)
(Embedded image moved to file: pic20851.gif)

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Peggy_Bartels@fws
.gov
To
03/05/2008 07:46 Patrick_Mock@URSCorp.com

AM

cc

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Daniel_Steward@ca.blm.gov,
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To

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Cheryl_Rustin@URSCorp.com, Amy_Gramlich@URSCorp.com

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From: Daniel_Steward@ca.blm.gov
Date: 03/04/2008 04:44PM
cc: Peggy_Bartels@fws.gov, "gcheniae" <gcheniae@cox.net>,

Lynda_Kastoll@ca.blm.gov
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Peggy_Bartels@fws.gov
03/06/2008 12:18 PM

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cc Amy_Gramlich@URSCorp.com, Angela_Leiba@URSCorp.com, Cheryl_Rustin@URSCorp.com,
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Patrick_Mock@URS Corp.com

03/06/2008 11:35 AM

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cc Amy_Gramlich@URSCorp.com, Angela_Leiba@URSCorp.com, Cheryl_Rustin@URSCorp.com, "gcheniae" <gcheniae@cox.net>, Lynda_Kastoll@ca.blm.gov, Peggy_Bartels@fws.gov, Glen_Kinoshita@URSCorp.com
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I have a 2:30 call scheduled on the 10th and will be on the road on the 13th, but can take a call on my cell

phone so long as I have cell coverage at that time.

In the mean time I have asked my staff biologist to categorize each species detected thus far as to whether it is considered to be breeding or not and estimate their relative abundance (abundant, common, uncommon, rare). I have also asked that our current field workers (rare plant surveyers) continue to document any species they detect. Presumably we will detect a few more species this year to add to our list.

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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Daniel_Steward@ca.blm.gov

Daniel_Steward
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03/06/2008 09:43
AM

To: Peggy_Bartels@fws.gov

cc: Amy_Gramlich@URSCorp.com, Angela_Leiba@URSCorp.com, Cheryl_Rustin@URSCorp.com, "gcheniae" <gcheniae@cox.net>, Lynda_Kastoll@ca.blm.gov, Patrick_Mock@URSCorp.com

Subject: Re: Migratory Birds on Sterling Solar 2

Peggy and Pat,

I am free on the afternoon of the 10th and anytime on the 13th.

Daniel Steward, Resources Branch Chief
Bureau of Land Management, El Centro Field Office
1661 South 4th Street
El Centro, CA 92243
Phone: (760) 337-4424
Cell: (760)791-5602
Fax: (760) 337-4490

Peggy_Bartels@fws.gov
03/05/2008 07:46 AM

To
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cc
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Angela_Leiba@URSCorp.com,
Cheryl_Rustin@URSCorp.com,
Daniel_Steward@ca.blm.gov,
"gcheniae" <gcheniae@cox.net>,
Lynda_Kastoll@ca.blm.gov,
Patrick_Mock@URSCorp.com

Subject
Re: Migratory Birds on Sterling Solar 2

Hello Pat,

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I am available this week beginning this afternoon and next week except for the 12th. Please contact me at your earliest convenience.

Thanks so very much.
Peggy Bartels
Section 7/10 Coordinator
Wildlife Biologist MS
6010 Hidden Valley Road
Carlsbad, California 92011
760.431.9440 Ext. 310 (o)
760.431.5901 (f)

Patrick_Mock@
URSCorp.com

To
03/04/2008 Daniel_Steward@ca.blm.gov
05:46 PM
cc
Patrick_Mock@URSCorp.com, Peggy_Bartels@fws.gov,
"gcheniae" <gcheniae@cox.net>,
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Re: Migratory Birds on Sterling Solar 2

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We are interested in finding out the specifics of FWS' concerns so that we can address them adequately to meet any concerns of FWS, BLM, and CEC. The Solar Two site is located outside the Desert Management Areas, hence why SES selected this site in order to avoid conflicts with the DMA plan.

Pat

Patrick J. Mock, Ph.D.
Senior Project Manager
Senior Biologist

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619-294-9400
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-----Daniel_Steward@ca.blm.gov wrote: -----

To: Patrick_Mock@URSCorp.com
From: Daniel_Steward@ca.blm.gov
Date: 03/04/2008 04:44PM
cc: Peggy_Bartels@fws.gov, "gcheniae" <gcheniae@cox.net>, Lynda_Kastoll@ca.blm.gov
Subject: Migratory Birds on Sterling Solar 2

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(See attached file: Solar Two Bird List and survey dates.doc)

(See attached file: Solar Two Bird List and survey dates.doc)

Solar Two Bird List and survey dates.doc

Peggy_Bartels@fws.gov
03/05/2008 07:46 AM

To Patrick_Mock@URSCorp.com
cc Amy_Gramlich@URSCorp.com, Angela_Leiba@URSCorp.com, Cheryl_Rustin@URSCorp.com,
bcc
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03/04/2008 05:46 PM

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cc Patrick_Mock@URSCorp.com, Peggy_Bartels@fws.gov, "gcheniae" <gcheniae@cox.net>, Lynda_Kastoll@ca.blm.gov, Angela_Leiba@URSCorp.com, Cheryl_Rustin@URSCorp.com, Amy_Gramlich@URSCorp.com
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Solar Two Bird List and survey dates.doc

TECHNICAL AREA: CULTURAL RESOURCES

Data Adequacy Request 1: Applicant refers to survey of "Project area." Please confirm whether the "Project area" is equal to the area inside the "Project Boundary" on the maps in the Cultural Resources section of the AFC (figure 5.5-1) and the cultural resource inventory report in appendix Z of the AFC (Figure 5.7-1).

Response: Please refer to the discussion in section 5.7.1.1 and 5.7.2.2 of the revised Section 5.7, Cultural Resources provided as Attachment CUL-1. Figure 5.7-1 Depicts the "Project Area" including all elements of the Areas of Potential Effect and is included in Attachment CUL-1.

TECHNICAL AREA: CULTURAL RESOURCES

Data Adequacy Request 2: Please clarify whether the literature search area for the proposed transmission line was 0.25 miles out from both sides of the proposed alignment, and whether the literature search area included the proposed water line and the area 0.25 miles out from both sides of that proposed alignment.

Response: Please refer to section 5.7.5 and figure 5.7-2 of Attachment CUL-1.

TECHNICAL AREA: CULTURAL RESOURCES

Data Adequacy Request 3: Please clarify whether this information [Cultural resources listed under a city or county ordinance, local heritage society or museum] was sought, and, if so, what the results were of any such inquiry.

Response: Please refer to section 5.7.5 of Attachment CUL-1.

Research was performed to assess any cultural resources listed by Imperial County and any local heritage society or museum in 2007 and again on August 7, 2008. Imperial county does not maintain such a list. The local heritage society was contacted but will be closed for an undisclosed extended period of time.

TECHNICAL AREA: CULTURAL RESOURCES

Data Adequacy Request 4: AFC Table 5.7-2 does not include many sites in vol. 2, app. A (e.g., CA-IMP-114, -383, -721–723, -743–750, -753–756, -928–930, and -2032), and there is at least one site in the table (CA-IMP-112) for which there is no record. Documentation for Yuha Basin Discontiguous District appears to be absent. Please revise Table 5.7-2 and provide DPR forms for the complete inventory of previously recorded cultural resources in the literature search area.

Response: Please refer to table 5.7-2 on page 5.7-19 of Attachment CUL-1. Complete site records are provided in the revised confidential Cultural Resources Technical Report.

TECHNICAL AREA: CULTURAL RESOURCES

Data Adequacy Request 5: Please revise Figure 5.7-1 to provide the boundary of the literature search area on it.

Response: A revised figure showing the boundary of the literature search is provided as figure 5.7-2 of Attachment CUL-1.

TECHNICAL AREA: CULTURAL RESOURCES

Data Adequacy Request 6: Please provide all old technical reports (CHRIS reports).

Response: All old technical reports (CHRIS reports) are provided in Appendix C of the revised confidential Cultural Resources Technical Report.

TECHNICAL AREA: CULTURAL RESOURCES

Data Adequacy Request 7: Applicant refers to survey of "Project area." Please confirm either that the Imperial Valley substation is in the "Project area," or that the substation and a 200 ft. buffer was part of the new archaeological surveys. Similarly, please confirm either that the "Proposed Main Access Road" is in the "Project area," or that the proposed road and a 100 ft. buffer was part of the new archaeological surveys. Please provide archaeological survey information for an additional 50-ft.wide strip along the project's 3.4-mi. water supply line.

Response: Please refer to sections 5.7.1.2 and 5.7.7 and Figure 5.7-1 of Attachment CUL-1.

TECHNICAL AREA: CULTURAL RESOURCES

Data Adequacy Request 8: Please provide the results of a built-environment survey, including Plaster City, the Westside Main Canal, and any other standing buildings or structures located within 0.5 miles of the proposed plant site and linear facilities.

Response: Please refer to section 5.7.7 of the Attachment CUL-1.

TECHNICAL AREA: CULTURAL RESOURCES

Data Adequacy Request 9: Pp. 5.7-22 and 5.7-23, vol. 1, AFC says that the list of archaeological sites in sec. 5.7 of the AFC (table 5.7-3) is preliminary. The present technical report, therefore, does not present the results of the new archaeological surveys. It presents partial results.

Response: Please refer to Section 5.7.6 and table 5.7-3 of Attachment CUL-1 for the complete results of the new archeological surveys.

TECHNICAL AREA: CULTURAL RESOURCES

Data Adequacy Request 10: Please provide a new draft technical report that includes a *complete* inventory of archaeological resources and that conforms to the ARMR format. Please prepare the report consistent with the direction in subsection VI.B.b, section VII (research designs for both historic and prehistoric archaeological resources), and section X of ARMR. To facilitate the development of appropriate mitigation measures, please incorporate the direction of subsection XI.B of ARMR.

Response: A revised draft Cultural Resources Technical Report has been submitted. It is inclusive of the above requests.

TECHNICAL AREA: CULTURAL RESOURCES

Data Adequacy Request 11: Please provide a report for a built-environment survey of Plaster City, the Westside Main Canal, and any other such resources.

Response: Please refer to section 5.7.6 of Attachment CUL-1.

TECHNICAL AREA: CULTURAL RESOURCES

Data Adequacy Request 12: Please incorporate, into section 5.7 of the AFC, non-confidential information on the *complete* inventory of archaeological resources in the main project area, along the project laterals, on and around the Imperial Valley substation, and on and around the laydown area to the east of the main project area, and the complete inventory of built-environment resources that will be the result of the built-environment survey.

Response: A complete cultural resources inventory is presented in Attachment CUL-1 as table 5.7-3 and section 5.7.6. A built environment survey has been conducted and the results are included in this submittal in section 5.7.7. This information is also included in the revised confidential Cultural Resources Technical Report.

TECHNICAL AREA: CULTURAL RESOURCES

Data Adequacy Request 13: Please include a section in the technical report that describes the built-environment survey procedures and methodology.

Response: A section has been included in Volume One of the revised confidential Cultural Resources Technical Report. This information is summarized in section 5.7.7 of Attachment CUL-1.

TECHNICAL AREA: CULTURAL RESOURCES

Data Adequacy Request 14: Please revise the *Results* section of the technical report to reflect the *complete* inventory of archaeological resources.

Response: A completed results section, updated with the information from the Built Environment Survey, the consideration of district potential for the prehistoric sites recorded during the survey, a complete inventory of sites, with eligibility and district recommendations is included in Volume 1 of the revised confidential Cultural Resources Technical Report.

TECHNICAL AREA: CULTURAL RESOURCES

Data Adequacy Request 15: Please draft a report section to present the results of the built-environment survey.

Response: A section has been included in Volume One of the revised confidential Cultural Resources Technical Report. This information is summarized in section 5.7.7 of Attachment CUL-1.

TECHNICAL AREA: CULTURAL RESOURCES

Data Adequacy Request 16: The DPR 523 series forms provided do not represent the *complete* inventory of archaeological resources and do not provide adequately detailed information.

Response: Volumes 2 through 5 of the revised confidential Cultural Resources Technical Report contain the complete inventory of archeological resources.

TECHNICAL AREA: CULTURAL RESOURCES

Data Adequacy Request 17: Please revise the [built environment] forms to represent the *complete* inventory of archaeological resources with adequately detailed information.

Response: Volumes 2 through 5 of the revised confidential Cultural Resources Technical Report contain the complete inventory of archeological resources.

TECHNICAL AREA: CULTURAL RESOURCES

Data Adequacy Request 18: Please provide DPR 523 series forms that reflect the built-environment survey results.

Response: Volumes 2 through 5 of the revised confidential Cultural Resources Technical Report contain the complete inventory of archeological resources.

TECHNICAL AREA: CULTURAL RESOURCES

Data Adequacy Request 19: Please provide an appropriately scaled 11x17-inch topographical map with all previously recorded and newly found cultural resources.

Response: A series of 11x17-inch topographical maps are provided in Volume 1 of the revised confidential Cultural Resources Technical Report.

TECHNICAL AREA: CULTURAL RESOURCES

Data Adequacy Request 20: While the Cultural Resources section of the AFC notes the qualifications of project personnel, the resumes that the section cites as being in appendix Z of the AFC do not appear to be present. Please provide the referenced resumes. Please provide the resumes for project personnel responsible for project built-environment research who meet the Secretary of the Interior's Professional Standards.

Response: All resumes are provided as Appendix D to the revised confidential Cultural Resources Technical Report.

TECHNICAL AREA: CULTURAL RESOURCES

Data Adequacy Request 21: While p. 5.7-30, vol. 1 of the AFC describes the progress of Native American consultation, the documentation of the consultation that the section cites as being in appendix Z of the AFC does not appear to be present. Please provide the referenced documentation of consultation, NAHC responses, letters sent to Native Americans, responses from Native Americans, and summary of oral responses from Native Americans.

Response: All documentation of consultation, NAHC responses, letters sent to Native Americans, and a summary of oral responses from Native Americans is provided in the revised confidential Cultural Resources Technical Report.

TECHNICAL AREA: CULTURAL RESOURCES

Data Adequacy Request 22: Please provide provision to mitigate project impacts on any built-environment resources found as a result of the new built-environment survey.

Response: No built-environment resources recommended as eligible for the National Register of Historic Places will be impacted by the Project. The only two built-environment resources recommended as eligible are Highway 80 and the US Gypsum rail line. It is unlikely these resources will be impacted unless major alterations are proposed to the resources to support the project. At this time no mitigation measures are proposed, because no major impacts have been proposed.

ATTACHMENT CUL-1

REVISED SECTION 5.7, CULTURAL RESOURCES

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SECTION 5 ENVIRONMENTAL INFORMATION

5.7 CULTURAL RESOURCES

Stirling Energy Systems, Inc. Solar Two, LLC (SES) is seeking approval to construct and operate a 750 megawatt solar generation project and ancillary facilities (Solar Two or the Project). This section presents the inventory results of the Class III intensive pedestrian archaeological survey of the SES Solar Two Project area (Project area) Project and ancillary facilities. This section will also discuss the general effects the project has on historic properties, both previously and newly recorded. The section will discuss general treatment measures that can be utilized to avoid, minimize, or mitigate those effects. This section will also provide a general framework for the approach URS Corporation will be using to develop evaluations of newly identified cultural resource evaluations.

Cultural resources include prehistoric resources, historic buildings, structures, objects, districts, and sites; and sites and resources of concern to Native American and other ethnic groups. The cultural resources assessment prepared for the Project includes a description of the Project area and effected environment; existing site conditions; a summary of the ethnography, prehistory, and history of the region; a review of site records for previously completed cultural resource investigations and recorded sites in the Area of Potential Effect (APE) and within a buffer of the project boundary; the results of the archaeological and historic architecture pedestrian surveys of the APE; and the Native American consultation. Complete documentation of the cultural resources assessment is appended in the archaeological survey report (Appendix Z, Cultural Resources Technical Report).

This report provides a summary of cultural resources identified during the surveys conducted of the Project area. It presents a program for the systematic evaluation of the potential significance of these resources. It concludes with management recommendations for the short-term and long-term treatment of historic properties that might be adversely affected by the proposed Project.

All cultural resources work for the Project was carried out under the direct supervision of an archaeologist who meets the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation Professional Qualification Standards (36 Code of Federal Regulations [CFR] Part 61, Appendix A). The cultural resources investigation was done in accordance with the Warren-Alquist State Energy Resources Conservation and Development Act (Public Resources Code, Section 25000 *et seq*.); *Instructions to the California Energy Commission Staff for the Review of and Information Requirements for an Application for Certification* (CEC 1992). *Regulations Pertaining to the Rules of Practice and Procedure and Power Plant Site Certification* (CEC 2007a); and *Rules of Practice and Procedure and Power Plant Site Regulations Revisions* (CEC 2007b). Also, this study was done in accordance with the California Environmental Quality Act (Public Resources Code, Section 21000 *et seq*. and Title 14 of the California Code of Regulations, Chapter 3, Section 15000).

5.7.1 A E

5.7.1.1 Project Area Description

The Project description is provided in Section 3.0 Project Description and Location. The Solar Two Project area (APE) covers approximately 6,500 acres comprised of 6,140 acres of land requested to be

authorized under a ROW Grant Permit from the Bureau of Land Management (BLM) to Stirling Energy Systems (SES) Inc., and 360 acres of private land (Figure 5.7-1 - Site Project Location and Vicinity). The private lands may be purchased or leased by SES. Both the public and private lands to be used by the Project were included in the Class III cultural resources inventory of the APE and are reported on herein. Figure 5.7-1, Previous Archaeological Surveys, details the site description in relation to the Project.

5.7.1.2 Area of Potential Effects

The archaeological APE includes the Project area, and an additional 200 feet around the Project area. The delineation of the APE was done in accordance with the *Rules of Practice and Procedure and Power Plant Site Regulations Revisions*, Appendix B (g)(2)(C) (CEC 2007b).

The delineation of the APE was done in accordance with the *Rules of Practice and Procedure and Power Plant Site Regulations Revisions*, Appendix B (g)(2)(C) (CEC 2007b) with some adjustments made at the direction of the BLM. Overall, two APEs were designated for the project: an archaeological APE and a Built Environment APE. Elements of the APE are broken out in Table 5.7.1.2– Elements of the APE.

Table 5.7-1.2
Elements of the APE

A E	L	A
Phase I 300-MW Solar Field (main project area)	main project area	2565
Phase II 450-MW Solar Field	main project area	3610
750-MW Substation	East of the main project area	6
Access Road Corridor (100 ft wide)	Between Dunaway Road and the main project area	79
Laydown Area staging area	East of the main project area	24
Laydown Area	Interior of the main project area	82
Main Services Complex	Interior of the main project area	25
Project Boundary	200 ft buffer extending around the entire Project area.	6314
Transmission Line Corridor (300 ft wide)	Extends southeast from the main project area to the Imperial Valley substation	380
Waterline Corridor (150 ft wide)	Extends east from the main project area paralleling US 80	131

5.7.1.3 Physiography

Section 5.3, Geologic Hazards and Resources, provides a detailed description of the physiography of the Project area.

Of particular note with respect to cultural resources is the fact that the Project Site is located on the western edge of the Salton Basin. At various times during prehistory, the basin filled with floodwaters from the Colorado River to form a large lake that is referred to as Lake Cahuilla. The insertion, expansion, and retreat of this large body of water in the midst of an arid region had profound consequences for the prehistoric occupation of the region (Schaefer and Laylander 2007).

5.7.1.4 Soils and Geology

Section 5.3, Geologic Hazards and Resources, and Section 5.4, Soils, provide detailed descriptions of regional geology and soil conditions, respectively.

5.7.1.5 Existing Conditions

The Project area is currently open desert and outside of the Plaster City factory area. On the north boundary of the Project area, there is no current economic use of the area. Off-highway vehicle usage within the area is presently restricted to the established Bureau of Land Management (BLM) roads, though there is ample evidence this practice was not followed in the past. Bone scatters of domestic animals show that the area may have been used for grazing in the past. Additionally, there is evidence of modern disturbance in portions of the Project area in the form of gravel and sand mining.

5.7.1.6 Prehistoric Context

The Project area is situated within the Colorado Desert in a region that has not had substantial archaeological investigations. As more extensive archaeological excavations are completed, Colorado Desert native cultures are likely to be similar to those of the Mojave Desert to the north, where archaeological research has been conducted more extensively. However, some differences from the Mojave Desert region are to be expected. The Colorado Desert lies at a lower latitude and is prone to different weather conditions, which could have affected the types and amount of plant and animal resources available to prehistoric peoples. Also, throughout the Holocene, the Colorado River inundated the Salton Sink and created Lake Cahuilla, which increased freshwater resources and created areas with a more fertile environment able to sustain larger populations (Weide 1976).

Malcolm Rogers conducted the most extensive archaeological survey and report of the Colorado Desert in the 1920s (Weide 1976). His theories on the periods for many of the sites he found are uncertain because most of the cultural material is non-stratified surface remains and at that time the artifact chronology was in early stages of development (Rogers 1939). Several sites recorded have no artifact assemblage associated with them; they are merely cleared circles of about 6 feet in diameter and are sometimes defined by a low wall around the perimeter (Rogers 1939). These sites were interpreted by Rogers as “temporary bedding platforms” (Rogers 1939). These bedding platform features and other sites containing artifact assemblages of crude tools were the basis of Rogers’s suggestion that they were

associated with a pre-projectile point culture (Pre-Paleoindian period) (Rogers 1939). The absence of dateable material makes this hypothesis inconclusive.

Aside from the disputed Pre-Paleoindian period, archaeological research in Southern California over the past century has resulted in the development of a temporal scheme for regional prehistory that is generally accepted by the archaeological community. The temporal periods include the Paleoindian period, 12,000 to 7,000 years before present (YBP); the Archaic period, beginning between 8,000 and 7,000 YBP; and (transitioning to) the Late Prehistoric period at approximately 3,000 YBP. Although specific dates are given, the beginning and end date for each period is not static because technological innovations occurred at different times within this region. For example, the introduction of the bow and arrow closely coincided with the introduction of pottery, but their introduction does not appear to have occurred simultaneously throughout the region (Moratto 1984).

Paleoindian Period "San Dieguito" (12,000 to 7,000 Years Before Present)

San Dieguito is the earliest established and dated period for the Colorado Desert region (Weide 1976). The start of the Paleoindian period is marked by increased rainfall and cooler temperatures that formed deep pluvial lakes and marshes even in interior desert regions and offered a multitude of subsistence options. Although temperatures warmed and the lakes began to recede around 11,000 YBP (Moratto 1984), the recession was so gradual that the pluvial lake environment was still in existence for several millennia, during which the San Dieguito people adopted living patterns in association with their environment. These cultural patterns composed the Western Pluvial Lakes Tradition, which included developing methods of procuring foods and materials based on the plants and animals that lived around the lakes (Moratto 1984). Marshes in particular offered a variety of plants with edible seeds, roots, and stems. This habitat provided frogs, turtles, fish, and water rats and attracted ducks and other waterfowl, which were good for meat and eggs. Sites located along the former shore of Lake Cahuilla reveal that these people had developed a flaked-stone industry with an extensive number of tool forms, including ovate bifaces, chipped stone crescents (called amulets by Rogers), drills, cleavers, pulping planes, and keeled scrapers (Rogers 1939). However, milling tools are conspicuously absent from these sites, implying that hard seeds were not included in the diet (Moratto 1984).

Archaic Period (7,000 to 3,000 Years Before Present)

With a dramatic increase in temperature and the evaporation of the pluvial lakes during the early Holocene, it is believed the population of the Colorado Desert dropped precipitously. Archaeological sites recorded to date are limited to small artifact scatters, and the dates for these sites are questionable because of poor chronological sequencing; the only good chronology to compare them with is from sites in the southern Mojave Desert. Excavations in the Mojave Desert include several sites in the Pinto Basin Area; these excavations resulted in the discovery of the material culture ascribed to this period (Campbell and Campbell 1935). The Pinto Period is defined to have existed between 7,000 to 4,000 YBP (Moratto 1984). This period is marked by large numbers of Pinto-style points, which are moderately large triangular dart points with straight to expanding stems with marked basal notches that produce an eared or flared appearance, and the introduction of a small, flat variety of millingstone (Moratto 1984). A few Pinto-like points have been found in the Colorado Desert, such as one at the Split Mountain Sand Dune site. Because the stratum where the point was recovered was radiocarbon dated to 770 YBP, the point

likely represents re-use by a later cultural group rather than presence of Pinto cultural group. Pinto points have also been recorded at sites located along relict terraces of ancient Lake Cahuilla, indicating the lake may have refilled temporarily during this period (Weide 1976). The presence of these sites, the Truckhaven Man burial (radiocarbon date of 5,840 YBP), and a quartz point of unspecified type from a stratum radiocarbon dated at 4,980 YBP (Weide 1976) suggest that the Colorado Desert region was not entirely unoccupied during the Archaic Period; people may have been present only on a seasonal basis because of lack of resources (Fagan 2003).

The evaporation of the lakes also caused a shift in flora to plants adapted to arid climates. The hard seeds of mesquite (*Prosopis juliflora*) and screwbean (*Prosopis pubscens*) and foods from other desert-adapted plants, such as various types of cactus and agaves, became staples of the Native American diet (Barker 1976). Groundstone tools, including manos, metates, mortars, and pestles, were developed to aid in the processing of these new foods, and are commonly found in artifact assemblages throughout the Mojave and Colorado Deserts (Moratto 1984). In addition to stone tools, people of the Colorado Desert may have made wooden milling utensils and other artifacts of organic materials that are usually not preserved in the archaeological record. Ethnographic records show use of wooden mortars and pestles, items such as hooked sticks for shaking mesquite pods down from trees, nets in which to collect cactus and then beat against the ground to remove the needles, digging sticks for excavating rodents from burrows or digging up plants, and throwing sticks for hunting hare and other small game (Barker 1976). These tool types likely persisted for millennia with little change in technology or style.

Late Prehistoric Period (3,000 Years Before Present to European Contact – Anno Domini 1769)

Between Anno Domini (AD) 500 and 800, the Colorado River shifted course, and by around AD 1050 refilled Lake Cahuilla. This refilled lake provided a stable year-round water supply in the Colorado Desert. People began to repopulate the Colorado Desert, some following the river on its route from the Colorado River Valley and some attracted from the Mojave Desert or the mountain ranges to the west (Moratto 1984; Weide 1976). Ceramic wares, which had been introduced centuries before in other areas, were brought into this region with the influx of people. Typical wares included Tizon Brown wares and, in smaller quantities, Lower Colorado Buff wares (Moratto 1984). The Lower Colorado Buff wares, in common use since AD 800, show new attributes around AD 1050 such as stucco finishes, recurved jar rims, and tab handles on scoops. These attributes aid archaeologists in dating sites that appear in the area (Moratto 1984).

Small arrow points, such as Cottonwood Triangular points, appearing around AD 900, and Desert Side-notched points, first appearing around AD 1100, replacing the larger dart point types that marked earlier periods (Moratto 1984). These smaller points indicate the introduction of the bow and arrow and its replacement of the atlatl (Moratto 1984). These projectile point types are common throughout California during this period and into the historic period (Justice 2002).

People began to occupy permanent settlements and exploit different food sources at different times of the year because enough resources were present to provide year-round sustenance. Evidence for these settlements can be seen in coprolite analyses, which reveal the remains of plant and animal foods available during different seasons (Moratto 1984). Trade networks with people living near the coast also

likely developed during this time. This conclusion is suggested by the first appearance of shell beads and shell ornaments in the artifact assemblages (Moratto 1984).

Around AD 1450, the Colorado River's course shifted eastward, and native peoples were confined to an ever decreasing fertile area as Lake Cahuilla gradually dried up (Moratto 1984). As the lake receded, surrounding areas experienced an increase in occupation as the population shifted to more abundant lands, such as the Colorado River Valley and mountains to the west of the Salton Trough (Weide 1976; Moratto 1984). People persevered in this desert environment, as evidenced in a series of stone-lined fish traps marking the progress of the receding waterline (Moratto 1984). As subsistence resources disappeared along with the lake, people also attempted to rely on limited agriculture. Evidence of water control techniques, such as the use of wells and springs for irrigation and the construction of reservoirs and ditches, is apparent (Weide 1976). Tizon Brown wares still compose a majority of the ceramic wares used, though Lower Colorado Buff wares significantly increase during this period (Moratto 1984). Desert Side-notched and Cottonwood Triangular points remain common point types throughout the Late Prehistoric Period (Moratto 1984).

Materials used in projectile point production include chalcedony, chert, quartzite, quartz, fine grained basalt, Andesite, and obsidian. Isoptropic materials such as obsidian were preferred sources for projectile points and the receding shoreline of Lake Cahuilla exposed an ideal obsidian source, Obsidian Butte; the butte is located between 131 feet to 230 feet below sea level at the southern end of the Salton Sea. This lithic source was exposed intermittently during the Late Prehistoric Period and subsequently exploited for use in flaked stone tool manufacture. When available, obsidian was collected, used locally, and traded or carried west to coastal Southern California. Obsidian hydration dates for the source range from A.D. 1200 to 1800 (Laylander 1997).

5.7. E

Kroeber's 1925 inventory of California Indian groups found that the Salton Trough was occupied at least intermittently by the Kamia (Heizer 1966), a band that has been more recently linked to the Ipai and Tipai tribes. Although the bands did not recognize a native tribal name, they were grouped together based on their linguistic similarities. The bands shared the Tipai language, classified in the Yuman language family, Hokan stock (Luomala 1978). Together, the Ipai and Tipai ranged from the Colorado Desert to the coast, and along the coast from Agua Hedionda past the Todos Santos Bay (Luomala 1978). The Tipai were thought to have lived along the coast and in the mountains for millennia before migrating east into the Mojave Desert and south along the Colorado River around 1,000 AD; eventually Tipai people moved further into the Colorado Desert, including around Lake Cahuilla (Luomala 1978). As Lake Cahuilla receded, some Tipai migrated back to the mountains and others relocated to the banks of the New and the Alamo Rivers.

The Kamia band occupied a small area of the Ipai/Tipai area and was found primarily in Imperial Valley (Gifford 1931). Heintzelman recorded a population of 254 Kamia living along the banks of the New River in 1849 (Barker 1976). The Southern Diegueño, another band of the Tipai, occupied the peninsular ranges to the west of the Colorado Desert and the Kamia kept in close contact with this group, though they spoke different dialects and had different social structures and subsistence collection methods (Barker 1976). The Kamia would frequently exchange agricultural produce with their Southern Diegueño

neighbors for gathered food staples abundant at higher elevations, such as acorns, dried cakes of mescal, and piñon nuts (Gifford 1931; Barker 1976). Interaction between the Kamia and the Southern Diegueño was so extensive that Gifford had difficulty defining a territorial boundary between the two (Gifford 1931).

The Kamia apparently also had strong relationships with another group of Yuman speakers, the Quechan tribe to the east, who occupied the Colorado River Valley (Luomala 1978). The two tribes were so familiar with each other that it was reported in 1849 that the "Grand Chief of the Cuchans" (Quechan) was a Kamia and born in a New River settlement (Gifford 1931). The two tribes shared many traits, including the practice of agriculture, and frequently were allied in battle (Gifford 1931). As with the Southern Diegueño, friendly relations made territorial boundaries between the Quechan and the Kamia difficult to ascertain, and Gifford even records Kamia living in Quechan territory, on the west bank of the Colorado River (Gifford 1931).

Some overlapping of territory may also have occurred with the Cahuilla, whose boundaries lay close to the north, extending from the Salton Sink up to the San Bernardino Mountains (Bean 1978). No record of interaction with the Kamia exists; the Cahuilla preferred to trade and intermarry among tribes more closely related to their own language and culture, such as the Gabrielino, found along the coast near present-day Los Angeles (Bean 1978). Their language belongs to the Cupan subgroup of the Takic family of Uto-Aztecan stock (Bean 1978). Because the environment of the Cahuilla was similar to that of the Kamia, subsistence tactics were essentially the same, though the Cahuilla relied less on agriculture (Bean 1978).

Although European contact with the Tipai occurred with the arrival of the Spanish in 1540 (Luomala 1978), the inland band of Kamia may not have encountered colonists until 1769. It was at this time that the Spanish took an interest in inland routes and Gaspar de Portola, governor of the Spanish territory Las Californias, led an expedition through Mexico and across the Colorado Desert region to San Diego (Chartkoff and Chartkoff 1984). Still, even before this, the effects of the contact on the coast rippled through Native settlements, resulting in population drops even among the interior tribes due the introduction of new European pathogens (Cook 1978).

The Kamia band of Tipai were a semi-sedentary people who, in contrast with the rest of the Tipai, practiced horticulture during summer months, after the floods of the Colorado River had peaked (Luomala 1978; Barker 1976). Crops such as maize (*Zea mays*), tepary beans (*Phaseolus acutifolius* var. *latifolius*), and several species of gourds and melons were grown, as were cowpeas (*Vigna sinensis*), which had been introduced by the Spanish (Barker 1976). Irrigation canals were typically not used in most areas, with the exception of the Jacumba Valley, but occasionally sloughs were dammed to thoroughly soak an area before planting (Gifford 1931). Agricultural practices were supplemented by gathering wild plant foods, with a particular reliance on mesquite and screwbean (Barker 1976). They also practiced hunting rabbits, deer, sheep, and small mammals, and fishing in sloughs around the New River (Barker 1976).

The last Kamia chief died in 1905 and was not replaced because the population was too scattered (Barker 1976). As a result, the entire Kamia social system suffered a breakdown, though Kamia individuals were still living. Kamia descendents may have survived this breakdown, but currently no longer show any cultural distinction from the other Tipai bands.

5.7. R H C

5.7.3.1 Spanish Period (1540 to 1821)

The northern Sonoran Desert was rarely visited by Europeans until the intensive settlement of the twentieth century because of the desert's remoteness and dry, nearly waterless environment. One early European explorer of the region was Hernando de Alarcon, believed to be the first Spanish explorer to see the Colorado River in the 1540s. Spanish explorers would visit the desert region several hundred years later as they attempted to locate a more direct travel route between their older and well-established missions in Sonora and New Mexico and the missions of San Diego, San Gabriel, and Monterey. The latter missions were all located along coastal Alta California (northern California) and were on the frontier with Russian fur trappers who were moving south along the Pacific coast. Thus, as Weber (1992) points out, "the success or failure of New California as a bastion against Russian expansion seemed to depend on the rapid delivery of reinforcements, food, and supplies."

Spanish officials and clerics in California made many attempts during the mid-eighteenth century to establish a reliable supply network. Antonio María de Bucareli, at the urging of Father Junípero Serra, enlisted the aid of the Sonoran frontier officer Captain Juan Bautista de Anza in 1773 to find an appropriate overland route from Sonora to San Diego and on to Monterey. Along with the overland route, a sea venture was also formulated with the effect that both the sea and land routes would send a message to the Russians that Alta California belonged to Spain. Anza acquired the assistance of a small group of soldiers and two Franciscan friars, the most notable being Francisco Garcés, who made the trip through the lower Colorado Desert several times. The Anza-Garcés journey began in 1774 at the mission in Tubac, south of present day Tucson, Arizona. It proceeded south to Altar in the state of Sonora, Mexico, and one month later arrived at the junction of the Gila and Colorado Rivers. By early 1774, the Anza-Garcés expedition crossed the Sonoran Desert, encountered the Yuman Indians along the Colorado, crossed the San Jacinto Mountains, and reached the San Gabriel Mission (Weber 1992).

In 1781, José de Gálvez ordered the construction of two outposts along the Colorado River to further secure the overland travel route between Sonora and the California coast: Purísima Concepción, near present-day Yuma, and San Pedro y San Pablo de Bicuñer, near present-day Laguna Dam (Weber 1992). Although Father Garcés was the leading priest for the villages, Teodoro de Croix became the first Comondancia General de Provincias Internas in 1777 (Texas State Historical Association 2001). In effect, de Croix was the commandant for the interior provinces of Mexico and was the person responsible for ensuring the success of the enterprise of the two newly established villages along the Colorado.

Four years after the creation of the villages, the Yuma Indians, because of the ill treatment caused to them by the Spanish, attacked the villages, killing Father Garcés along with many of the settlers. In 1782, Pedro Fages argued for an increased force to defend against Russian encroachment and to quell Indian uprisings. Although Fages rescued several of the remaining Spanish captives in Yuman custody and managed to inflict heavy damage on the Yuman villages, no peace accords were established between the Yuma Indians and the Spanish. By the close of the eighteenth century, New Mexico still did not have a reliable overland route to their settlements along the Pacific coast of Alta California and was forced to rely on sea ventures to supply these settlements (Weber 1992).

5.7.3.2 Mexican Period (1821 to 1848)

The downfall of Spain as a colonial imperialist in the New World likely had its most dramatic beginnings in 1810. The downfall occurred when a group of Anglo-Americans rebelled against the Spanish-controlled government in West Florida and captured the town of Baton Rouge on behalf of the United States government. Because of its domestic problems in the wake of the Napoleonic Wars, Spain could do little to provide economic assistance to its overseas ventures and in 1819 signed a peace accord, the Adams-Onís Treaty, which gave East Florida to the United States and in effect de facto control of West Florida to the United States. Texas, a heavily contested region, was to remain under Spanish control.

In 1821, just 2 years after the signing of the Adams-Onís Treaty, Agustin de Iturbide led a successful coup over the Spanish colonial government in Mexico City. Iturbide was an officer in the Spanish military in New Spain who became disenchanted with the current Spanish government. In 1820, he was assigned to suppress an anti-colonial uprising, but instead Iturbide led the coup. In February 1821, Iturbide issued the "Plan of Iguala," which laid the framework for Mexican independence from Spain. By August of 1821, the Spanish government signed the Treaty of Córdoba, which recognized the change of government to Iturbide's insurrection. Soon afterward, in 1822, Iturbide declared himself Agustin I, emperor of New Spain. Because of his despotism, Antonio López de Santa Anna led a successful coup that deposed Iturbide in 1824. However, Iturbide had left a dangerous legacy for Mexico. In 1822, Iturbide permitted Stephen Austin and a small group of Anglo-Americans to construct a settlement inside the border of Texas, more likely as an act of appeasement to limit the increasingly frequent border disputes. This act, however, only furthered the cause of the Anglo-Americans to take control of the southwest.

Few, if any, development activities were conducted in the northern territories of Mexico during this period. The Sonoran Desert was nearly forgotten and only referenced as Indian (Yuman) horse thieves were chased through the desert. In 1826 and 1827, Romualdo Pacheco, who would become the first California-born governor of the State of California and was sub-Lieutenant, Engineer officer, and aide-de-camp to the governor of Mexican California, made several exploratory expeditions through the region (Stott 1950). In 1831, a group of Anglo-American traders departed St. Louis, headed for Santa Fe, traveled through the Sonoran Desert, and ended in San Diego. One person of note in this trip was Jonathan Trumball Warner of Connecticut, who was a clerk on the expedition (Stott 1950). Warner later acquired San Jose Valley in San Diego County. The valley became known as "Warner's Ranch," the name it retains to this day.

5.7.3.3 American Period (1848–Present)

The Anglo-American colonies established in Texas in the 1820s eventually rebelled and gained their independence from Mexico in the Texas War of Independence in 1836. The newly established Republic of Texas maintained its independence until 1845, when it petitioned for annexation to the United States.

When this annexation was completed in 1845, during the presidency of James K. Polk, the stage was set for war between an outraged Mexico and the United States. Border tensions escalated and the result was war and an invasion of Mexico by the United States in 1846. That year, President Polk enlisted the aid of Mormon volunteers to form a battalion and advance on the Mexican army in California. The Mormons

already had a large population in the west, particularly in Salt Lake City, Utah, area. By June 1846, Colonel Stephen W. Kearney, commander of the western army, with the assistance of Mormon leader Brigham Young, recruited 314 Mormon soldiers (Vurtinus 1979). By the fall of 1846, the battalion moved through the southwest toward California and reached San Diego on 29 January 1847. In the process, the western army, with the aid of the Mormon battalion, established garrisons in San Diego, Los Angeles, the mission of San Luis Rey and established a battery in Cajon Pass, San Bernardino County (Vurtinus 1979).

By 1848, the United States had prevailed over the Mexican army, and the Treaty of Guadalupe Hidalgo ended the war. By the terms of the treaty, the United States acquired all Mexican territory north and west of the Rio Grande and Gila rivers, including Texas, New Mexico territory, and Alta California. In the same year, Anglo-Americans discovered gold in the mountains of California, and the resulting gold rush brought a huge influx of Anglo-American settlement. This transformed California from a Hispanic backwoods frontier to the new Anglo-American "Golden State" that was admitted to the Union as the thirty-first state in 1850.

The settlement of the Imperial Valley owes much of its early history to Dr. Oliver M. Wozencraft. In 1849, Wozencraft, on his way to gold fields near San Bernardino from New Orleans, traveled through the Imperial Valley and noted the soil fertility and potential for arability. He was likely the first person to recognize the valley's potential for agriculture, and he noted that because the Colorado River was much higher than the valley, it would be feasible to irrigate using a gravity canal from the Colorado River (Garnholz 1991).

Wozencraft's opinion of the fertile valley was reaffirmed in 1853 when Jefferson Davis, Secretary of the U.S. War Department, ordered a scientific expedition along the Colorado River for the placement of fortifications. In this expedition led by Lieutenant R. S. Williamson and William Phipps Blake, professor of Yale College, the particular fertility of the alluvial soil at the southern end of the Salton Sink was noted. Blake prophetically wrote, "It is indeed a serious question, whether a canal would not cause the overflow once more of a vast surface, and refill, to a certain extent, the dry valley of the ancient lake" (Garnholz 1991). Blake's expedition in the Salton Sink was the most scientific of its time and included soil scientists, geologists, geographers, and paleontologists to name a few. It was Blake's expedition that first scientifically described how the Colorado River had meandered through the valley, delivered enough silt to block the mouth of the Gulf of California, and recognized that the banks of the current Colorado River course were much higher than that of Imperial Valley (Smith 1979). During the nineteenth century, the Colorado River flooded the valley several times: specifically, in 1840, 1842, 1852, 1859, and 1867 (Garnholz 1991).

With the information gathered from the scientific expedition, Wozencraft pressed California into granting him approximately 1,600 square miles or roughly 10 million square acres (essentially the entire present-day Imperial County and parts of Riverside County). However, the federal government retained title to the land in this region of California, and Wozencraft was unable to convince Congress, even with the results of the scientific analysis of the valley, to support his efforts. Wozencraft then approached George Chaffey to finance the project. Chaffey, who would successfully spearhead irrigation projects in San Bernardino County and Australia, was also unconvinced and noted that the "Imperial Valley was to [sic] hot for white men to prosper" (Garnholz 1991). Chaffey would later change his mind and near the end of

the nineteenth century led the effort to irrigate the valley. Still undeterred, Wozencraft hired the Los Angeles County surveyor, Ebenezeer Hadley, in 1860 to draw up a plan to irrigate the valley by diverting the Colorado River through the Alamo River (Garnholz 1991). Wozencraft left California for Washington, D.C., to lobby Congress. He died several years later without ever convincing Congress and never saw his dream fulfilled. Although Wozencraft failed to create an irrigation network, his efforts during the mid-nineteenth century led the way for future development efforts.

Between 1893 and 1894, the Colorado Irrigation Company, under the direction of Chief Engineer Charles R. Rockwood, followed Wozencraft's earlier attempts to irrigate the Imperial Valley. Originally known as the "Valley of the Dead," understandable considering that it receives less than 3 inches of rainfall per year, Charles Rockwood renamed it "Imperial Valley" as part of his grand vision of channelizing the Colorado through thousands of miles of canal lines, with the net effect of irrigating hundreds of thousands of acres of land in the Sonoran Desert (Reisner 1986). Teaming with George Chaffey, head of the California Development Company (CDC), Rockwood, who became the chief engineer of the company in 1901, continued on the plans established by Wozencraft in the mid-nineteenth century to have a canal, referred to as the "main channel," constructed from the Colorado River through the Imperial Valley using an ancient overflow channel of the Colorado known as the Alamo River (Sperry 1975). Chaffey, to avoid conflict with the Mexican government over land development—the canal was to be developed almost entirely on the south side of the border, which, because it was conducted by a foreign agency, was prohibited by Mexican law—established a subsidiary to the CDC, the Sociedad de Irrgación y Terrenos de la Baja California (Smith 1979). By 1901, the Imperial Valley was irrigated and attracted many new settlers and farmers from the Midwest. In 1907, Imperial County was established from the western portions of San Diego County.

George Chaffey replaced Charles Rockwood at the Colorado Irrigation Company because of his experience in working on canal projects and deep financial interests in seeing the development of the southwest. One of the main problems throughout the entire canal venture project was constant silting, which needed consistent dredging of muck. The solution was to build a wooden, though supposedly temporary, structure referred to as the "Chaffey Gate" (Sperry 1975; Tout 1932). The year the gate was constructed, 1904, was one of the wetter years on record and the gate was constructed too high on the riverbank. Arguments at the time seem to suggest that Chaffey had the gate constructed correctly, but that because the water level was high at the time, the engineer in charge of the project placed several removable flashboards in the bottom of the gate, which silted over rapidly (Sperry 1975). The next few years were very dry, causing the canals' water level to drop, which precipitated the construction of more diversion and gates around the Chaffey Gate. However, 1905 was extremely wet. Several flooding episodes

occurred, with the fifth one completely destroying all remaining gates and dams along the canal network system. The Colorado River, originally flowing toward the Gulf of Californian, had changed its course and started flooding the Alamo River to the Salton Sink in Imperial Valley.

The Southern Pacific Railroad Company threatened a lawsuit against the company for flooding their railroad line along the Salton Sink. A year later, the company reorganized and the board was taken over by men associated with Southern Pacific, including Epes Randolph, who was the assistant to the president of Southern Pacific and became president of the Development Company (Sperry 1975). The task of

returning the Colorado to its natural course heading toward the Gulf of California was such a daunting and expensive quest that Southern Pacific eventually ended its association with the Development Company. However, Southern Pacific did request over $3 million from the U.S. government for expenses incurred in turning the Colorado back toward the Gulf; the government awarded them $1 million 22 years later (Sperry 1975; Tout 1932). Only the construction of the Hoover Dam allowed for more effective control of the Colorado River for irrigation purposes.

At about the same time that Rockwood and Chaffey were devising plans to irrigate the Imperial Valley, W.F. Holt was developing an idea to introduce electricity to the region through hydroelectric power. Holt formed the Holton Power Company in 1903 with the purpose of constructing a 40-foot drop on the Alamo River. By 1916, the Holton Power Company was successfully producing enough energy to supply the needs of the entire Imperial Valley. Soon after, the Nevada-California Electric Company acquired the Holton Power Company; however, Nevada-California had problems in producing enough reliable electricity to the expanding agricultural economy of the valley and electricity rates to produce the power needed were becoming too high for the average farmer.

The Imperial Irrigation District (IID) was organized in 1911 to acquire the land rights of the defunct CDC, and its Mexican subsidiary Sociedad de Irrigación y Terrenos de la Baja California, from Southern Pacific. By the mid-1920s, IID was delivering water to over 500,000 acres of arable land (Imperial Irrigation District 2006). The Boulder Canyon Act, passed in 1928, authorized the Bureau of Reclamation to construct Boulder Dam, completed in 1935, along the Colorado River. The Imperial Valley and IID benefited greatly as the act and the dam provided immediate hydroelectric power to the valley. The act also provided for the construction of the All-American Canal. In 1932, the Secretary of the Interior and IID signed an agreement to allow IID to use the hydroelectric power from the canal system to repay the costs of the canal construction. The All-American Canal was begun in 1934 and the first diesel-generating plant was constructed near Brawley in 1936 (Imperial Irrigation District 2006). Subsequent hydroelectric plants were constructed in 1941. The All-American Canal was completed in 1941.

5.7.

The key cultural resources personnel who conducted and/or supervised the field survey and prepared the technical report (Appendix Z, Cultural Resources Technical Report) and this Application for Certification section are as follows:

- Reid Farmer, MA, RPA (URS) Principal Investigator for this Project;
- Elizabeth Roberts, MA (URS Archaeologist);
- Rachael Nixon, MA (URS Archaeologist);
- Joshua McNutt, MA (URS Archaeologist);
- Dustin Kay, BS (URS Archaeologist);
- Gordon Tucker, PhD, RPA (URS Archaeologist);
- Juston Fariello, BA (URS Archaeologist);

- Sarah Mattiussi, BA (URS Archaeologist);
- Joshua Peabody, MA (URS Archaeologist);
- Jeffrey Reid, BA (URS Archaeologist);
- Jeremy Hollins, MA (URS Architectural Historian), and
- Leroy Laurie, BA (URS Archaeologist).

The initial Principal Investigator for the project was T. Reid Farmer. Mr. Farmer directed the field investigations and was assisted by Elizabeth B. Roberts. Mr. Farmer and Ms. Roberts collaborated on writing the initial draft report, with contributions from Drs. Gordon C. Tucker Jr. and Robert J. Mutaw. . During the course of the report preparation phase, Mr. Farmer resigned as Principal Investigator and that role was assumed by Brian Glenn. Also, at that time Elizabeth Roberts and Robert Mutaw assumed responsibilities for the completion of the report under Mr. Glenn's direction. Ms. Kim Zielinski prepared the illustrations used in the report. Resumes and qualifications for all contributing URS staff are located in Volume 8, Appendix C. All participants meet the Secretary of Interior's Qualification Standards.

5.7.5 S R L R

A search of the records was conducted for all of the Project area and its corresponding APE. The search extended to a one mile buffer around the entire Project area and the corresponding APE boundaries. Figure 5.7-2 presents the area examined for the records search. Figure 5.7-3 presents all the surveys conducted in the area examined for the records search.

On 16 January 2007, Matthew Armstrong, URS Archaeologist, requested a records search from the Southeast Information Center (SIC) at the Imperial Valley College Desert Museum from the California Historical Resource Information System cultural resources database. A second records search was conducted by Elizabeth Roberts, URS Archaeologist, on 26 and 27 February 2008 at the SIC to cover the area of the proposed transmission line, which had not been identified at the time of the initial records search.

The SIC searched all relevant previously recorded cultural resources and previous investigations completed for the Project area and a 1-mile search radius (Appendix Z, Cultural Resources Technical Report). Information reviewed included location maps for all previously recorded trinomial and primary prehistoric and historical archaeological sites and isolates; site record forms and updates for all cultural resources previously identified; previous investigation boundaries; and National Archaeological Database citations for associated reports, historical maps, and historical addresses. Copies of site records, maps depicting previously recorded sites and surveys, and technical reports for investigations within a quarter mile of the Project area are included in Appendix Z.

The records searches identified 25 cultural resources investigations conducted within 1 mile of the Project area. No cultural resources investigations have been conducted within the Project area. These investigations are listed in Table 5.7-1, Previous Surveys in or Near Project Area, and their locations are shown on Figure 5.7-1, Previous Archaeological Surveys.

Table 5.7-1
Previous Surveys in or Near Project Area

N.A.D. .	N			D S
1100108	Archaeological Survey of the Yuha Basin, Imperial County	Jay von Werlhof and Sherilee von Werlhof	U.S. Department of the Interior, Bureau of Land Management, Riverside, CA	20 June 1977
1100207	Class II Cultural Resource Inventory of the East Mesa and West Mesa Regions, Imperial Valley, California	WESTEC Services, Inc.	U.S Department of the Interior, Bureau of Land Management, Riverside, CA, Contract No. YA-512-CT9-75	July 1980
1100233	Cultural Resources Study of a Proposed Electric Transmission Line From Jade to the Sand Hills, Imperial Valley, California	Carol J. Walker, Charles S. Bull, Jay von Werlhof	San Diego Gas and Electric	13 February 1981
1100251	Volume II Appendix Phase II, Archaeological Survey of the La Rosita 230 kV Interconnection Project	Cultural Systems Research, Inc.	San Diego Gas and Electric	November 1981
1100262	Archaeological Field Investigation of the Cultural Resources Associated With the Proposed Imperial Valley Substation (7A) Access Road	Cultural Systems Research, Inc.	San Diego Gas and Electric	March 1982
1100279	Volume I Phase III Archaeological Survey of the Mountain Springs (Jade) to Sand Hills Portion of the APS/SDG&E Interconnection Project 500 Kv Transmission Line	Cultural Systems Research, Inc.	San Diego Gas and Electric	1982

Table 5.7-1
Previous Surveys in or Near Project Area
(Continued)

N.A.D. .	N			D S
1100286	South Brawley Prospect Geothermal Overlay Zone Draft Program Environmental Impact Report Volume I	County of Imperial	Unknown	28 January 1983
1100289	Cultural Resource Inventory of the La Rosita to Imperial Valley Interconnection Project 230 Kv Transmission Line, Imperial Valley, California	Greenwood and Associates	Unknown	18 March 1983
1100297	Archaeological Examinations of Petty Ray Geophysical Transects on West Mesa	Jay von Werlhof, Imperial Valley College	Bureau of Land Management, El Centro Area Office	15 June 1983
1100301	Appendix B Cultural Resources Inventory for Thirty Proposed Asset Management Parcels in Imperial Valley, California	Patrick Welch	Unknown	July 1983
1100310	Southwest Powerlink Cultural Resources Management Plan Volume III-B	Jan Townsend, WIRTH Environmental Services	San Diego Gas and Electric	March 1984
1100311	Southwest Powerlink Cultural Resources Management Plan Volume II	Jan Townsend, WIRTH Environmental Services	San Diego Gas and Electric	March 1984
1100314	Volume III Data Recovery on the Mountain Springs (Jade) to the Sand Hills Segment-Southwest Powerlink Project	M. Steven Shackley, WIRTH Environmental Services	San Diego Gas and Electric	September 1983

Table 5.7-1
Previous Surveys in or Near Project Area
(Continued)

N.A.D. .	N			D S
1100315	Volume IV Data Recovery on the Mountain Springs (Jade) to the Sand Hills Segment-Southwest Powerlink Project	M. Steven Shackley, WIRTH Environmental Services	San Diego Gas and Electric	April 1984
1100316	Volume II – Appendixes Data Recovery on the Mountain Spring (Jade) to Sand Hills Segment, Southwest Powerlink Project	M. Steven Shackley, WIRTH Environmental Services	San Diego Gas and Electric	April 1984
1100319	Volume I Archaeological Investigations in the Western Colorado Desert: A Socioecological Approach	M. Steven Shackley, WIRTH Environmental Services	San Diego Gas and Electric	April 1984
1100325	West Mesa Resource Survey and Site Evaluation, Imperial Valley, California	WESTEC Services, Inc.	USDI, BLM., El Centro Area Office	1984
1100330	Camps and Quarries After the Lake: A Survey of 547 Acres Below the Relic Lake Cahuilla Shoreline in the Vicinity if Interstate 8 and Dunaway Road	Mooney-Lettieri and Associates	USDI, BLM	January 1985
1100496	Yuha Rehab and Mechanical Restoration	Unknown	USDI, BLM, El Centro Area Office	29 April 2003
1100737	Desert Material Sites: West Imperial County Bear, Coyote, Plaster City, Underpass, Yuha	Unknown	Unknown	May 1989

Table 5.7-1
Previous Surveys in or Near Project Area
(Continued)

N.A.D. .	N			D S
1100804	AT&T Wireless Services Facility No. IM004, Imperial Valley, California	Curt Duke, LSA Associates, Inc.	GeoTrans, Inc.	29 March 2002
1100820	Cultural Resources Survey and Assessment of a Cellular Phone Tower Emplacement and Associated Access Road Along Old Highway 80 Near Dixieland, Imperial Valley, California	Professional Archaeological Services	Phase One, Inc.	May 2000
1100853	NEPA 2000-55, CACA-42103 Hunter's Alien Waters	Unknown	USDI, BLM, El Centro Field Office	7 March 2001
1100873	NEPA 2001-51, CACA Hunter's Alien Waters FY2001	Unknown	USDI, BLM, El Centro Field Office	18 October 2001
1100892	NEPA 2001-39, CACA-42904 NTCH-CA, inc. DBA Rio-Tel Communication site	Unknown	USDI, BLM, El Centro Field Office	17 July 2001
1100916	Section 106 Consultation Request for American Tower Corporation Cell Site CA7- New Site # 58	Phase One Inc. SM	Unknown	May 2000
1100984	Proposed Cellular Phone Communications Tower & Facility, Evan Hughes Highway, Plaster City, California	Unknown	Unknown	18 Apriil 2005

Table 5.7-1
Previous Surveys in or Near Project Area
(Continued)

N.A.D. .	N			D S
1101057	Cultural resources Study of the Mount Signal and Dixie Ranch, Imperial County Prison Alternatives, Imperial County, California	ERC Environmental and Energy Services Company, Inc.	California Department of Corrections Planning and Construction Division	January 1990
1101073	Cultural Resource Survey of a 230-KV Transmission corridor from the Imperial Valley Substation to the International Border with Mexico	Judy A. Berryman, Ph.D.	SEMPRA Energy	11 September 2001
1100757	Review of Alamosa PCS Site # 82502-020, Imperial County, CA	Environmental Biologist, Inc. Ohio 43209	Unknown	Unknown
CA-670-2007-93/CACA 47740-01	Proposed Geotechnical Investigations For The Stirling Energy Systems Solar Two Site Imperial County, CA	URS Corporation Denver, CO	El Centro Field Office Bureau of Land Management 1661 South Fourth Street El Centro, CA 92243	
	San Diego Gas & Electric Company's Sunrise Powerlink Project	SDG&E San Diego	El Centro Field Office Bureau of Land Management 1661 South Fourth Street El Centro, CA 92243	July 2008

The records searches identified 106 cultural resources located within the Project APE and 209 cultural resources located within 1 mile of the Project APE boundary. These investigations are listed in Table 5.7-2, Previously Recorded Cultural Resources Within 1 Mile of the Project Area, and their locations are included in Appendix Z, Cultural Resources Technical Report.

Table 5.7-2
Previously Recorded Cultural Resources within 1 Mile of the Project Area

T	S T	D
IMP-0112	cremation site	15 to 20 m x 15 to 20 m x 1 ft
IMP-0114	lithic scatter	20 m x 30 m
IMP-0269	probable seasonal area	480 m x 890 m
IMP-0321	Yuman site	Not on form
IMP-0364	probable seasonal campsite	120 m x 130 m
IMP-0383	temporary campsite	11 m x 11 m
IMP-0453	pottery shards	Not on form
IMP-0456	temporary campsite	0.5 acre
IMP-0721	ceramic scatter - small campsite	3 m x 3 m
IMP-0722	ceramic scatter	1 m x 1 m
IMP-0723	lithic workshop	3 m x 3 m
IMP-0730	cairn on low terrace - 65 stones	2 m x 1 m
IMP-0731	lithic scatter	10 m x 10 m
IMP-0732	lithic workshop	2 m x 2 m
IMP-0733	lithic workshop	2 m x 2 m
IMP-0734	lithic workshop	1 m x 2 m
IMP-0735	cairn of porphyry rock	90 cm x 90 cm x 7 cm
IMP-0737	cairn	112 cm x 180 cm x 24 cm
IMP-0738	lithic workshop and 3 tools	7 m x 3 m
IMP-0739-I	ridge-backed scraper	103 mm x 83 mm x 27 mm
IMP-0740-I	(isolate); fist axe	158 mm x 70 mm x 70 mm
IMP-0741	cairn	1 m x 1 m x 20 cm
IMP-0743	ceramic scatter	20 m x 5 m
IMP-0744	trail marker	1 m x 1 m
IMP-0745	trail	25 m x 25 m
IMP-0746	ceramic scatter - campsite	50 m x 30 m
IMP-0747-I	scraper	1 m x 1 m
IMP-0748	cairn	2 m x 1 m
IMP-0749	trail marker	2 m x 2 m

Table 5.7-2
Previously Recorded Cultural Resources within 1 Mile of the Project Area
(Continued)

T	S T	D
IMP-0750	ceramic scatter	2 m x 3 m
IMP-0753	ceramic scatter	15 m x 4 m
IMP-0754	ceramic scatter	9 m x 8 m
IMP-0755	ceramic scatter	11 m x 8 m
IMP-0756	hearth and ceramic scatter	24 m x 8 m
IMP-0758	mound of pebbles on a sand base	1 m x 1 m 35 cm x 7 cm
IMP-0759	trail	80 m x 35 cm
IMP-0760	lithic workshop	30 m x 40 m x 20 cm
IMP-0764	trail	804 m x 3 m
IMP-0776	cleared sandy area with ring of pebbles	1 m x 1 m
IMP-0777	trail	1,609 m x 1 m
IMP-0778	fire pit	1 m x 1 m x 14.5 cm
IMP-0780	firesite	
IMP-0808	trail	402 m x 1 m
IMP-0928	temporary camp	3 m x 3 m
IMP-0929	temporary camp	3 m x 3 m
IMP-0930	temporary camp	2 m x 2 m
IMP-0932	small lithic workshop	2 m x 2 m
IMP-0934	lithic workshop	2 m x 2 m
IMP-0935	lithic workshop, Malpais or SD I	1 m x 1 m
IMP-0936	small lithic workshop, Malpais	1 m x 1 m
IMP-0937	assemblage of porphyry tools and debitage; lithic workshop, malpais	2 m x 2 m
IMP-0938	lithic workshop, Malpais	2 m x 2 m
IMP-0939	lithic workshop, Malpais	1 m x 1 m
IMP-0940	lithic workshop, Malpais	1 m x 1 m
IMP-0941	lithic workshop, Malpais	2 m x 1 m
IMP-0942	lithic workshop, Malpais	3 m x 3 m
IMP-0943	lithic workshop, Malpais	5 m x 6 m
IMP-0944	lithic workshop, Malpais	10 m (area)
IMP-0945	small lithic workshop, Malpais	2 m x 2 m

Table 5.7-2
Previously Recorded Cultural Resources within 1 Mile of the Project Area
(Continued)

T	S T	D
IMP-0946	lithic workshop, Malpais	2 m x 2 m
IMP-0947	sleeping circle	400 cm x 280 cm
IMP-0948	sleeping circle	350 cm x 340 cm
IMP-0949	sleeping circle	470 cm x 400 cm
IMP-0950	sleeping circle	400 cm x 360 cm
IMP-0951	sleeping circle	350 cm x 370 cm
IMP-0952	sleeping circle	600 cm x 400 cm
IMP-0953	sleeping circle	400 cm x 300 cm
IMP-0954	sleeping circle	450 cm x 450 cm
IMP-0956	trail	1,207 m x 1 m
IMP-0958	cairn	1 m x 2 m
IMP-0959	cairn	1 m x 1 m
IMP-0960	lithic workshop	2 m x 3 m
IMP-0961	tools along trail	500 m x 1 m
IMP-0962	3 scrapers, possible lithic site	6 m x 6 m
IMP-0963	trail	805 m x 6 m
IMP-0964	cairn, lithic scatter	recheck
IMP-0966	agave pit	recheck
IMP-0972	lithic workshop	60.9 cm x 70.9 cm
IMP-0973	lithic workshop, Malpais	2 m x 2 m
IMP-0974	temporary campsite, Malpais	5 m x 6 m
IMP-0989	trail, probable Yuman	402 m x 1 m
IMP-0990	cairn (or monument), probable Yuman	1 m x 1 m
IMP-0991	temporary campsite, Yuman	30 m x 30 m
IMP-0992	temporary campsite, Yuman	150 m x 50 m
IMP-0993	cremation site, Yuman	3 m x 3 m
IMP-0994	temporary campsite, Yuman	3 m x 3 m
IMP-0995	temporary campsite, Yuman	30 m x 30 m
IMP-0996	temporary campsite, Yuman	30 m x 30 m
IMP-0997	cremation site, Yuman	3 m x 3 m
IMP-0998	temporary campsite, Yuman	3 m x 3 m

Table 5.7-2
Previously Recorded Cultural Resources within 1 Mile of the Project Area
(Continued)

T	S T	D
IMP-0999	scattered lithic workshop, Yuman	15 m x 15 m
IMP-1000	trail	50 m (length)
IMP-1001	temporary campsite, San Dieguito	5 m x 5 m
IMP-1002	temporary campsite, San Dieguito	8 m x 8 m
IMP-1003	lithic workshop, San Dieguito	1 m x 1 m
IMP-1006	temporary campsite, Yuman	10 m x 10 m
IMP-1007	lithic workshop, Yuman	10 m x 10 m
IMP-1009	05e: lithic scatter	600 m x 400 m
IMP-1010	sleeping circle	225 cm x 5 cm x 5 cm
IMP-1011	sleeping circles	320 cm x 5 cm x 5 cm
IMP-1012	temporary campsite, Yuman	15 m x 15 m
IMP-1013	lithic workshop, San Dieguito I	15 m x 15 m
IMP-1014	trail	35 m x 1 m
IMP-1015	temporary campsite and lithic workshop	30 m x 15 m
IMP-1033	ceramic and lithic scatter with cairns	20 m x 36 m
IMP-1034	cairn	2 m x 2 m
IMP-1035	cairn	2 m x 2 m
IMP-1036	cairn	2 m x 2 m
IMP-1037	cairn	2 m x 2 m
IMP-1042	temporary camp with loci	23 m x 25 m
IMP-1066	small lithic workshop	1.5 m x 1 m
IMP-1067	trail	208 m x 1 m
IMP-1069	lithic workshop, Malpais	Not on form
IMP-1070	lithic workshops	2 m x 4 m
IMP-1071	campsite	100 m x 100 m
IMP-1072	lithic workshop and cairn, Malpais	30 m x 50 m
IMP-1075	lithic workshop	100 m x 50 m
IMP-1078	lithic workshop, mound of 19 cobbles on sand base	33 m x 50 m
IMP-1122	lithic workshop, cairns	15 m x 15 m
IMP-1408	lithic scatter, ceramic scatter	65 m x 40 m
IMP-1411	felsitic flake (isolate)	1 m x 1 m

Table 5.7-2
Previously Recorded Cultural Resources within 1 Mile of the Project Area
(Continued)

T	S T	D
IMP-1412	pot sherd (isolate)	1 m x 1 m
IMP-1413	pottery and lithic scatters	1,700 m x 250 m
IMP-1417	6 sherds	8 m x 4 m
IMP-1418	3 pot sherds	10 m x 10 m
IMP-1419	lithic scatter, pottery locus	40 m x 40 m
IMP-1420	pottery scatter and felsitic flake scatter	20 m x 30 m
IMP-1426	village	10 m x 100 m
IMP-1597	sleeping circle	68 m x 3 m
IMP-1661	pottery scatter and tools	Not on form
IMP-1662	temporary campsite	75.5 m x 38.4 m
IMP-1663	campsite	3 m x 7.5 m
IMP-1724	Indian trail Northeast	Not on form
IMP-1744	crossed express and Indian trail	Not on form
IMP-1745	crossed express and Indian trail	Not on form
IMP-1746	crossed express and Indian trail	Not on form
IMP-1996	lithic workshop	3 m x 4 m
IMP-1997	lithic workshop with chips	2 m x 3 m
IMP-1999	scraper, mano, and destroyed evidence	1 m x 0.5 m
IMP-2000	lithic workshop with tools, cores, and debitage	8 m x 8 m
IMP-2001	random artifact in extended lithic workshop	8 m x 5 m
IMP-2002	single artifact along extended lithic workshop	12 m x 12 m
IMP-2003	miscellaneous artifacts in extended lithic area	1 m x 1 m
IMP-2004	miscellaneous tools in extended lithic site	1 m x 1 m
IMP-2005	single artifact in extended lithic area	1 m x 1 m
IMP-2006	lithic workshop with tools, cores, and debitage	1 m x 1 m
IMP-2009	lithic workshop with cores, debitage,	10 m x 10 m

Table 5.7-2
Previously Recorded Cultural Resources within 1 Mile of the Project Area
(Continued)

T	S T	D
	and tools	
IMP-2010	lithic workshop	Not on form
IMP-2011	lithic workshops	50 m x 50 m
IMP-2013	single artifact amid misc worked material	10 m x 10 m
IMP-2024	miscellaneous artifacts	1 m x 1 m
IMP-2025	lithic workshop	4 m x 4 m
IMP-2026	lithic workshops	3 m x 3 m
IMP-2027	lithic workshop with combination tools	5 m x 5 m
IMP-2028	lithic workshop	Not on form
IMP-2029	chopper, lithic workshop	Not on form
IMP-2030	single artifact (isolate)	1 m x 1 m
IMP-2032	lithic reduction station	3 m x 3 m
IMP-2033	chipping station	10 m x 2 m
IMP-2034	lithic workshop	7.6 m x 7.6 m
IMP-2035	single artifact (isolate)	1 m x 1 m
IMP-2036	punctate and debitage	1 m x 1 m
IMP-2038	porphyry core with debitage	Not on form
IMP-2041	lithic workshop	7 m x 7 m
IMP-2043	lithic workshop	1.5 m x 1.5 m
IMP-2044	lithic workshop	2 m x 2 m
IMP-2046	lithic workshop	2 m x 2 m
IMP-2071	lithic workshop	6 m x 6 m
IMP-2073	chipping station, scrapers, knives, spokes have	1 m x 2 m
IMP-2074	lithic scatter; probably San Dieguito site	1,001 m x 5 m
IMP-2075	core, grey porphyry, 2 choppers	3 m x 3 m
IMP-2076	core and 3 choppers	5 m x 5 m
IMP-2077	core, chopper, debitage, and scraper	30.4 m x 9.1 m
IMP-2078	choppers and core	30.4 m x 21.3 m

Table 5.7-2
Previously Recorded Cultural Resources within 1 Mile of the Project Area
(Continued)

T	S T	D
IMP-2081	3 tools, choppers, and scraper	1 m x 30 m
IMP-2082	chopper and 2 cores	3 m x 18 m
IMP-2083	chipping station with core, chopper, and debitage	5 m x 5 m
IMP-2084	chopper, 2 cores, and knife	5 m x 5 m
IMP-2085	tools	5 m x 5 m
IMP-2086	lithic	15 m x 30 m
IMP-2087	chipping station	10 m x 10 m
IMP-2088	lithic site	15 m x 15 m
IMP-2089	lithic tools	5 m x 5 m
IMP-2092	lithic tools	30 m x 10 m
IMP-2093	chipping station	30 m x 5 m
IMP-2094	lithic tools	30 m x 30 m
IMP-2095	chipping station	5 m x 5 m
IMP-2096	lithic site	15 m x 5 m
IMP-2097	lithic	30 m x 5 m
IMP-2098	possible agave pit with tools	2.5 m x 7.3 m
IMP-2099	lithic	1 m x 1 m
IMP-2100	random tools	10 m x 10 m
IMP-2105	lithic station	5 m x 5 m
IMP-2106	lithic workshop with tool	10 m x 10 m
IMP-2107	sleeping circle	2 m x 2 m
IMP-2112	lithic workshop	53.3 m x 45.7 m
IMP-2122	lithic scatter with tools	5 m x 5 m
IMP-2137	lithic workshop	3 m x 3 m
IMP-2139	lithic scatter	2 m x 2 m
IMP-2141	lithic, fist axe, core and debitage	2 m x 2 m
IMP-2144	lithic, core and small knife	1 m x 1 m
IMP-2145	random tools at pottery scatter site	1 m x 1 m
IMP-2147	lithic chips and hammerstone	2 m x 2 m
IMP-2149	lithic flakes	1 m x 1 m
IMP-2154	lithic, core, and flakes	1 m x 1 m

Table 5.7-2
Previously Recorded Cultural Resources within 1 Mile of the Project Area
(Continued)

T	S T	D
IMP-2156	lithic flakes	1 m x 1 m
IMP-2157	lithic tools	2 m x 2 m
IMP-2158	lithic flakes and hammerstone	1 m x 1 m
IMP-2176	lithic tools	1 m x 1 m
IMP-2177	lithic workshop and sleeping circles	30 m x 10 m
IMP-2178	lithic workshop, chopper core, domed scraper plane	50 m x 10 m
IMP-2179	lithic workshop, fist chopper	11 m x 1 m
IMP-2180	trail	15 m x 1 m
IMP-2181	lithic tool, ovoid scraper (isolate)	1 m x 1 m
IMP-2182	lithic tools and trail	1 m x 1 m
IMP-2183	lithic assemblage	1 m x 1 m
IMP-2185	lithic tool and trail	1 m x 1 m
IMP-2189	lithic workshop and cairn	30 m x 30 m
IMP-2190	lithic workshop	3 m x 3 m
IMP-2193	flaking station	2 m x 2 m
IMP-2194	flaking station	2 m x 2 m
IMP-2195	flaking station	2 m x 2 m
IMP-2196	lithic station and worked tools	30 m x 30 m
IMP-2197	lithic station	2 m x 2 m
IMP-2198	lithic station	2 m x 2 m
IMP-2200	lithic station	1 m x 1 m
IMP-2202	lithic workshop (3 choppers)	20 m x 5 m
IMP-2203	lithic workshop (3 choppers)	5 m x 3 m
IMP-2204	lithic workshop (core and debitage)	1 m x 1 m
IMP-2205	sleeping circle, 3 flaking stations	10 m x 10 m
IMP-2207	lithic, fist axe and hammerstone	2 m x 1 m
IMP-2211	lithic workshop (core and 3 choppers)	3 m x 3 m
IMP-2212	lithic, fist axe, knife	2 m x 1 m
IMP-2213	lithic workshop	60 m x 20 m
IMP-2214	lithic workshop and tools	12 m x 3 m
IMP-2216	lithic, knife	1 m x 1 m

Table 5.7-2
Previously Recorded Cultural Resources within 1 Mile of the Project Area
(Continued)

T	S T	D
IMP-2217	lithic, knife	1 m x 1 m
IMP-2218	lithic, chopper	1 m x 1 m
IMP-2219	lithic workship	2 m x 3 m
IMP-2223	lithic	4 m x 2 m
IMP-2224	lithic, hammerstone and knife	2 m x 1 m
IMP-2225	lithic workshop	3 m x 2 m
IMP-2226	lithic (3 cores)	3 m x 1 m
IMP-2231	lithic workshop	2 m x 2 m
IMP-2232	lithic workshop (spokeshave and flakes)	1 m x 2 m
IMP-2234	lithic workshop	1 m x 1 m
IMP-2235	lithic workshop (core and debitage)	2 m x 2 m
IMP-2236	lithic workshop	25 m x 10 m
IMP-2239	lithic, 2 choppers and 1 scraper	1 m x 3 m
IMP-2241	lilthic	5 m x 2 m
IMP-2247	lithic, knife scraper core	3 m x 1 m
IMP-2251	lithic workshop	1 m x 1 m
IMP-2302	lithic workshop	30 m x 30 m
IMP-2303	lithic workshop	50 m x 50 m
IMP-2304	lithic workshop	30 m x 100 m
IMP-2305	lithic workshop	100 m x 30 m
IMP-2306	single artifact	Multiple dimensions given
IMP-2315	lithic workshop	6 m x 3 m
IMP-2322	lithic workshop (green porphyry and quartz)	60 m x 48 m
IMP-2332	lithic workshop with core	3 m x 1.5 m
IMP-2333	lithic workshop	2.4 m x 2.4 m
IMP-2334	lithic workshop, 5 tools	6 m x 4.5 m
IMP-2341	circle with artifacts in center	1 m x 1 m
IMP-2351	3 artifacts	Not on form
IMP-2353	single artifact	1 m x 1 m
IMP-2359	lithic workshop	1 m x 1 m
IMP-2360	cairn	1 m x 1 m

Table 5.7-2
Previously Recorded Cultural Resources within 1 Mile of the Project Area
(Continued)

T	S T	D
IMP-2361	lithic workshop	9.12 m2
IMP-2362	single artifact	1 m x 1 m
IMP-2363	lithic workshop	30 m x 30 m
IMP-2364	lithic workshop	Multiple dimensions given
IMP-2371	lithic workshop	30 m x 30 m
IMP-2372	lithic workshop	15 m x 15 m
IMP-2373	intersection of 2 trails	300 m x 1 m
IMP-2438	lithic scatter	10 m x 10 m
IMP-2439	2 cores and a few flakes	10 m x 10 m
IMP-2440	2 cores and 20 bone fragments	5 m x 5 m
IMP-2441	2 cores and flakes	5 m x 5 m
IMP-2442	5 fired red sandstone deposits	100 m x 60 m
IMP-2443	lithic workshop, green porphyry	130 m x 10 m
IMP-2478	possible trail	100 m x 1 m
IMP-2479	scraper, 2 cores, and flakes	1 m x 1 m
IMP-2764	lithic scatter with tools	40 m x 15 m
IMP-3052	ceramic scatter	3 m x 3 m
IMP-3191-H	ruins of the Dixieland School	Not on form
IMP-3192-H	Dixieland Cafe and Grocery store	Not on form
IMP-3276-H	San Felipe Creek	8ft x 6 inches
IMP-3396-H	crossed express trail	Not on form
IMP-3399-H	crossed wagon road	Not on form
IMP-3400-H	Wagon Road (unable to relocate 1978)	Not on form
IMP-3401-H	cross wagon road	Not on form
IMP-3402-H	Wagon Road (unable to relocate 1978)	Not on form
IMP-3505-H	military occupation (heavy) mounts, cairns, trail	402.3 m (length)
IMP-3745	lithic scatter	5 m x 5 m
IMP-3747	single potsherd (isolate)	Not on form
IMP-3748	isolate (hammerstone)	10 cm x 8 cm x 6 cm
IMP-3750	chipping station	3 m x 3 m

Table 5.7-2
Previously Recorded Cultural Resources within 1 Mile of the Project Area
(Continued)

T	S T	D
IMP-3751	lithic scatter	1 m x 1 m
IMP-3752	lithic scatter with 4 loci	25 m x 30 m
IMP-3753	isolate (bifacial scraper)	NA
IMP-3754	lithic scatter with 2 loci	5 m x 10 m
IMP-3755	lithic scatter	3 m x 3 m
IMP-3756	lithic scatter	1 m x 1 m
IMP-3757	lithic scatter with tools	11 m x 3 m
IMP-3758	lithic scatter with tools	130 m x 60 m
IMP-3759	lithic scatter with tools	50 m x 50 m
IMP-3760	lithic scatter with 4 loci	60 m x 60 m
IMP-3761-H	historic trash dump with 2 loci	15 m x 20 m
IMP-3762	lithic scatter and trail segment	30 m x 0.3 m
IMP-3763	lithic scatter with tools	30 m x 20 m
IMP-3764	lithic scatter with tools	40 m x 15 m
IMP-3765	lithic scatter	20 m x 10 m
IMP-3766	pottery scatter with lithics	10 m x 0.8 m
IMP-3767	single flake (isolate)	NA
IMP-3768	lithic scatter with 2 loci	25 m x 45 m
IMP-3769	lithic scatter with tools	0.5 m x 0.5 m
IMP-3770	single flake (isolate)	NA
IMP-3771	lithic scatter with tools	60 m x 60 m
IMP-3772	lithic scatter with tools	15 m x 15 m
IMP-3773	lithic scatter with tools	20 m x 15 m
IMP-3774	lithics, 2 cores	1 m x 1 m
IMP-3775	lithics, flake and scraper	1 m x 1 m
IMP-3776	discoid scraper (isolate)	Not on form
IMP-3777	core (isolate)	Not on form
IMP-3778	chopper (isolate)	13 cm x 10 cm x 4.5 cm
IMP-3779	lithics, core and flake	0.2 m x 0.2 m
IMP-3782	ceramic scatter and trail segment	
IMP-3783	ceramic scatter	3 m x 3 m
IMP-3784	chopper (isolate)	Not on form

Table 5.7-2
Previously Recorded Cultural Resources within 1 Mile of the Project Area
(Continued)

T	S T	D
IMP-3785	lithic scatter	2 m x 2 m
IMP-3786	flake (isolate)	0.5 m x 0.5 m
IMP-3788	lithic scatter	20 m x 60 m
IMP-3789	lithic scatter	3 m x 3 m
IMP-3790	lithic scatter	7 m x 2 m
IMP-3791	lithic scatter, ceramic scatter	1 m x 1 m
IMP-4189	temporary campsite	100 m x 50 m
IMP-4190	lithic scatter	6 m x 8 m
IMP-4191	lithic scatter	0 to 10 sq m
IMP-4192	lithic (isolate)	0.5 m x 0.5 m
IMP-4193-H	historic trash dump	2 m x 2 m
IMP-4237	temporary campsite	800 m x 800 m
IMP-4244	lithic scatter	100 m x 35 m
IMP-4245-H	historic trash dump	10 m x 10 m
IMP-4246	ceramic scatter, lithic scatter	5 m x 15 m
IMP-4247	lithic workshop	200 m x 80 m
IMP-4248	ceramic scatter, lithic scatter	20 m x 5 m
IMP-4337	lithic (isolate)	0.5 m x 0.5 m
IMP-4338	chipping station	2 m x 1 m
IMP-4339	isolated locale	1 m x 1 m
IMP-4340	lithic (isolate)	0.5 m x 0.5 m
IMP-4341	chipping circle	1 m x 1 m
IMP-4342	lithic (isolate)	1 m x 1 m
IMP-4343	temporary campsite	80 m x 50 m
IMP-4344	lithic scatter; possible temporary campsite	160 m x 340 m
IMP-4346	temporary campsite	30 m x 30 m
IMP-4347	lithic scatter	10 m x 55 m
IMP-4348	temporary campsite/village	Multiple dimensions given
IMP-4349	lithic scatter, ceramic scatter, temporary campsite	500 m x 85 m
IMP-4350	lithic scatter, ceramic scatter	85 m x 135 m
IMP-4351	lithic scatter, ceramic scatter	25 m x 105 m

Table 5.7-2
Previously Recorded Cultural Resources within 1 Mile of the Project Area
(Continued)

T	S T	D
IMP-4352	lithic scatter, temporary campsite	40 m x 60 m
IMP-4354	lithic scatter	30 m x 30 m
IMP-4380	trail and lithic workshop	91 m x 91 m
IMP-4381	geoglyph and hearths	30 m x 30 m
IMP-4390-H	historic trash dump	5 m x 5 m
IMP-4469	temporary campsite, 2 pot drops, lithic scatter	20 m x 15 m
IMP-4470	pot drop	20 m x 10 m
IMP-4471	pottery scatter	Not on form
IMP-4515	ceramic scatter	10 m x 10 m
IMP-4540	temporary campsite, lithic scatter	100 m x 400 m
IMP-4541	lithic scatter, chipping circle	0.5 m x 1 m
IMP-4544	3 Felsitic flakes	1 m x 1 m
IMP-4546	3 Felsitic flakes	5 m x 5 m
IMP-4548	lithic scatter, flakes	70 m x 100 m
IMP-4573	lithic scatter	50 m x 30 m
IMP-4575	lithic scatter	5 m x 5 m
IMP-4577	lithic scatter	60 m x 40 m
IMP-4578	chipping circle	2 m x 2 m
IMP-4581	lithic workshop	5 m x 5 m
IMP-4582	lithic scatter	80 m x 80 m
IMP-4583	lithic workshop	5 m x 5 m
IMP-4584	chipping circle	5 m x 5 m
IMP-4585	temporary campsite	30 m x 30 m
IMP-4602	pottery scatter	25 m x 25 m
IMP-4677	lithic and pottery scatter	2 acres (area)
IMP-4750	lithic scatter	1 m x 1 m
IMP-4752	hearths, lithic scatter	120 m x 60 m
IMP-4875	chipping circle	0.5 m x 0.5 m
IMP-4954	lithic site with cairn	220 m x 120 m
IMP-5042	temporary campsite	75 m x 75 m
IMP-5043	ceramic scatter, lithic scatter	24 m x 30 m

Table 5.7-2
Previously Recorded Cultural Resources within 1 Mile of the Project Area
(Continued)

T	S T	D
IMP-5044	ceramic scatter, lithic scatter	7 m x 5 m
IMP-5058	ceramic scatter	5 m x 2 m
IMP-5189	lithic tools and flakes, possible shell midden, ceramics, and trails	60 m x 80 m
IMP-5190	trail, porphyry side scraper, porphyry punctate	100 m x 6 m
IMP-5197	low-density scatter of andesite flakes, sherds, and burnt bone.	50 m x 25 m
IMP-5198	low-density lithic scatter	50 m x 25 m
IMP-5199	chipping circle	15 m x 25 m
IMP-5200	chipping circle	22 m x 2 m
IMP-5201	pumice cache and low-density lithic scatter	15 m x 15 m
IMP-5202	temporary campsite	29 m x 20 m
IMP-5203	temporary campsite	15 m x 10 m
IMP-5204	temporary campsite	170 m x 30 m
IMP-5205	tempoary camp - lithic scatter	100 m x 100 m
IMP-5225	geoglyph	5 m x 10 m
IMP-5277	metate fragment	Not provided
IMP-5700	lithic workshop	Not provided
IMP-5701	3 primary flakes, 1 secondary flake, 1 hammerstone	Not provided
IMP-5704	lithic scatter	Not provided
IMP-5705	lithic scatter	Not provided
IMP-5707	lithic scatter	Not provided
IMP-5715	ceramic scatter	Not provided
IMP-5719	lithic scatter	Not provided
IMP-6687	lithic workshop	1 m x 1 m
IMP-7816-H	historic railroad stop	100 m x 40 m
IMP-7834-H	Westside Main Canal	40 mi long
IMP-7868-H	historic trash scatter on open desert	8 m x 12 m
IMP-8509	irrigation canal, concrete culvers	.31 mi length x 15.1 ft width
IMP-8654	ceramic scatter, lithic scatter	17 m x 17 m

Table 5.7-2
Previously Recorded Cultural Resources within 1 Mile of the Project Area
(Continued)

T	S T	D
IMP-8656	lithic scatter	58 m x 83 m
IMP-8667	lithic scatter	5 m x 5 m
IMP-8668	lithic scatter	11 m x 80 m
IMP-8669	ceramic scatter, lithic scatter	50 m x 60 m
IMP-8698	ceramic scatter, lithic scatter	15 m x 25 m
IMP-8720	lithic scatter	37 m x 140 m
IMP-8721	lithic scatter	35 m x 100 m
IMP-8738	lithic scatter	5 m x 5 m
IMP-8740	lithic scatter	5 m x 5 m
IMP-8743	lithic scatter	5 m x 20 m
IMP-8745	lithic scatter	6 m x 6 m
IMP-8749	cairns, lithic scatter	16 m x 49 m

Source: URS Corporation, 2008a.
Notes:
--- = not available
APE = Area of Potential Effect
cm = centimeters
ft = feet
m = meter
mi = miles
mm = millimeter
NRHP = National Register of Historic Places
sq m = square mile
x = by

5.7. A S

The archaeological survey was conducted in two different sessions due to the addition of acreage to the Project APE after the first field session was complete. Survey for the initial Project APE was completed by a crew of twenty between 9 January 2008 and 5 April 2008. Fieldwork was under the overall control of Reid Farmer, and due to varying personnel requirements, field supervision was under the control of Mr. Farmer, Rachael Nixon, Dustin Kay, Leroy Laurie, or Joshua Peabody. Survey for the additional acreage was conducted under the field supervision of Rachael Nixon and a crew of four between 6 and 9 May 2008.

Work was conducted under URS Cultural Resource Use Permits CA-06-01 and CA-06-11. A Fieldwork Authorization (Form 8151-3) for this Project was issued by the El Centro BLM Field Office on 17

December 2007 and a second authorization was issued on 31 March 2008, when the fieldwork took longer than initially anticipated.

This pedestrian survey for the Project APE covered the Project area and extended an additional 200 feet around it (Appendix Z, Cultural Resources Technical Report). A 300-foot wide right-of-way was surveyed for the proposed transmission line. The survey right-of-way extended approximately 7.5 miles south (approximately 10.5 miles total) of the Project area. Survey of a 50-foot right-of-way for a 7-mile-long water supply line east of the Project area was also conducted. The principal survey method consisted of a systematic walk-over in parallel transects at 10 meter intervals. The survey transects extended across the entire horizontal extent of the archaeological APE and the rights-of-way of the linears. Little vegetation was extant in the area, and ground visibility was excellent, usually at least 90 percent.

The URS archaeological team identified 385 newly and previously recorded archaeological sites and isolated finds. These are listed in Table 5.7-3, Newly Recorded Cultural Resources Within the Project Area. This list of sites is preliminary. Information is still being processed for each of the sites and will be completed before the final version of this table is submitted in the final version of the Cultural Resources Technical Report (URS 2008b). The table below reflects data currently available. At this time, data that assists in determining NRHP eligibility for some sites is not available. Many of the site boundaries are being reconfigured to include other newly recorded sites or previously recorded sites. Much of the information and details related to the cultural resource sites recorded during the Project may be subject to change between the draft and final Cultural Resources Technical reports (URS 2008b). Details about these sites, the Department of Parks and Recreation 523 forms completed for them, and the reasons for the URS recommendations are shown in Appendix Z, Cultural Resources Technical Report.

Table 5.7-3
Newly Recorded Cultural Resources within the Project Area

T S N	A	S T
DRK-001	27,292	AP2. Lithic scatter, AP3. Ceramic scatter, AP11. Hearths/pits, AP13. Trails/linear earthworks, AP15. Habitation debris
DRK-002	287	AP2. Lithic scatter, AP13. Trails/linear earthworks
DRK-004	213	AP2. Lithic scatter
DRK-005	871	AP2. Lithic scatter
DRK-009	5,459	AP2. Lithic scatter, AP13. Trails/linear earthworks
DRK-010	4,091	HP39. Other (historic survey marker rock cairn), AP2. Lithic scatter, AP8. Cairns/rock features, AP13. Trails/linear earthworks
DRK-011	3,224	AP2. Lithic scatter, AP13. Trails/linear earthworks
DRK-012	948	AP2. Lithic scatter, AP13. Trails/linear earthworks
DRK-013	182	AP2. Lithic scatter
DRK-015	816	AP2. Lithic scatter
DRK-016	62	AP2. Lithic scatter

Table 5.7-3
Newly Recorded Cultural Resources within the Project Area
(Continued)

T S N	A	S T
DRK-017	10	AP2. Lithic scatter
DRK-019	69	AP3. Ceramic scatter, AP13. Trails/linear earthworks
DRK-022	270	AP2. Lithic scatter
DRK-023	1,003	AH16. Other (historic rock cairns)
DRK-024	12	AP2. Lithic scatter
DRK-025	32	AP2. Lithic scatter
DRK-027	1,216	AP2. Lithic scatter, AP8. Cairns/rock features, AP10. Caches
DRK-029	227	AP2. Lithic scatter
DRK-030	471	AH4. Privies/dumps/trash scatter
DRK-031	17	AP2. Lithic scatter
DRK-032	134	AP2. Lithic scatter
DRK-034	8	AP2. Lithic scatter
DRK-035	1	AP2. Lithic scatter
DRK-037	5	AP2. Lithic scatter
DRK-041	2,002	AP2. Lithic scatter
DRK-042	410	AP2. Lithic scatter
DRK-043	109	AP2. Lithic scatter
DRK-044	6	AP2. Lithic scatter
DRK-045	43	AP2. Lithic scatter
DRK-046	361	AP2. Lithic scatter
DRK-047	157	AP2. Lithic scatter
DRK-048	1,510	AP2. Lithic scatter
DRK-049	387	AP2. Lithic scatter
DRK-050	70	AP2. Lithic scatter
DRK-052	344	AP2. Lithic scatter, AH4. Privies/dumps/trash scatter
DRK-139	5,391	AP2. Lithic scatter
DRK-140	849	AP2. Lithic scatter
DRK-141	1,260	AP2. Lithic scatter, AP11. Hearths/pits
DRK-143	905	AP2. Lithic scatter, AP3. Ceramic scatter, AP15. Habitation debris
DRK-144	494	AP2. Lithic scatter
DRK-146	1,215	AH4. Privies/dumps/trash scatter

Table 5.7-3
Newly Recorded Cultural Resources within the Project Area
(Continued)

T S N	A	S T
DRK-147	118	AP2. Lithic scatter, AH4. Privies/dumps/trash scatter
DRK-148	3,398	AP15. Habitation debris
DRK-149	104	AH4. Privies/dumps/trash scatter
DRK-150	120,810	AP15. Habitation debris, AH4. Privies/dumps/trash scatter
DRK-188	721	AP2. Lithic scatter
EBR-001	6,244	AP2. Lithic scatter
EBR-002	2,194	AP2. Lithic scatter, AP13. Trails/linear earthworks
EBR-003	169	AP2. Lithic scatter
EBR-015	235	AH4. Privies/dumps/trash scatter
EBR-016	36	AH4. Privies/dumps/trash scatter
EBR-018	5,108	AP2. Lithic scatter, AP3. Ceramic scatter, AP11. Hearths/pits, AP16. Other (prehistoric stone bead and pendant)
EBR-019	700,416	AP2. Lithic scatter, AP3. Ceramic scatter, AP11. Hearths/pits, AP1. Unknown (prehistoric animal or human bone)
EBR-020	26	AP2. Lithic scatter
EBR-021	12	AP2. Lithic scatter
EBR-022	2,847	AP2. Lithic scatter
EBR-023	40	AP2. Lithic scatter
EBR-025	7	AP2. Lithic scatter
EBR-026	301	AP3. Ceramic scatter, AP2. Lithic scatter
EBR-060	15	AP13. Trails/linear earthworks
EBR-061	45	AP2. Lithic scatter
EBR-062	554	AP2. Lithic scatter
EBR-064	1	AP2. Lithic scatter
EBR-065	109	AP2. Lithic scatter
EBR-066	1,331	AP2. Lithic scatter, AP3. Ceramic scatter
EBR-070	209	AP2. Lithic scatter
EBR-072	11	AP2. Lithic scatter
EBR-073	28	AP2. Lithic scatter
EBR-077	98	AP3. Ceramic scatter, AP2. Lithic scatter
EBR-079	864	AP2. Lithic scatter
EBR-080	37	AP2. Lithic scatter, AP13. Trails/linear earthworks

Table 5.7-3
Newly Recorded Cultural Resources within the Project Area
(Continued)

T S N	A	S T
EBR-081	4	AP2. Lithic scatter
EBR-084	16	AP2. Lithic scatter
EBR-085	23	AP3. Ceramic scatter
EBR-087	1,747	AP2. Lithic scatter, AH4. Privies/dumps/trash scatter
EBR-092	1,045	AH4. Privies/dumps/trash scatter, AH16. Other (historic)
EBR-095	2,817	AP2. Lithic scatter
EBR-096	13	AP2. Lithic scatter
EBR-097	2,102	AP2. Lithic scatter, AP3. Ceramic scatter, AP13. Trails/linear earthworks
EBR-098	53	AP2. Lithic scatter
EBR-099	862	AP2. Lithic scatter
EBR-100	31	AP2. Lithic scatter
EBR-101	333	AP2. Lithic scatter
EBR-102	2,320	AP2. Lithic scatter
EBR-103	428	AP2. Lithic scatter
EBR-106	7	AP2. Lithic scatter
EBR-107	153	AP2. Lithic scatter
EBR-108	570	AP2. Lithic scatter
EBR-109	802	AP2. Lithic scatter, AH4. Privies/dumps/trash scatter
EBR-205	14,014	AP2. Lithic scatter
EBR-207	63,618	AH4. Privies/dumps/trash scatter
EBR-213	163,671	AP2. Lithic scatter, AP3. Ceramic Scatter, AP11. Hearths/pits, AH4. Privies/dumps/trash scatter
EBR-218	3,398	AP15. Habitation debris, AP2. Lithic scatter, AP3. Ceramic scatter
EBR-219	11,874	AP2. Lithic scatter, AP3. Ceramic scatter
EBR-220	1,198	AP3. Ceramic Scatter, AP11. Hearths/pits
EBR-222	978	AP11. Hearths/pits, AP3. Ceramic scatter
EBR-223	3,955	AP2. Lithic scatter
EBR-300	1,189	AP2. Lithic scatter
EBR-303	351	AH4. Privies/dumps/trash scatter
EBR-304	167	AP2. Lithic scatter, AP3. Ceramic scatter
EBR-305	1,486	AP2. Lithic scatter, AP3. Ceramic scatter
EBR-C	5,757	AP2. Lithic scatter, AP3. Ceramic scatter, AP9. Burials, AP11. Hearths/pits

Table 5.7-3
Newly Recorded Cultural Resources within the Project Area
(Continued)

T S N	A	S T
JF-001	346	AP2. Lithic scatter
JF-002	308	AP2. Lithic scatter
JF-003	92	AP2. Lithic scatter
JF-004	23	AP2. Lithic scatter
JF-005	45	AP2. Lithic scatter
JF-006	559	AH16. Other (historic rock cairn benchmarks)
JF-007	7,753	AH16. Other (cairns)
JF-008	1,447	AH4. Privies/dumps/trash scatter
JF-018	19	AP2. Lithic scatter
JF-019	20	AP2. Lithic scatter
JF-026	9,943	AP2. Lithic scatter, AP3. Ceramic scatter, AP11. Hearths/pits
JF-027	150	AP2. Lithic scatter
JF-030	2,678	AH4. Privies/dumps/trash scatter
JF-031	448	AH4. Privies/dumps/trash scatter
JF-042	21	AP16. Other (prehistoric)
JF-043	90	AP2. Lithic scatter
JFB-002	5	AP16. Other (prehistoric)
JFB-006	7	AP16. Other (prehistoric)
JFB-009	8	AP16. Other (prehistoric)
JFB-011	75	AH4. Privies/dumps/trash scatter
JFB-012	3	AP2. Lithic scatter
JM-001	1,106	AP2. Lithic scatter
JM-002	508	AP2. Lithic scatter
JM-003	387	AP2. Lithic scatter
JM-004	106	AP2. Lithic scatter
JM-005	601	AP2. Lithic scatter
JM-006	495	AP2. Lithic scatter
JM-007	22	AP2. Lithic scatter
JM-008	9	AP2. Lithic scatter
JM-009	612	AP2. Lithic scatter
JM-011	2,178	AP2. Lithic scatter

Table 5.7-3
Newly Recorded Cultural Resources within the Project Area
(Continued)

T S N	A	S T
JM-012	185	AP2. Lithic scatter
JM-016	58	AP2. Lithic scatter
JM-017	519	AP2. Lithic scatter
JM-020	289	AP2. Lithic scatter
JM-021	154	AP2. Lithic scatter, AP8. Cairns/rock features
JM-022	655	AP2. Lithic scatter
JM-023	245	AP2. Lithic scatter
JM-024	190	AP2. Lithic scatter
JM-025	1,795	AP2. Lithic scatter
JM-026	4,027	AP2. Lithic scatter
JM-027	3,440	AP2. Lithic scatter
JM-028	13	AP2. Lithic scatter
JM-029	155	AP2. Lithic scatter
JM-030	6	AP2. Lithic scatter
JM-032	874	AP2. Lithic scatter
JM-033	133	AP2. Lithic scatter
JM-035	113	AP2. Lithic scatter
JM-036	203	AP2. Lithic Scatter
JM-037	1,485	AP2. Lithic Scatter
JM-038	121	AP2. Lithic scatter
JM-039	1,291	AP2. Lithic scatter
JM-041	640	AP2. Lithic scatter, AP13. Trail
JM-042	6,715	AP2. Lithic scatter
JM-043	7	AP2. Lithic scatter
JMK-010	2,572	AP2. Lithic scatter, AP3. Ceramic scatter
JMR-004	19	AP11. Hearths/pits
JMR-005	28,497	AP2. Lithic scatter, AP8. Cairns/rock features, AH4. Privies/dumps/trash scatters
JMR-006	2,346	AH16. Other (historic), AH4. Privies/dumps/trash scatters
JMR-008	18	AP2. Lithic scatter
JMR-009	3,997	AP2. Lithic scatter
JMR-011	235	AP2. Lithic scatter

Table 5.7-3
Newly Recorded Cultural Resources within the Project Area
(Continued)

T S N	A	S T
JMR-012	145	AP2. Lithic scatter, AP13. Trails
JMR-013	26	AP2. Lithic scatter
JMR-014	11,569	AP2. Lithic scatter, AP8. Cairns
JMR-018	1,670	AP2. Lithic scatter
JMR-021	41	AP2. Lithic scatter, AP3. Ceramic scatter
JMR-025	5,018	AP2. Lithic scatter
LL-018	288	AP2. Lithic scatter
LL-019	11,364	AP2. Lithic scatter
LL-020	209	AP2. Lithic scatter
LL-021	2,390	AP2. Lithic scatter, AP3. Ceramic scatter, AP11. Hearths/pits
LL-022	1,782	AP2. Lithic scatter, AP3. Ceramic scatter
LL-024	13,205	AP2. Lithic scatter, AP11. Hearths
LL-026	4,565	AP2. Lithic scatter
RAN-001	496	HP39. Other (historic)
RAN-002	8	AP2. Lithic scatter
RAN-004	27,132	AP2. Lithic scatter, AH4. Privies/dumps/trash scatter
RAN-005	228	AH4. Historic Refuse, AH16. Other (GLO marker)
RAN-006	1,827	AH4. Privies/dumps/trash scatter
RAN-007	1	AP2. Lithic scatter
RAN-008	13	AP3. Ceramic scatter
RAN-009	56	AH4. Privies/dumps/trash scatter
RAN-010	12	AP2. Lithic scatter
RAN-011	222	AP2. Lithic scatter, AP18. Cairn
RAN-012	1,790	AP2. Lithic scatter, AP3. Ceramic scatter, AP11. Hearths/pits, AP8. Cairns/rock features
RAN-013	83	AH4. Privies/dumps/trash scatter
RAN-014	54	AH4. Privies/dumps/trash scatter
RAN-015	13	AH4. Privies/dumps/trash scatter
RAN-016	11	AH16. Other (historic GLO survey marker)
RAN-017	25,666	AP2. Lithic scatter, AH4. Privies/dumps/trash scatter
RAN-018	22	AH16. Other (historic aerial photograph marker)
RAN-019	180	AH4. Privies/dumps/trash scatter

Table 5.7-3
Newly Recorded Cultural Resources within the Project Area
(Continued)

T S N	A	S T
RAN-020	1,178	AH4. Privies/dumps/trash scatter
RAN-021	9,892	AP2. Lithic scatter
RAN-022	15,941	AH4. Privies/dumps/trash scatter
RAN-023	16,867	AH4. Privies/dumps/trash scatter
RAN-024	43	AP2. Lithic scatter
RAN-025	86	AP2. Lithic scatter
RAN-026	11	AP2. Lithic scatter
RAN-027	1,219	AH4. Privies/dumps/trash scatter
RAN-028	206	AP2. Lithic scatter
RAN-029	202	AP2. Lithic scatter
RAN-030	2,023	AP2. Lithic scatter, AH7. Roads/trails/railroad grades
RAN-034	22,848	AH4. Privies/dumps/trash scatter, AH9. Mines/quarries/tailings
RAN-035	407	AH4. Privies/dumps/trash scatter
RAN-036	22,730	AP2. Lithic scatter, AP11. Hearths/pits, AP13. Trails/linear earthworks, AH4. Privies/dumps/trash scatter
RAN-046	11,122	AH4. Privies/dumps/trash scatter, AP16. Other (prehistoric mano)
RAN-048	53	AP2. Lithic scatter
RAN-049	5	AH4. Privies/dumps/trash scatter
RAN-050	4,446	AP2. Lithic scatter
RAN-051	10,798	AP2. Lithic scatter
RAN-052	41,154	AP2. Lithic scatter
RAN-053	5,726	AP2. Lithic scatter, AP8. Cairn, AP11. Hearth
RAN-054	1,861	AP2. Lithic scatter
RAN-055	1,525	AP2. Lithic scatter, AP11. Hearths/pits
RAN-057	44	AP3. Ceramic scatter
RAN-058	2,409	AP2. Lithic scatter, AP8. Cairn, AP14. Hearth
RAN-061	1,455	AP2. Lithic scatter
RAN-063	443	AP2. Lithic scatter
RAN-066	99	AP2. Lithic scatter
RAN-067	163	AP2. Lithic scatter
RAN-068	4	AP2. Lithic scatter
RAN-069	2,450	AP2. Lithic scatter, AP11. Hearths/pits

Table 5.7-3
Newly Recorded Cultural Resources within the Project Area
(Continued)

T S N	A	S T
RAN-070	440	AP2. Lithic scatter
RAN-072	165	AP2. Lithic scatter
RAN-073	462	AP2. Lithic scatter, AP11. Hearths/pits
RAN-074	99	AP2. Lithic scatter
RAN-081	5,690	AP2. Lithic scatter
RAN-082	248	AP2. Lithic scatter
RAN-084	2,328	AP2. Lithic scatter, AP11. Hearths
RAN-092	3,246	AP2. Lithic scatter
RAN-095	375	AP2. Lithic scatter, AP8. Hearth
RAN-412C	16,423	AP2. Lithic scatter, AP3. Ceramic scatter
RAN-412F	6,639	AP2. Lithic scatter, AP3. Ceramic scatter
RAN-413	13,542	AP2. Lithic scatter
RAN-416	141	AP3. Ceramic scatter
RAN-417	700	AP2. Lithic scatter
RAN-418	3,109	AP2. Lithic scatter, AP3. Ceramic scatter
RAN-419	1,298	AP2. Lithic scatter, AP3. Ceramic scatter, AP11. Hearths/pits
RAN-420	3,633	AP2. Lithic scatter, AP3. Ceramic scatter, AP11. Hearths/pits
RAN-421	1,369	AP2. Lithic scatter, AP3. Ceramic scatter
RAN-424	38,659	AP2. Lithic scatter, AP3. Ceramic scatter
RAN-426	593	AP2. Lithic scatter
RAN-428	38,719	AP2. Lithic scatter, AP11. Hearths/pits, AH4. Privies/dumps/trash scatter
RAN-430	8,075	AP2. Lithic scatter
RAN-431	1,225	AP2. Lithic scatter, AP11. Hearths/pits
RAN-433	11,662	AP2. Lithic scatter, AP3. Ceramic scatter, AH4. Privies/dumps/trash scatter, AH16. Other (historic surface gravel mining)
RAN-434	5,517	AP2. Lithic scatter, AP8. Cairns/rock features
RANA-003	118	AH16. Other (historic bomb crater)
RANA-004	24	AP2. Lithic scatter

5.7.7 E S

On 7 August 2008, URS Architectural Historian Brian Shaw completed an intensive historic architecture survey to account for the properties that appeared to be older than 45 years (1963 or earlier) within the historic architecture APE, which extended a half-mile from the proposed Project site and a half-mile on either side of its above ground linear facilities. The guidelines set forth in CCR Section 15064.5(a), and the criteria outlined in PRC Section 5024.1 were used to evaluate properties that appeared to be older than 45 years within the historic architecture APE. Following completion of the survey, Mr. Shaw recorded the properties that appeared to be older than 45 years through the appropriate Department of Parks and Recreation (DPR) 523 series forms, and evaluated the properties per the criterion of the CRHR and as historical resources for purposes of CEQA. Properties that did not appear to be older than 45 years or were known not to be older than 45 years were not recorded. The survey occurred from public vantage points; and, in areas were views of the property were obstructed or restricted (e.g., limited access, security walls), investigators utilized available information to record the property.

In addition to these efforts, site-specific and general primary and secondary research was conducted at/with the Imperial Valley Pioneer Society; Imperial County Free Library – El Centro Branch; San Diego State University Library; University of California, San Diego Geisel Library and Mandeville Special Collections; San Diego Public Library; and numerous online resources (e.g., *Calisphere – A World of Digital Resources*, *California Historic Topographic Map Collection*). The research was conducted between 3 and 7 April 2008. Overall, the research provided insight into the historic contexts and themes of the area and specific information concerning the properties within the APE (e.g., date of construction, architect/builder, and historic landownership).

The historic built environment survey focused on the areas within the Project area, plus a one-half mile buffer. This survey focused on the historic built environment properties surrounding the Project area. (Figure 5.7-4)

URS identified five previously recorded built environment locations and no unrecorded built environment locations within the historic architecture APE. These resources are summarized and presented below. Two of the resources have been recommended not eligible by the original recorders, while the remaining three were not evaluated. Copies of the DPR forms, and related figures are located in Appendix B – Previously Recorded Site Forms.

N	I	R T	C	L A E R
US Gypsum Rail-Line	CA-IMP-7739H	Railroad	1922	Within half-mile built environment APE
Highway 80	CA-IMP-7886H	Highway	Early 1930s	Within half-mile built environment APE
Plaster City Plant	P-13-009303	Industrial Buildings	Remodeled 2000, First Developed 1920s	Within half-mile built environment APE
San Diego & Arizona	37-025680	Railroad	1919	Within half-mile built

N	I	R T	C	L A E R
Railroad				environment APE
Westside Main Canal	CA-IMP-7834H	Irrigation canal	1906	Within half-mile built environment APE

5.7. N A C

The Native American Heritage Commission (NAHC) was contacted on 4 January 2008 to request a search of the Native American Sacred Lands File to determine the presence of Native American sacred sites within the APE. A list of the Native American contacts who may have some knowledge of known cultural resources or sacred sites within the APE was also requested. The NAHC responded on 23 January 2008 and indicated that a records search of the Sacred Lands File failed to indicate the presence of Native American cultural resources in the immediate APE. In addition to the response letter, the NAHC also supplied a Native American contact list.

Because the BLM is responsible for government-to-government tribal consultation, URS delayed notifying the individuals on the NAHC list until BLM had initiated its consultation. Each contact on the list was sent a notification of the proposed undertaking by mail on 28 February 2008 with a request that he or she respond with any known cultural resources or sacred sites within the APE.

A telephone message was received from Carmen Lucas on 10 March 2008 expressing concern that the Project would adversely affect the rich cultural resources in the Project area. A letter was received from Bridget R. Nash-Chrabascz, Tribal Historic Preservation Officer of the Quechan Indian Tribe, on 17 March 2008. This letter forwarded a copy of a letter the Quechan Indian Tribe had sent to BLM on 19 February 2008. This letter had requested that a Class III inventory be conducted of the Project area and that the Quechan Indian Tribe be provided with a report of the results.

Correspondence letters between URS, on behalf of Solar Two, and the NAHC, as well as a spreadsheet showing those Native American individuals contacted are included in Appendix Z, Cultural Resources Technical Report.

5.7. E C

5.7.9.1 Significance Criteria

Section 106 of the National Historic Preservation Act as implemented per 36 CFR Part 800 defines the process for identifying, evaluating, and assessing adverse effects of federal undertakings on cultural resources. The conduct of this Project has followed this procedure.

Cultural resources that have been identified must be evaluated for eligibility for inclusion on the National Register of Historic Places with reference to the evaluation criteria enumerated in 36 CFR Part 63.

The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association:

1. that are associated with events that have made a significant contribution to the broad patterns of our history,

2. that are associated with the lives of significant persons in the past,

3. that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction, and

4. that have yielded or may be likely to yield, information important in history or prehistory.

Ordinarily, cemeteries, birthplaces, graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years shall not be considered eligible for the National Register. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:

1. a religious property deriving primary significance from architectural or artistic distinction or historical importance,

2. a building or structure removed from its original location but which is primarily significant for architectural value, or which is the surviving structure most importantly associated with a historic person or event,

3. a birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building associated with his or her productive life,

4. a cemetery that derives its primary importance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events,

5. a reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived,

6. a property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance, and

7. a property achieving significance within the past 50 years if it is of exceptional importance.

Once cultural resources have been identified, the lead federal agency for the Project is responsible, in consultation with the State Historic Preservation Officer/Tribal Historic Preservation Officer, and other parties as identified in 36 CFR 800.2, for evaluating the NRHP eligibility. Then, if an NRHP-eligible

resource, defined as a "historic property" upon eligibility, will be affected, the lead agency official shall notify all consulting parties and invite their comment with regards to potential adverse effects, if any, in accordance with 36 CFR 800.5.

Per 36 CFR 800.5, an adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.

Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance, or be cumulative.

Examples of adverse effects could include:

- physical destruction of or damage to all or part of the property,
- alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, or provision of handicapped access, in a way that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR Part 68) and applicable guidelines,
- removal of the property from its historic location;
- change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance,
- introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features,
- neglect of a property that causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian Organization, and
- if adverse effects to historic properties are identified, the lead agency in consultation with the identified consulting parties, will agree on adequate mitigation measures.

5.7.1 C E

Direct effects from the Project could result from: vegetation clearing; grading of roads for the Main Services Complex and other structure sites; trenching for pipelines, electrical transmission lines, and drainage diversions; augering for foundations for electrical towers or poles and SunCatchers; and any other earth-moving activity that disturbed or buried previously undisturbed cultural resources such as prehistoric objects or sites, making those objects and their cultural resources unavailable for future scientific investigation. Clearing, grading, and deeper excavations at the Project Site could result in significant adverse effects to cultural resources. In addition, the construction of supporting facilities, such as construction offices, laydown areas, and parking areas, have the potential to cause adverse effects to cultural resources if they involve additional ground disturbance. Furthermore, past and present actions

within the region including highway/roadway construction, commercial and residential development, and off-highway vehicle use have resulted in effects to cultural resources. However, the location and engineering of the Project Site have been specifically designed to avoid effects to cultural resources.

Because a properly designed and implemented mitigation program is used, these potential effects could be reduced such that significant effects are avoided. Assuming mitigation measures are implemented properly, the contribution of the Project is not likely to result in long-term, significant effects. The potential effects of other reasonably foreseeable future projects are unknown as mitigation measures for such projects cannot be determined at this time.

5.7.11 M M

The Project is anticipated to have an effect on NRHP-eligible cultural resources. Mitigation measures have been provided that will reduce potential effects to cultural resources to a less-than-significant level. Also, due to the fact that a high probability exists for buried resources in the area, archaeological monitoring must be conducted during all ground-disturbing activities within the Project Site. Should a potentially eligible cultural resource be encountered, evaluation of this resource to determine significance is required. The mitigation measures and procedures described below would apply to any cultural resources located within the identified Project APE. With implementation of the mitigation measures listed below, effects to cultural resources would be reduced to a less-than-significant level.

All cultural resources monitoring and mitigation will be carried out under the direct supervision of an archaeologist who meets the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (36 CFR Part 61, Appendix A), and will be consistent with the procedures for compliance with 36 CFR 800.

5.7.11.1 Data Recovery

CUL-1

Data recovery to mitigate adverse effects to historic properties will be conducted in accordance with a Historic Properties Treatment Plan approved by BLM, the California Energy Commission, and other consulting parties.

5.7.11.2 Avoidance

CUL-2

In the event cultural resources are encountered before or during construction activities, including subsurface excavation, construction activities in the immediate vicinity of the identified resource shall be halted, and a qualified archaeologist shall identify the nature and boundary of the finds and assess whether the proposed activities will impinge on a cultural resource. Routes of any access roads that must be built or graded that are outside of areas previously surveyed for cultural resources will be subjected to archaeological survey before construction. In the event the resource is identified as a potentially significant cultural resource, planned construction activities shall be modified to avoid the resource, if feasible. If it is not feasible to avoid the resource, the archaeologist shall identify the proper course of

testing, excavation, recovery, and documentation to be undertaken to reduce Project-related effects to a less-than-significant level. In the event that archaeological resources are discovered during the course of construction, activities related to the Project, grading, and/or excavation activities within 100 feet of the potentially significant resource should be monitored by a qualified archaeologist.

5.7.11.3 Preconstruction Assessment and Construction Training

CUL-3

A qualified professional archaeologist shall be retained to monitor all ground-disturbing activities associated with the Project. Ground-disturbing activities include clearing, grubbing, grading, and trenching within the Project Site and construction laydown areas. The archaeological monitor shall visit the Project Site before commencement of construction activities to become familiar with site conditions.

The archaeological monitor shall attend the pre-construction meeting and work with BLM, Solar Two, and the construction management staff to suspend or redirect construction activities if cultural materials are encountered. The archaeological monitor shall also provide training to appropriate construction personnel on the site to explain the importance of and legal basis for the protection of significant archaeological resources.

5.7.11.4 Archaeological Monitoring

CUL-4

The archaeological monitor shall be equipped with a cellular telephone to ensure rapid communication with URS senior cultural resources staff to promptly report any cultural finds or discuss any problems as they are encountered in the field. Archaeological monitors shall keep a daily monitoring log of construction activities, observations, types of equipment used, problems encountered, and any new archaeological discovery (including the cultural material observed and the location). Photographs shall be taken as necessary to supplement the documentation. These logs shall be signed and dated by the archaeological monitor and included within the monitoring report.

The archaeological monitor shall monitor all ground-disturbing activities within the Project Site and construction laydown areas. The archaeological monitor will be authorized to temporarily halt ground-disturbing activities in the immediate vicinity of a discovery in the event that cultural resources are uncovered during construction. Similarly, if the construction staff or others identify cultural resources during construction activities, they shall halt construction in the immediate vicinity and immediately notify the archaeological monitor and Project supervisor. The archaeological monitor shall then immediately notify URS senior cultural resources staff. The archaeological monitor shall use flagging tape to delineate the area of the find and protect the resources from construction activities. Construction activities shall not take place within the delineated discovery area until the archaeological monitor, in consultation with URS senior cultural resources staff and BLM, can inspect and evaluate the significance of the find and implement mitigation measures, if needed. During this time, construction activities may be redirected to other areas outside of the flagged area.

After all ground-disturbing activities are complete, URS cultural resources staff shall prepare a cultural resources compliance monitoring report. The report shall include the daily monitoring logs as an appendix. The report shall also include the level of effort involved in monitoring cultural resources, a description of activities monitored, and the number and types of new cultural resources discoveries, including assessment and treatment action.

5.7.11.5 Native American Monitoring

CUL-5

To ensure participation by interested members of the Native American community, it is recommended that a Native American monitor be present during archaeological testing and/or data recovery for cultural resources that appear to have a prehistoric or ethnographic component. The monitor will be retained either directly by the Applicant or by the consultant conducting the actual fieldwork.

5.7.11.6 Resource Recordation and Evaluation

CUL-6

The archaeological monitor shall follow accepted professional standards in recording any discovery and shall submit applicable Department of Parks and Recreation forms to the SIC. If the discovery is deemed not significant by URS senior cultural resources staff, construction activities may proceed. Should a potentially significant cultural resource be encountered during monitoring, evaluation of this resource to determine significance will be required. Significant cultural resources affected by the Project would require additional mitigation, which may include data recovery. A recovery of a sample of the deposit from which the archaeologist can define scientific data to address archaeological research questions is considered an effective mitigation measure. URS cultural resources staff shall prepare and carry out a mitigation plan. The mitigation program shall be carried out as quickly as possible to avoid construction delays. Construction may resume on-site as soon as the field data collection phase is completed.

5.7.11.7 Provision for Encountering Human Remains

CUL-7

If human remains are encountered, construction activities shall be immediately halted in the immediate vicinity of the discovery. The Project supervisor shall immediately contact the county coroner, BLM, and the Applicant. If the remains are Native American, the NAHC shall be contacted. The NAHC is required to determine the most likely descendant, notify that person, and request that they inspect the burial and make a recommendation for treatment and removal.

5.7.11.8 Laboratory Analysis and Curation

CUL-8

Cultural material removed during the course of monitoring or other mitigation measures shall be bagged and catalogued in the field, and analyzed in the laboratory. Cultural materials shall be analyzed to characterize the resource(s) and their association to existing regional chronologies. The materials, and the contexts from which they were sampled, shall also be evaluated with regard to the eligibility criteria for inclusion on the NRHP.

The objectives of laboratory processing and analysis are to determine to the extent possible the date, function, cultural affiliation, and significance of the archaeological sites, and to prepare artifacts for permanent curation. Artifacts shall be processed (i.e., cleaned, catalogued, and analyzed) according to the Secretary of the Interior's Standards and Guidelines for curation (36 CFR 79). Artifacts shall be gently washed using tap water and a soft toothbrush. Delicate and/or unstable materials, such as decayed metal and organic material, shall be carefully dry-brushed with a soft toothbrush. After drying, artifacts shall be analyzed, catalogued, and rebagged according to provenience and type. Artifacts shall have acid-free paper labels with full provenience information, including the state site number, catalog number, shovel test pit or test unit number, stratum, and date. All artifact information shall be entered into a customized computer-based application.

All artifacts, monitoring logs, and photographs are the property of BLM and shall be placed in appropriately labeled boxes for temporary storage at URS. As part of mitigation requirements, final curation shall be wherever BLM shall direct.

5.7.11.9 Physical

CUL-9

In instances where a Project facility must be placed within 100 feet of a known cultural resource previously found eligible for inclusion on the CRHR, the cultural resource will be temporarily fenced or otherwise demarcated on the ground, and the area will be considered environmentally sensitive. Construction equipment will be directed away from the cultural resource and construction personnel will be directed to avoid entering the area. Where cultural resource boundaries are unknown, the protected area will include a buffer zone with a 100-foot radius. In some cases, additional archeological work may be required to demarcate the boundaries of the cultural resource to ascertain whether the cultural resource can be avoided.

5.7.1 C LORS

The Project shall be conducted in a way consistent with all applicable laws, ordinances, regulations, and standards (LORS). Any cultural resources potentially affected by the Project are subject to compliance with the provisions outlined in Section 106 of the National Historic Preservation Act, due to their location on BLM-administered public land. All applicable LORS are summarized in Table 5.7-4, Summary of LORS – Cultural Resources.

Table 5.7-4
Summary of LORS – Cultural Resources

LORS	R	C S	A A	A C
National Historic Preservation Act of 1966 as amended, Public Law 102-575	Requires preservation or mitigation of effects to historic properties that are eligible for inclusion on the National Register of Historic Places	Section 5.7.8.1	BLM; State Historic Preservation Office	Carrie L. Simmons Archaeologist El Centro Field Office BLM 1661 South 4th Street El Centro, CA 92243 760-337-4437
Archaeological Resources Protection Act of 1979 as amended, Public Law 96-95	Provides for the protection of archaeological resources and sites that are on public lands and Indian lands.	Section 5.7.10	BLM	Carrie L. Simmons
Federal Land Policy and Management Act of 1976 as amended, Public Law 94-579	Establishes policies and goals to be followed in administration of public lands by the Bureau of Land Management to include preservation of historic and archaeological resources.	Section 5.7.10	BLM	Carrie L. Simmons
Native American Graves Protection and Repatriation Act, Public Law 101-601	Requires federal agencies and institutions that receive federal funding to return Native American cultural items and human remains to their respective peoples. Cultural items include funerary objects, sacred objects, and objects of cultural patrimony.	Section 5.7.10	BLM	Carrie L. Simmons

Table 5.7-4
Summary of LORS – Cultural Resources
(Continued)

LORS	R	C S	A A	A C
Antiquities Act of 1906, as amended	Prescribes penalties for the theft or destruction of archaeological resources on public land and establishes procedure for issuance of permits for the conduct of research on cultural resources on public land.	Section 5.7.11.1	BLM	Carrie L. Simmons
Executive Order No. 11593: Protection And Enhancement Of The Cultural Environment, 1971	Requires Federal agencies to administer the cultural properties under their control in a spirit of stewardship and trusteeship for future generations, initiate measures necessary to direct their policies, plans, and programs in such a way that federally owned sites, structures, and objects of historical, architectural, or archaeological significance are preserved, restored, and maintained and institute procedures to assure that Federal plans and programs contribute to the preservation and enhancement of non-federally owned sites, structures, and objects of historical, architectural, or archaeological significance.	Section 5.7.11.1	BLM	Carrie L. Simmons
National Environmental Policy Act of 1969, as amended, Public Law 91-190	Requires the analysis of the effect of federal undertakings on the environment to include the effect on cultural resources.	Section 5.7.11.1	BLM	Carrie L. Simmons
S				

Table 5.7-4
Summary of LORS – Cultural Resources
(Continued)

LORS	R	C S	A A	A C
The Warren-Alquist Act 1974, as amended	Requires cultural, historic, and aesthetic resources be taken into account in consideration of an Application for Certification. Requires that a portion of any such resources on public land be set aside for public access.	Section 5.7.11.2	CEC	Michael McGuirt Heritage Resource Analyst California Energy Commission Energy Facilities Siting Division Environmental Office 1516 9th Street, MS 40 Sacramento, CA 95814-5512 916-654-4870
CEQA of 1970, as amended	Applies to discretionary projects causing a significant effect on the environment and a substantial adverse change in the significance of a historical or archaeological resource.	Section 5.7.11.2	CEC	Michael McGuirt
California PRC Section 5020-5029.5	Establishes the criterion for the California Register of Historical Resources, and creates the California Historic Landmarks Committee and authorizes the Department of Parks and Recreation to designate Registered Historical Landmarks and Registered Points of Historical Interest; establishes criteria for the protection and preservation of historic resources.	Section 5.7.11.2	CEC; State Historic Preservation Office; Department of Parks and Recreation	Michael McGuirt Milford Wayne Donaldson Fellow of the American Institute of Architects, State Historic Preservation Officer California Department of Parks and Recreation Office of Historic Preservation 1416 9th Street, Room 1442 Sacramento, CA 95814 P.O. Box 942896 Sacramento, CA 94296-0001

Table 5.7-4
Summary of LORS – Cultural Resources
(Continued)

LORS	R	C S	A A	A C
Senate Bill 922 (Ducheny 2005)	Exempts from California Public Records Act Native American graves, cemeteries, archaeological site information, and sacred places in the possession of the Native American Heritage Commission and other state or local agencies.	Section 5.7.11.2	CEC; Native American Heritage Commission	Michael McGuirt Larry Myers Native American Heritage Commission Executive Secretary 915 Capitol Mall, Room 364 Sacramento, CA 95814 916-653-4082
Senate Bill 18 (Burton 2004)	Protection and preservation of Native American Traditional Cultural Places during city and county general plan development.	N/A	CEC; County of San Luis Obispo; Native American Heritage Commission	Michael McGuirt
Senate Concurrent Resolution Number 87 (1994)	Provides for the identification and protection of traditional Native American resource gathering sites on state land.	N/A	CEC	Michael McGuirt
Administrative Code, Title 14, Section 4307	No person shall remove, injure, deface, or destroy any object of paleontological, archaeological, or historical interest or value.	Section 5.7.11.2	CEC	Michael McGuirt
Government Code, Sections 6253, 6254, 6254.10	Disclosure of archaeological site information is not required for records that relate to archaeological site information maintained by the Department of Parks and Recreation, the State Historical Resources Commission, or the State Lands Commission.	Section 5.7.11.2	CEC	Michael McGuirt

Table 5.7-4
Summary of LORS – Cultural Resources
(Continued)

LORS	R	C S	A A	A C
Health and Safety Code, Section 7050.5	Requires construction or excavation to be stopped near human remains until a coroner determines whether the remains are Native American; requires the coroner to contact the NAHC if the remains are Native American.	Section 5.7.11.2	CEC; County Coroner	Michael McGuirt Sergeant Charles Lucas Imperial County Sheriff/Coroner P.O. Box 1040 El Centro, CA 92244 760-339-6311
Health and Safety Code, Section 7051	Establishes removal of human remains from interment, or from a place of storage while awaiting interment or cremation, with the intent to sell them or to dissect them with malice or wantonness as a public offense punishable by imprisonment in a state prison.	Section 5.7.11.2	CEC; County Coroner	Michael McGuirt Sergeant Charles Lucas
Health and Safety Code, Section 7052	States that willing mutilation of, disinterment of, removal from a place of disinterment of, and sexual penetration of or sexual contact with any remains known to be human are felony offenses.	Section 5.7.11.2	CEC; County Coroner	Michael McGuirt Sergeant Charles Lucas
Penal Code, Title 14, Section 622.5	Misdemeanor offense for any person, other than the owner, who willfully damages or destroys archaeological or historic features on public or privately owned land.	Section 5.7.11.2	CEC	Michael McGuirt
PRC 5097-5097.6	Provides guidance for state agencies in the management of archaeological, paleontological, and historical sites affected by major public works project on state land.	Section 5.7.11.2	CEC	Michael McGuirt

Table 5.7-4
Summary of LORS – Cultural Resources
(Continued)

LORS	R	C S	A A	A C
PRC 5097.9-5097.991	Establishes regulations for the protection of Native American religious places; establishes the Native American Heritage commission; California Native American Remains and Associated Grave artifacts shall be repatriated; notification of discovery of Native American human remains to a most likely descendent.	Section 5.7.11.2	CEC; State Historic Preservation Office; Tribal Historic Preservation Office; Native American Heritage Commission	Michael McGuirt Milford Wayne Donaldson Agua Caliente Band of Cahuilla Indians Richard M. Begay, THPO 5401 Dinah Shore Drive Palm Springs, CA 92264 760-325-3400, Extension 6906
CCR Section 1427	Recognizes that California's archaeological resources are endangered by urban development; the Legislature finds that these resources need preserving; it is a misdemeanor to alter any archaeological evidence found in any cave, or to remove any materials from a cave.	Section 5.7.11.2	CEC	Michael McGuirt
Senate Concurrent Resolution Number 43	Requires all state agencies to cooperate with programs of archaeological survey and excavation, and to preserve known archaeological resources whenever reasonable.	Section 5.7.11.2	CEC	Michael McGuirt
Penal Code, Title 14, Section 622.5	Misdemeanor offense for any person, other than the owner, who willfully damages or destroys archaeological or historic features on public or privately-owned land.	Section 5.7.11.2	CEC	Michael McGuirt
L				

Table 5.7-4
Summary of LORS – Cultural Resources
(Continued)

LORS	R	C S	A A	A C
Imperial County General Plan, Conservation/ Open Space Element	Identify, preserve and protect locally significant cultural resources, and preserve prehistoric and historic areas as open space.	Section 5.7.11.3	Imperial County Planning Department	Jurg Heuberger American Institute of Certified Planners, Director 939 Main Street El Centro, CA 92243 760-339-4236

Source: URS Corporation, 2008a.

Notes:

BLM	=	Bureau of Land Management
CCR	=	California Code of Regulations
CEC	=	California Energy Commission
CEQA	=	California Environmental Quality Act
LORS	=	laws, ordinances, regulations, and standards
N/A	=	not applicable
PRC	=	Public Resources Code
THPO	=	Tribal Historic Preservation Officer

5.7.12.1 Federal

The Project is mostly located on BLM-administered public land. Therefore, all treatment of cultural resources will be consistent with Section 106 of the National Historic Preservation Act per 36 CFR Part 800, and any other applicable federal LORS.

5.7.12.2 State

Table 5.7-4, Summary of LORS – Cultural Resources, summarizes the cultural resources state-level LORS that may be applicable to the Project.

5.7.12.3 Local

Imperial County has specific LORS that also determine the treatment of cultural resources identified and recorded in the county. Table 5.7-4, Summary of LORS – Cultural Resources, summarizes the local-level LORS.

5.7.1 A A C

Agencies with jurisdiction to issue applicable permits and/or enforce LORS related to cultural resources are shown in Table 5.7-5, Agency Contact List for LORS.

Table 5.7-5
Agency Contact List for LORS

	A	C	A	T
1	Bureau of Land Management	Rolla Queen	Bureau of Land Management 22835 Calle San Juan De Los Lagos Moreno Valley, CA 92553	951-697-5386
2	Bureau of Land Management	Carrie Simmons	Bureau of Land Management 1661 South 4th Street El Centro, CA 92243	760-337-4437
3	California Energy Commission	Michael McGuirt	California Energy Commission 1516 9th Street Sacramento, CA 95814-5512	916-654-4870
4	SHPO California Department of Parks and Recreation Office of Historic Preservation	Milford Wayne Donaldson, Fellow of the American Institute of Architects	1416 9th Street, Room 1442 Sacramento, CA 95814 P.O. Box 942896 Sacramento, CA 94296-0001	916-653-6624
4	Imperial County Sheriff/ Coroner	Sargeant Charles Lucas	P.O. Box 1040 El Centro, CA 92244	760-339-6311
5	Native American Heritage Commission	Larry Myers, Executive Secretary	915 Capitol Mall, Room 364 Sacramento, CA 95814	916-653-4082
6	Agua Caliente Band of Cahuilla Indians	Richard M. Begay, THPO	5401 Dinah Shore Drive Palm Springs, CA 92264	760-325-3400 Extension 6906
7	American Institute of Certified Planners	Jurg Heuberger, Director	939 Main Street El Centro, CA 92243	760-339-4236

Source: URS Corporation, 2008a.
Notes:
SHPO = State Historic Preservation Officer
THPO = Tribal Historic Preservation Officer

5.7.1 R S

No permits are required for cultural resources for the Project.

5.7.15 R

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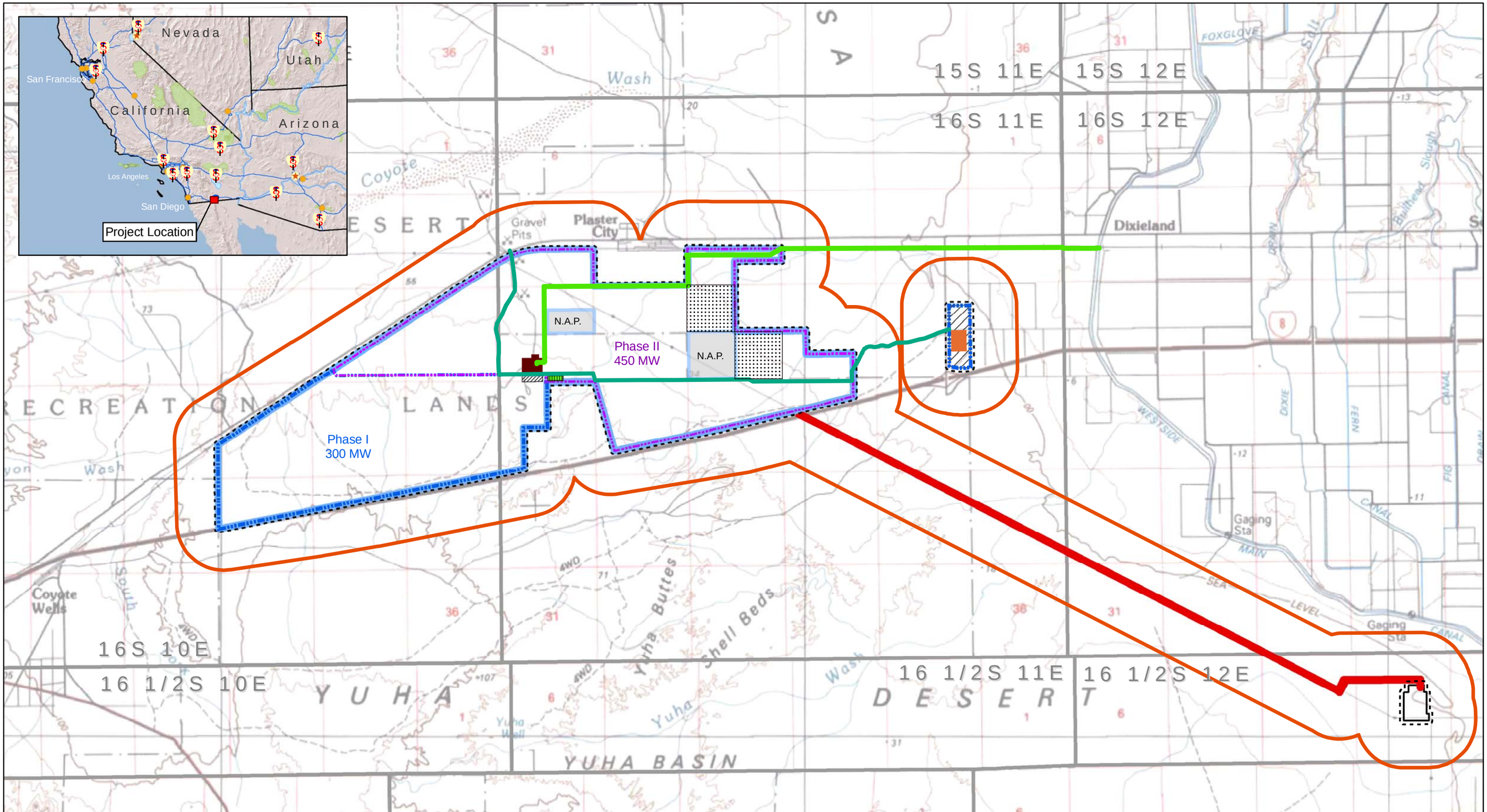


LEGEND

- Built Environment APE (1/2 mi buffer)
- Transmission Line (150 ft buffer)
- Access Road (50 ft Buffer)
- Water Line (75 ft Buffer)
- Project APE (200 ft buffer)
- Staging Area
- Main Services Complex
- Proposed 750-MW Substation
- Laydown Area
- Imperial Valley Substation
- Areas Not in Project
- Private Land

0 3,000 6,000 Feet

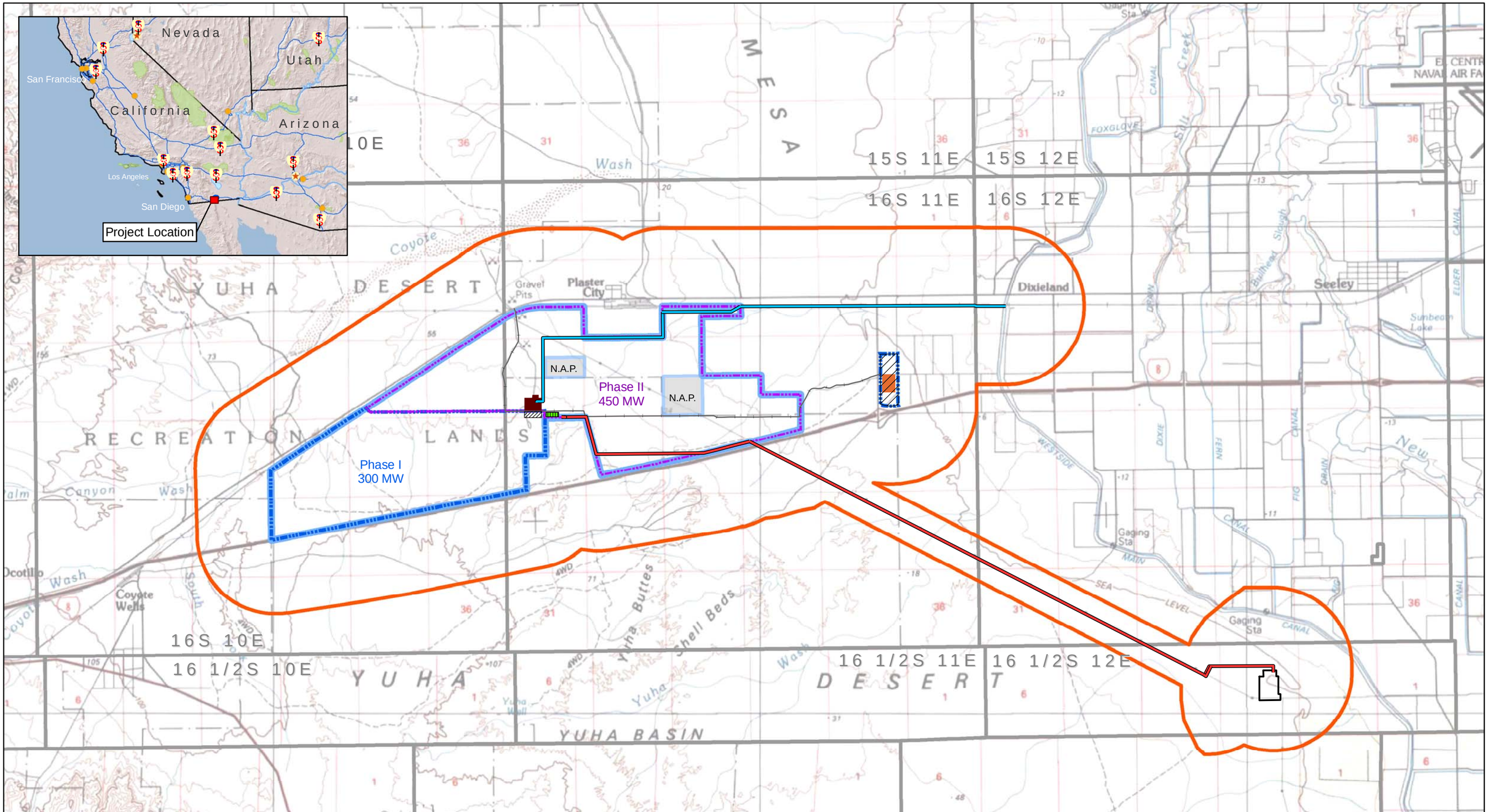
Scale: 1:72,000 (1" equals 6,000 ft)
Projection: NAD 83 Zone 11
Sept 17, 2008
Dr By: KMZ

®

Figure 5.7-1
Project Location and Vacinity

Solar Two Project
Cultural Resources Report
Imperial County, California

URS



LEGEND

- File Search Boundary (1 mile buffer; (1/4 mile buffer on transmission line)
- Project Boundary
- Proposed Water Line
- Proposed Transmission Line
- Proposed Main Access Road
- Imperial Valley Substation
- Main Services Complex
- Proposed 750-MW Substation
- Laydown Area
- Areas Not in Project
- Staging Area

0 3,000 6,000 Feet

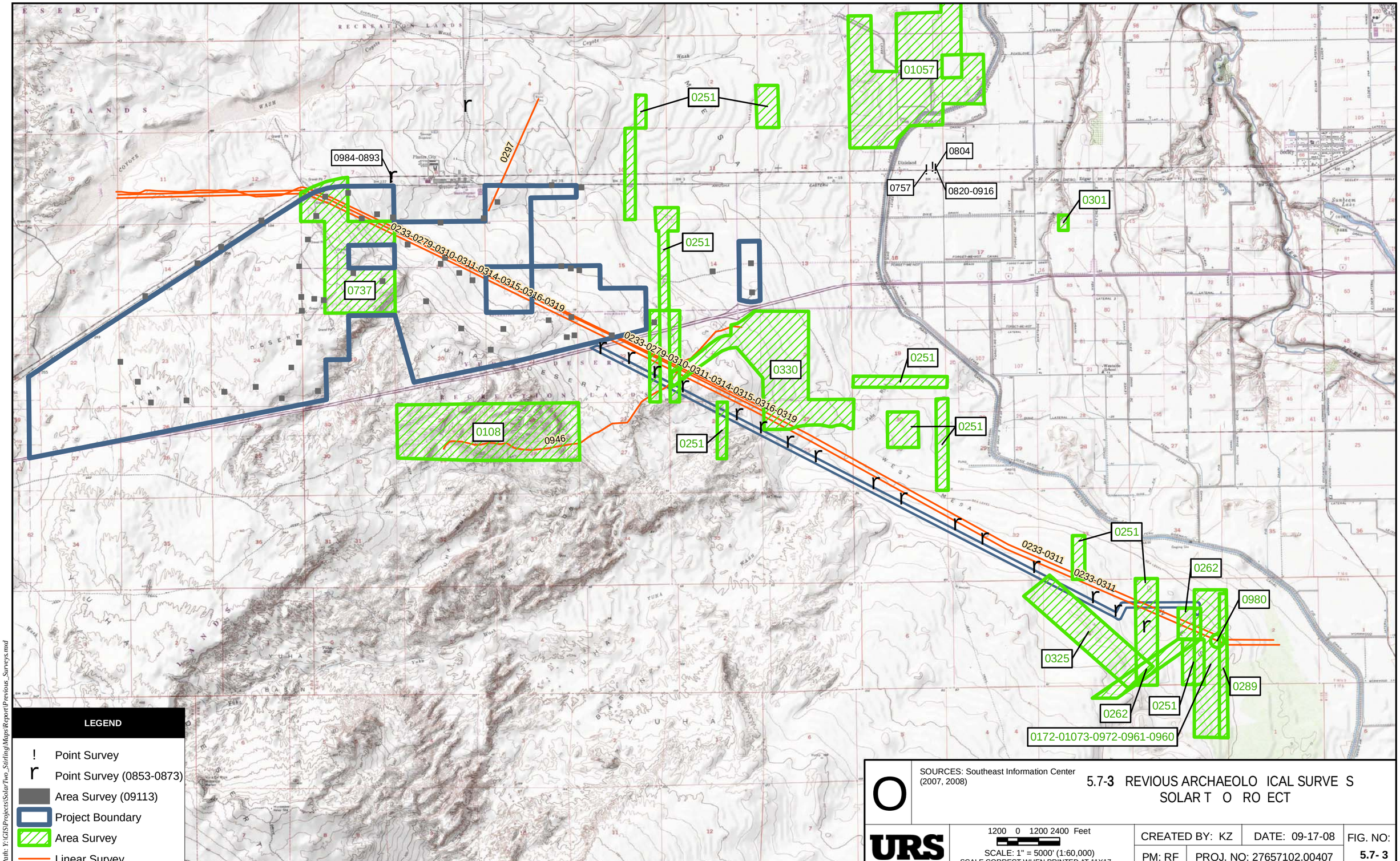
Scale: 1:72,000 (1" equals 6,000 ft)
Projection: NAD 83 Zone 11
Sept 17, 2008
Dr By: KMZ

Figure 5.7-2

File Search Boundary Map

Solar Two Project
Cultural Resources Report
Imperial County, California

URS



SOURCES: Southeast Information Center (2007, 2008)

5.7-3 REVIOUS ARCHAEOLO ICAL SURVE S
SOLAR T O RO ECT

URS

1200 0 1200 2400 Feet
SCALE: 1" = 5000' (1:60,000)
SCALE CORRECT WHEN PRINTED AT 11X17

CREATED BY: KZ	DATE: 09-17-08	FIG. NO:
PM: RF	PROJ. NO: 27657102.00407	5.7- 3

Path: Y:\GIS\Projects\SolarTwo_Stirling\Maps\Report\Previous_Surveys.mxd

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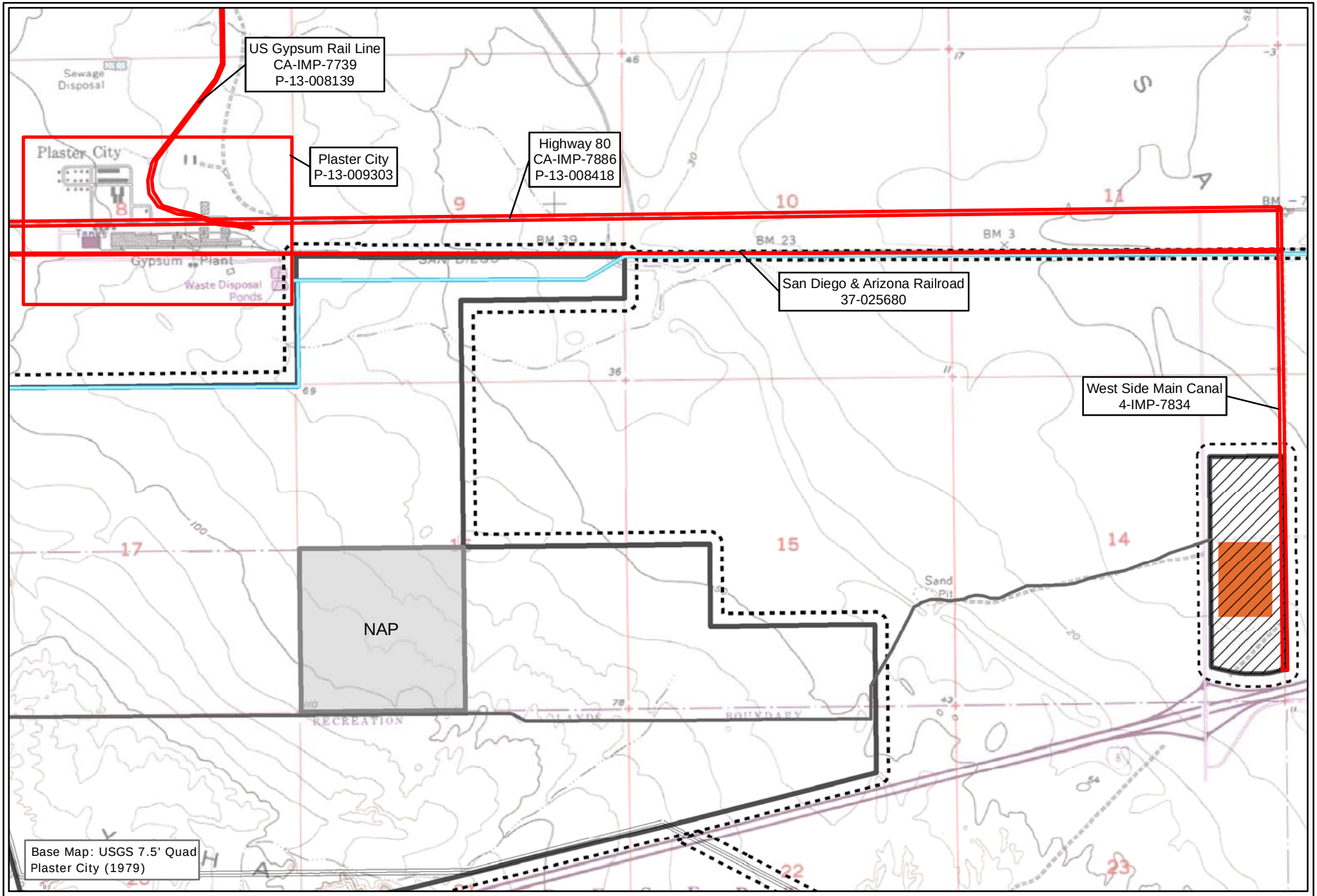


Legend

- Cultural Site
- Proposed Water Line
- Proposed Transmission Line
- Project Boundary
- Project Buffer
- Staging Area
- Laydown Area
- Areas Not in Project
- Main Access Road

0 2,000 4,000 Feet

Scale: 1:24,000 (1" equals 2,000 ft)
Projection: NAD 83 Zone 11
Dr By: KMZ
Sept 18, 2008

Figure 5.7-4
Built Environment
Solar Two Project
Cultural Resources Report
Imperial County, California

URS

TECHNICAL AREA: PALEONTOLOGICAL RESOURCES

Data Adequacy Request 1: Needs discussion of sensitivity of each individual geologic unit, and why the sensitivity was assigned.

Response: The sensitivity of each individual geologic unit and the reasoning for why the sensitivity was assigned are discussed in the Application for Certification in Section 5.8.1.5 Resource Inventory Results. The discussion can be found in Paleontological Resource Inventory, pages 5.8-11 through 5.8-14, with a summary on page 5.8-14.

Additionally, the discussion can be found in the Confidential Paleontological Resources Technical Report in Section 2.1.5 Resource Inventory Results, specifically in Paleontological Resources Inventory, pages 16 through 24, with a summary on page 24.

TECHNICAL AREA: SOCIOECONOMICS

Data Adequacy Request 1: Please provide information on capacities, existing and expected use levels, and planned expansion for public services i.e., law enforcement.

Response: According to consultation with Ryan Kelly, Emergency Medical Services Administrator and Bioterrorism Manager for Imperial County, May 22, 2008 Emergency Medical Services within the populated centers within the region can accommodate the Project's temporary construction employees and permanent operational employees.

Since the project is not expected to significantly effect population within Imperial County, including the project area, current use levels of public services, including fire protection, law enforcement, emergency response, and medical facilities are adequate and there is no anticipation that there will be the need for any expansion of public services.

Currently the Imperial County Sheriff's Department would respond to any law enforcement needs of Solar 2. Response time is 10-15 Minutes

TECHNICAL AREA: SOCIOECONOMICS

Data Adequacy Request 2: Please provide potential impacts, including additional costs, on public services i.e., law enforcement.

Response: As discussed on page 5.10-14 and 5.10-15 of the AFC, the majority of employees will come from the local area. Any non local workers will not contribute to population growth beyond the rate expected in the general plan. Furthermore, the applicant will provide security for the project including surveillance, fences and controlled gates, and security personnel.

The current available levels of public services, including fire protection, law enforcement, emergency response, and medical facilities are adequate to service the project needs according to conversations with the Office of Emergency Services (OEMS), and the County Sheriff's Department. No significant impacts are expected, nor the need for any expansion of public services. The project will not cause additional costs to public services.

URS contacted Ryan Kelly of the Office of Emergency Services (OEMS), Emergency Medical Services Administrator and Bioterrorism Manager for Imperial County on May 22, 2008. URS conducted a phone interview with Sheriff's Dispatch on 9/23/08 at 4:00pm ((760) 394-4114). URS also conducted a phone interview with Chief Deputy Steven Gutierrez of the Support Services Division of the County of Imperial Sheriff Department, on 9/24/08.

The number of full time employees of the Imperial County Sheriff's Department is 229, with 111 sworn officers and 36 vehicles, according to Chief Deputy Gutierrez. The Solar 2 Project is located within west beat area, which is located west of A Street, El Centro. Additional response support could be supplied by other beats within the county and by the CHP. Chief Deputy Gutierrez indicated that the current level of crime in the project area is low, compared to the County at large. He also indicated that any impacts resulting from Solar 2 on the Sheriff Department would be considered less than significant, due to the security measures already incorporated into the project and the low probability of crime associated with a project of this type. Chief Deputy Gutierrez signaled that he did not believe the project would result in a significant rise in the crime statistics for the jurisdiction. He also indicated that the Sheriff's Department currently has the capacity to respond to the Project during operations.

Crime statistics for Imperial County are listed below:

	2001	2002	2003	2004	2005	2006
Criminal Offenses	34,003	18,191	19,844	11,381	10,103	8,954
Hate Crimes	45	86	13	3	4	1
Arrests	9,190	8,200	7,520	4,622	4,868	5,242
Disciplinary Actions	13,826	12,951	14,439	14,753	14,327	17,366
Totals	57,064	39,428	41,816	30,759	29,302	31,563

Source: www.cpec.ca.gov/OnLineData/

TECHNICAL AREA: SOCIOECONOMICS

Data Adequacy Request 3: Please provide an estimate of applicable school impact fees.

Response: The current Imperial Unified School District impact fee is $0.47 per square foot for industrial development. Total square footage for permanent, inhabited structures is 75,000 ft^2. Therefore, a school impact fee of $35,250 is expected.

TECHNICAL AREA: SOCIOECONOMICS

Data Adequacy Request 4: Please provide an estimate of the total construction payroll for the 40 months of construction (phases 1&2) not just for the first and second year (24 months). Also, please provide separate estimates of the total operation payroll for permanent and short term (contract) operations employees.

Response: Total construction payroll for the 40 months of construction is stated in the AFC in section 5.10.2.4 Fiscal Impact as $140,454,046.

The portion of operational payroll that would go to short term contract operations employees is $937,248 per year.

The remaining portion of operational payroll that will go to permanent operational employees is $8,349,162 per year.

These operations payroll estimates have been increased from the operations payroll estimates given in the AFC document. A new analysis of economic impacts resulting from Solar Two was performed to take into account the new estimates. The results of the analysis are detailed below.

Indirect and Induced Economic Effects

The following presents expected secondary economic effects during operation of the Solar Two Project. Indirect effects represent the impacts (e.g., change in employment) caused by the iteration of industries purchasing from industries resulting from direct final demand changes. Induced effects represent the impacts (e.g., change in employment) on all industries caused by the expenditures of new household income generated by the direct and indirect effects of direct final demand changes. IMPLAN Professional Version 2.0.1025 was used to create an input/output model assessing these economic impacts.

Operation of the Solar Two Project would result in indirect and induced economic impacts occurring within Imperial, Riverside, and San Diego counties. The affected Project region during operation was determined based on: 1) the available labor force within reasonable commuting distance to serve the operation phase of the project, and 2) locations where operations and maintenance supplies and materials are expected to be purchased. Unlike construction indirect and induced impacts, operational indirect and induced impacts represent permanent increases in area's economic variables. These impacts would lag behind direct effects by 6 to 12 months.

Because Phase I of the Project commences operation 6 months prior to Phase II, indirect and induced economic impacts were modeled separately for operation of Phase I and Phase II, which entails operation of the entire facility.

Phase I Operation. The modeling input was based on estimated annual O&M budget of about $8,162,405, which consists of operation expenditures of $3.7 million for locally-purchased materials, and an average direct employment of 164

personnel, having a combined payroll of $4,462,405. IMPLAN Pro Sector 30 (Power Generation and Supply) was used for this analysis, and economic estimates were based on 2007 dollars.

Operation of Phase I will generate a permanent beneficial impact by creating employment opportunities for local workers through local expenditures for materials, supplies, and services. The resulting indirect and induced employment effects of the Solar Two Project's first year of operation occurring in Imperial, Riverside, and San Diego counties would be 8 and 31 jobs, respectively. These additional jobs result from the $3.7 million in locally-purchased materials, as well as $4,462,405 in payroll. Assuming a direct operation employment of 164, the employment multiplier associated with the operation of the Solar Two Project is 1.24, which was arrived through ([164 + 8 + 31]/164). This project operation employment multiplier is based on a Type SAM model.

Indirect and induced income impacts are estimated at $464,120 and $1,240,483, respectively. Based on the total local operation expenditure (payroll and materials and supplies) of $8,162,405 million ($4,462,405 in payroll and $3.7 million in supplies during the first year, the income multiplier associated with the first year of operation is 1.21 ([$8,162,405 + $464,120 + $1,240,483]/$8,162,405), and is based on a Type SAM multiplier.

The Solar Two Project's indirect and induced outputs during the first year were estimated at $1,188,202 and $1,240,483, respectively. The project output multiplier based on a Type SAM model is 1.37, which was generated through ([$13,654,442 + $1,188,202 + $3,824,298]/$13,654,442).

Phase II Operation. The following analyses apply to the Phase II operation, which involves the operation of the entire facility. The modeling input was based on estimated annual O&M budget of about $16,324,810, which consists of $7.4 million for locally-purchased materials, and an average direct employment of 164 personnel, having a combined payroll of $8,924,810. IMPLAN Pro Sector 30 (Power Generation and Supply) was used for this analysis, and economic estimates were based on 2007 dollars.

Operation of the entire Solar Two facility will generate permanent beneficial impacts by creating employment opportunities for local workers through local expenditures for materials, supplies, and services. The resulting indirect and induced employment effects of the Solar Two Project's Phase II (i.e., operation of the entire facility) occurring in Imperial, Riverside, and San Diego counties would be 16 and 61 jobs, respectively. These additional jobs result from the $7.4 million in operations expenditures and $8,924,810 in payroll. Assuming a direct operation employment of 164, the employment multiplier associated with the second year of operation of the Solar Two Project is 1.47, which was arrived through ([164 + 16 + 61]/164). This project operation employment multiplier is based on a Type SAM model.

Indirect and induced income impacts are estimated at $929,429 and $2,481,464, respectively. Based on the total local operation expenditure (payroll and materials and supplies) of $16,324,810, the income multiplier associated with the

operational phase of the project is 1.21, which was determined through ([$16,324,810 + $929,429 + $2,481,464]/$16,324,810), and is based on a Type SAM multiplier.

The Solar Two Project's indirect and induced outputs during the second year were estimated at $2,379,399 and $7,650,083, respectively. The project output multiplier based on a Type SAM model is 1.37, which was generated through ([$27,319,126 + $2,379,399 + $7,605,083]/$27,319,126).

TECHNICAL AREA: SOCIOECONOMICS

Data Adequacy Request 5: Please provide an estimate of sales tax generated during construction and separately during an operational year of the project.

Response: The portion of construction costs for expenditures on local materials is $8.04 Million. At the local tax rate of 7.75 percent this would result in approximately $623,100 in sales tax generated during construction.

The average anticipated annual expenditure on local materials during operations is $5 Million. At the local tax rate this would generate approximately $387,500 in sales tax per year.

TECHNICAL AREA: SOCIOECONOMICS

Data Adequacy Request 6: Please provide an estimate of property taxes generated during an operational year of the project.

Response: The project expects a property tax exemption as explained in the AFC in Section 5.10.2.4 Fiscal Impact. Therefore, there no property taxes are expected to be generated by this project.

If the property tax exemption should lapse, the estimated property tax that would be paid to the local jurisdiction is estimated to be $840,750. This is based on the local tax rate of 1.25% given in the AFC Section 5.10.2.4 applied to the 360 acres of private lands as a portion of the overall land area of the project.

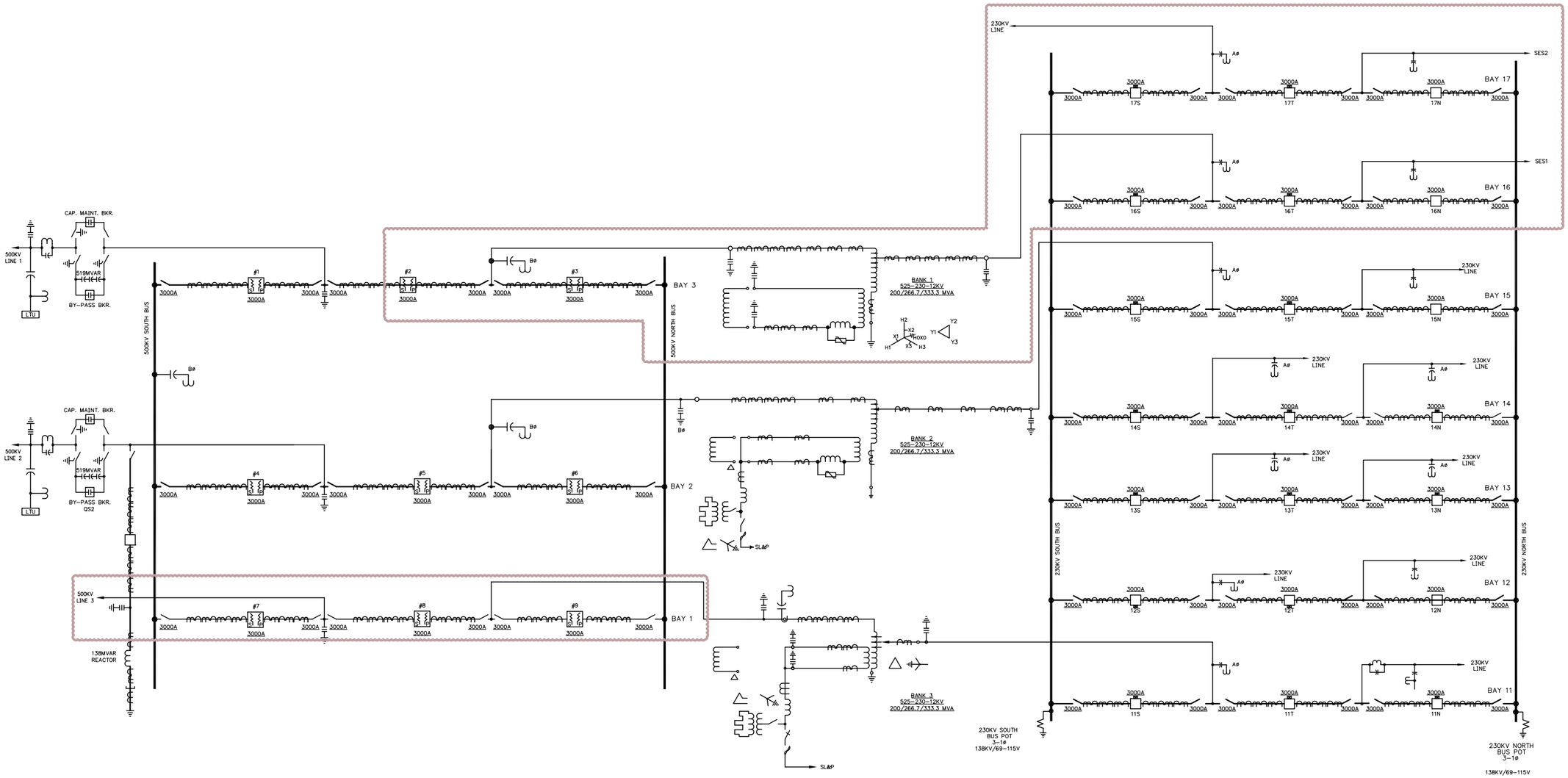
According to the Payment in Lieu of Taxes (PILT) Act, Chapter 69, Title 31 of the United States Code, there are no property taxes assessed for the Federal lands held by the BLM. A payment in lieu of taxes is paid to local jurisdictions by the Department of Interior based on the total amount of Federally managed land within the jurisdiction. In 2008, there were 1,271,143 acres administered by the federal government within Imperial County. The total Payment in Lieu of Taxes made to Imperial County in 2008 was $1,801,781.

TECHNICAL AREA: TRANSMISSION SYSTEM DESIGN

Data Adequacy Request 1: Please provide a detailed post project one line diagram of the existing Imperial Valley 230/500kV switchyard showing all the equipments that would require to interconnect the project including 230kV breakers, disconnect switches (with their respective ratings) and conductor termination points of the switchyard.

Response: Detailed post project one line diagrams of the existing Imperial Valley switchyard are provided as an attachment (see Attachment TS-1).

Attachment TS-1



NOTE:
1) ALL EQUIPTMENT SHOWN IS INSIDE EXISTING SUBSTATION FENCE.
2) ITEMS SHOWN IN CLOUD ARE REQUIRED FOR THE SES INTERCONNECTION, RELIABILITY AND DELIVERY UPGRADES.

REVISIONS

NO.		DATE:	BY:	APP'D:	NO.		DATE:	BY:	APP'D:	NO.	WORK DONE	DATE:	BY:	APP'D:	NO.	WORK DONE	DATE:	BY:	APP'D:

SES SOLAR TWO POWER PLANT

INTERCONNECTION

DRAWN BY:	DATE:	SCALE: NONE	W.O.: 1234567	REV: 0	
CHECKED BY:	DATE:				
APPROVED BY:	DATE:				SES-SKETCH-A
CAD NO.: SESSKETCHA	PLOT SCALE: 1 = 1				

ORIG DWG: IVE30.dwg

Sept 03, 2008 - 09:56:29

TECHNICAL AREA: VISUAL RESOURCES

Data Adequacy Request 1: Please provide the approximate number of recreationists that use the Plaster City Open Area.

Response: The BLM recorded 32,457 visitors to Plaster City Open Area during the year 2007, according to the Recreation Management Information System. According to a conversation with Dallas Meeks of the El Centro BLM Field Office on July 31, 2008, most visits are between the months of October through April.

TECHNICAL AREA: VISUAL RESOURCES

Data Adequacy Request 2: Please provide proposed color(s), materials, finishes, patterns, and other proposed design characteristics of each major component visible from off the project site, including and project related electrical transmission line and/or offsite aboveground pipelines and metering stations.

Response: A paint color acceptable to the BLM will be used on all project facilities that can be painted where appropriate to blend more naturally with the existing setting.

Guidelines from the BLM on color selection include but are not limited to choosing color two to three shades darker than the background to compensate for lack of natural texture, selecting color which blends, to the maximum extent possible, with both summer and winter landscapes, and using the appropriate vantage point to select color. Color will be chosen using the BLM's Standard Environmental Color Chart and through consultation with the BLM.

Any necessary fencing will be constructed of non-reflective materials or will be treated or painted to reduce visual effects on sensitive viewing areas. The reflectivity of surfaces will be reduced by using non-reflective elements where appropriate and possible.

TECHNICAL AREA: WATER RESOURCES

Data Adequacy Request 1: Please provide documentation that an adequate water supply for project consumption has been secured.

Response: Two letters are attached (see Attachment WR-1) from Imperial Irrigation District stating they will provide the operational and construction water requirements of the project (30-35 acre-feet/year and 125-175 acre-feet/year, respectively, as discussed in the AFC on page 5.5-10).

Attachment WR-1

IMPERIAL IRRIGATION DISTRICT

OPERATING HEADQUARTERS • P. O. BOX 937 • IMPERIAL, CALIFORNIA 92251

WD

August 19, 2008

Mr. John Egan
Director of Development
Stirling Energy Systems
2929 East Camelback Road
Phoenix, AZ 85016

Subject: SES Solar Two – Will Serve Letter

Dear Mr. Egan:

The Imperial Irrigation District (IID) has received and reviewed your water supply request. IID understands that you intend to take delivery of raw water at the following location off of the West Side Main Canal:

> New delivery gate to be installed within Township 16 S, Range 12 E, Section 7, approximately 1,000' south of Evan Hewes Highway and approximately 200' north of the Union Pacific Rail Road tracks.

According to correspondence dated May 2, 2008, the requested operational water service is 30-35 AF/yr. IID shall provide service to that location under the requirements of the 1932 Water Delivery Contract between IID and the United States, the action of the IID Board of Directors taken in 1942 to create the IID All-American Canal service area boundary, and the Board's subsequent action to include lands within the West Mesa Unit into the water service boundary.

Stirling shall be obligated to comply with the "Rules and Regulations Governing the Distribution and Use of Water" and the Equitable Distribution Plan adopted by IID Board in their present form or as they may be amended hereafter.

If you have any questions, please continue to coordinate your efforts with Ms. Sabrina Barber, Key Customer Coordinator.

Sincerely,

BRIAN J. BRADY
General Manager

SBC/ceb
cc: Ms. Sabrina Barber

IMPERIAL IRRIGATION DISTRICT

GENERAL MANAGER'S OFFICE • P. O. BOX 937 • IMPERIAL, CA 92251

August 25, 2008

Mr. John Egan
Director of Development
Stirling Energy Systems
2929 East Camelback Road
Phoenix, AZ 85016

Dear Mr. Egan:

Subject: SES Solar Two Will-Serve Letter for Temporary Construction Water

The Imperial Irrigation District has received and reviewed your request for a temporary water supply to be utilized for construction purposes. IID understands that you intend to take delivery of raw water at the following location off of the West Side Main Canal:

> New delivery gate to be installed within Township 16 S, Range 12 E, Section 7, approximately 1,000 feet south of Evan Hewes Highway and approximately 200 feet north of the Union Pacific railroad tracks.

According to correspondence dated May 2, 2008, the requested water service is 125-175 acre-feet/year during the construction period. IID shall provide service to that location under the requirements of the 1932 water delivery contract between IID and the United States, the action of the IID Board of Directors in 1942 to create the IID All-American Canal service area boundary and the board's subsequent action to include lands within the West Mesa Unit into its water service boundary.

Stirling shall be obligated to comply with the "Rules and Regulations Governing the Distribution and Use of Water" and the equitable distribution plan adopted by the board in their present form or as they may be amended hereafter.

If you have any questions, please continue to coordinate your efforts with Ms. Sabrina Barber, key customer coordinator.

Yours truly,

Brian J. Brady
General Manager

SB:rs
Cc: Key Customer Coordinator

TELEPHONE (760) 339-9477 • FAX (760) 339-9392
WEB SITE: www.iid.com

TECHNICAL AREA: WATER RESOURCES

Data Adequacy Request 2: Please identify all parties and provide contacts/agreements for all water supplied to the project that necessitates transfer and/or exchange of water. Please provide the status of all appropriate agencies' approvals for the proposed use, environmental impact analysis on the specific transfers and/or exchanges required to obtain the proposed supplies, a copy of any agency regulations that govern the use of the water, and an explanation of how the project complies with the agency regulations(s).

Response: All water supply alternatives for the project anticipate a public or private water purveyor. Therefore, SES anticipates no need for water transfer and/or exchange for the project.

TECHNICAL AREA: WATER RESOURCES

Data Adequacy Request 3: Please provide a description of the drainage facilities proposed and the design criteria used for design of the site drainage control system.

Response:

As presented in Appendix N of the AFC, Initial Drainage Report, the site will maintain local pre-development drainage patterns to the greatest extent possible. Arizona Crossings (roadway dips) or low flow culverts consisting of a small diameter storm drain with a perforated stem pipe will be placed on roadways as needed to cross the minor and major channels / swales. These are shown in Figures 3-29, 3-30 and 3-31 of the AFC. Development areas will be constructed per County drainage criteria, with provision for soft bottom stormwater retention basins to mitigate any increase in storm water runoff. Rainfall from paved areas and building roofs will be collected and directed to the storm water retention basins. Volume of retention or detention basins will have a total volume capacity for a three (3) inch minimum precipitation covering the entire site with no C reduction (coefficient of runoff) factors. Volume can be considered by a combination of basin size and additional volume provided within paving and/or landscaping areas. Retention basins will be designed so that the retained flows will empty within 72 hours after the storm in order to provide mosquito abatement. This can be accomplished by draining, evaporation, infiltration or a combination thereof.

The pre-existing flow patterns will be preserved with no SunCatchers constructed within the washes. The current design includes a drainage control area for the placement of stormwater basins, but the design of the basins will be forthcoming in future design submittals.

TECHNICAL AREA: WATER RESOURCES

Data Adequacy Request 4: Please provide all assumptions and calculations used to calculate runoff and to estimate changes in flow rates between pre- and post construction.

Response: As presented in Appendix N of the AFC, Initial Drainage Report, Hydrology methodology and data used to calculate runoff are defined in Caltrans “Highway Design Manual” (September 1, 2006) using the Regional Flood Approach. Under this approach, flood magnitude and frequency equations developed by the U.S. Geological Survey based on regional regression analysis of data from stream gaging stations (USGS Open File Report 93-419, 1994) can be used to determine estimates of flood magnitude on the basis of basin characteristics.

The following regression equations as listed in the Caltrans "Highway Design Manual" specific to the South Lahontan-Colorado River Basin were used:

$$Q2 = 7.3A^{0.30}$$
$$Q5 = 53A^{0.44}$$
$$Q10 = 150A^{0.53}$$
$$Q25 = 410A^{0.63}$$
$$Q50 = 700A^{0.68}$$
$$Q100 = 1080A^{0.71}$$

The off-site and on-site areas draining through the project site have been delineated as previously illustrated in Figure 5-1 of Appendix N, Initial Drainage Report. The following table provides drainage area and projected peak discharges for each of these basins at the various hydrologic design points. These flows correspond to the pre-project conditions. These flows also correspond to anticipated proposed conditions with implementation of the stormwater control measures indicated in AFC Appendix N.

Design Point	Area (Acre)	Area (mi^2)	Q_{10} (cfs)	Q_{25} (cfs)	Q_{100} (cfs)
A-South	375	0.59	144	282	587
A-North	701	1.10	212	425	906
B-South	146	0.23	80	153	307
B-North	294	0.46	123	241	496
C-South	1,047	1.64	271	551	1,194
C-North	1,926	3.01	396	819	1,818
D	2,573	4.02	474	988	2,220
E-South	918	1.43	250	506	1,090
E-North	1,616	2.52	355	730	1,610
D/E Outfall	5,372	8.39	748	1,594	3,689
F	855	1.34	239	483	1,038
G-South	1,252	1.96	303	619	1,351
G-North	1,753	2.74	374	770	1,704
H-South	1,030	1.61	269	545	1,180
I-South	928	1.45	252	509	1,098
I-North	1,167	1.82	290	591	1,287
J-South	117	0.18	70	132	263
J-North	318	0.50	130	254	524
K-South	408	0.64	151	299	623
K-North	632	0.99	198	397	842

The hydraulic analysis presented in section 6.2, page 16 of the Initial Drainage Report analyzed all significant drainage channels using a combination of HEC-RAS (Version 3.1.3) and FlowMaster (Bentley) hydraulic computer programs to determine the extent of inundated areas during flood events. For these channels, cross-section data were collected from flown 2-foot contour maps of the project site. Figure 6.1 shows the points at which post-project flows were calculated. With implementation of stormwater control measures defined in Appendix N and as shown in the tables in section 6.2 on pages 17 through 19, the pre- and post project flow rates are not expected to change significantly.

RESPONSES TO BLM MINIMUM REQUIREMENT COMMENTS

BLM Comment Table: SES POD and Appendices

Comment	Name	Section	Page	Paragraph	Comment	Response	Additional BLM Comments	Additional Responses
1	L Kastoll	1.1	1-1	3, last line	Should say *Ocotillo* instead Ocotillo Wells	The comment is noted and forthcoming submittals will reflect this correction, as appropriate.		
2	J Irwin	1.2	1-2	1	This document must also meet all NEPA standards.	This Application for Certification (AFC) has been prepared in accordance with the current California Energy Commission (CEC) power plant siting regulations and addresses each of the specified environmental areas. This approach is designed to facilitate review by CEC staff in accordance with the California Environmental Quality Act (CEQA). It is important to note that the majority of the Project is located on public land administered by the Bureau of Land Management California Desert District (BLM). Therefore, this document is also being submitted to the BLM to review for grant of a right-of-way grant. This dual submission is consistent with the National Environmental Policy Act of 1969 (NEPA).		
3	L Kastoll	1.2	1-2	Top of page	Should identify the El Centro Field Office here and throughout document.	The comment is noted and forthcoming submittals will reflect this correction, as appropriate.		
4	L Kastoll	1.3	1-2	1, line 13	Are the facilities in Huntington Beach and Daggett still in operation?	Stirling Energy Systems, Inc. has no operational facilities in Huntington Beach, CA or Daggett, CA.		
5	L Kastoll	1.4	14	2	No mention here of the 125 acre laydown/construction area to the east of Dunaway Road.	The eastern edge of the main portion of the Project site is located approximately 1 mile west of Dunaway Road with the exception of a 100-acre staging and lay down area, a main access road, the transmission line and the water line.		
6	J Irwin	1.4	1-4	3	Must include a No Action alternative for NEPA	Although this section of the Executive Summary does not include a No Action Alternative, the discussion of a No Action Alternative is in section 4.2.1.2, starting on page 4-4 of the AFC.		
7	J Irwin	1.4	1-4	5	Description of negative of 300MW alternative sounds predetermined.	The purpose of this description was to highlight both the positive attributes (the potential for less impacts to some resource areas, less financing required to construct and a smaller footprint) as well as the negative (higher price per kilowatt of capacity, smaller output and little difference in the cost of impacts from infrastructure). The assessment was not predetermined.		
8	J Irwin	1.4	1-5	Top of page	Change "cultural resources" to "sensitive resources" to prevent describing cultural site locations.	The comment is noted and forthcoming submittals will reflect this correction, as appropriate.		
9	J Irwin			Figure 1-3	Topo lines are not visible.	The purpose of this figure was to provide an overview of the Project and its auxiliary features. Please see figures 3-1, 3-2, 3-3 and figure 5.13-1for detailed topographic lines.		
10	D Steward	1.5.2	1-6		Change last sentence to " applicant intends that proposed mitigation measures will reduce impacts on sensitive species and wildlife."	The comment is noted and forthcoming submittals will reflect this correction, as appropriate.		

BLM Comment Table: SES POD and Appendices

Comment	Name	Section	Page	Paragraph	Comment	Response	Additional BLM Comments	Additional Responses
11	L Kastoll	1.5.4	1-7		Differentiate between County zoning and BLM land uses Need to clarify that County zoning does not apply to Federal lands.	The applicant acknowledges that although solar energy conversion is an allowable use on county lands, this zoning designation does not apply to BLM-administered public lands. BLM-administered public lands are zoned as multiple use class L, which is intended to protect sensitive, natural, scenic, ecological, and cultural resource values. Public lands designated as Class L are managed generally to provide for lower intensity and carefully controlled multiple-use of resources, while ensuring that sensitive resource values are not significantly diminished. The CDCA Plan identifies the guidelines (permitted uses) for Class L, which may include (1) electric generation facilities, including wind/solar and geothermal, after NEPA requirements are met*; new electric transmission facilities within designated corridors, after NEPA requirements are met, (2) new distribution facilities placed within existing ROW where they are reasonably available, (3) motorized vehicle access and transportation, including new roads developed under ROW grants or pursuant to approved	* and Plan Amendment	
12	J Irwin			Figure 1-1	The OHV area-closed at the lower left corner is actually Jacumba Wilderness Area, federally designated.. There is no cherry stem in the wilderness area to access private parcels.	The figure has been revised and is provided as Attachment A to this document.		
13	L Kastoll	2.1	2-2	2	"minimum effect of the Project on environmental resources", sounds predetermined.	The purpose of this statement was to highlight the care given to selecting a site so as to minimize impacts to environmental resources. The location and boundaries of the site were revised multiple times to avoid areas designated as environmentally sensitive. There was no pre-determined conclusion that the Project would have minimum effects, but rather that some effects were minimized by engineering and site selection.		
14	L Kastoll	2.2	2-2	2, line 4	"will require the proposed 500-kV Sunrise Powerlink", should be will not require....	The comment is noted and forthcoming submittals will reflect this correction, as appropriate.		
15	L Kastoll	2.4.3	2-4	1	El Centro Field Office	The comment is noted and forthcoming submittals will reflect this correction, as appropriate.		
16	L Kastoll	2.4.3	2-4	2, line 5	A right-of-way would be for construction, operation, maintenance and termination of a solar electric generating facility and related infrastructure.	The comment is noted and forthcoming submittals will reflect this correction, as appropriate.		
17	L. Kastoll	2.4.3	2-4	2, line 7	A plan amendment will be required, not expected.	The comment is noted and forthcoming submittals will reflect this correction, as appropriate.		
18	J Irwin	2.4.3	2-4	5	Reference list is not complete.	The reference list has been revised and is provided as Attachment B to this document.		

BLM Comment Table: SES POD and Appendices

Comment	Name	Section	Page	Paragraph	Comment	Response	Additional BLM Comments	Additional Responses
19	L Kastoll	3.1.2	3-3	2, line 11	Should add "or equivalent" after Sunrise Powerlink transmission line.	The comment is noted and forthcoming submittals will reflect this correction, as appropriate.		
20	L Kastoll	3.1.2	3-3	2, line 17	Should be "designated utility corridor	The comment is noted and forthcoming submittals will reflect this correction, as appropriate.		
21	J Whyte	3.3.1	3-6	Last para	The last sentence should be reworded to include the meaning of multiple use class L and should differentiate between County zoning and BLM land uses.	Please refer to the response to Comment 11.		
22	J Whyte	3.5.9	3-22	6	"The Site layout will maintain the local pre-development drainage patterns where feasible, and water discharge from the Site will remain at the eastern boundary " This section of the plan is very vague as there are a few areas with large natural washes due to desert rains and flooding in the area. There is also little to no grading plan in this section for the project.	The large natural washes are mapped as floodplains in the hydrology study, presented as Appendix N of the AFC/POD. SunCatchers will not be placed within the calculated 10-year floodplain on these washes. Based on results of the 35% grading plan development, there may not be any SunCatchers located within either the 25-year or the 100-year floodplain either. Buildings, substations, tanks and other facilities will be located outside of 100-year floodplains. Lifeline access roads will have to cross some major washes, however as indicated below, the roads will be culverted and the finished grade will be above the 25-year flood level. During larger floods, the road may be overtopped. Overtopping flows will return to the wash and will not be diverted from the natural flow path.		
23	J Whyte	3.7 and 3.7.5	3-33		Water supply and treatment. This section should address the SunCatcher mirror washing due to the winds and dust particles that are present in the area With the amount of particles in the air due to frequent dust storms is the amount of water needed for mirror washing appropriate?	SES Solar Two, LLC has identified in Section 3, Table 3-4 (Water Usage Rates for Solar Two Project Operations) of the AFC/POD the amount of water that will be utilized for mirror washing. The calculations used to produce the results in this table do take into consideration the amount of particles in the air due to frequent dust storms. The results represented are based on the assumption that each Suncatcher would be washed 11 times per year with a 14 gallon standard wash as well as one special wash which will use 42 gallons. The 42-gallon estimate was increased to provide cushioning for the potential for extra, unexpected washes. Should the total number of washes increase, the amount of water per wash will decrease, keeping the total usage within the estimates presented in Table 3-4 of the AFC.		
24	L Kastoll	3.7.1	3-35	Top of page	"or the BLM ROW"... Which ROW?	Initially, two water line routes were considered, one just south and outside of the Union Pacific Rail Road Right of Way on BLM administered public lands. However, the project now consists of the one waterline route as indicated in Figure 1-3.		

BLM Comment Table: SES POD and Appendices

Comment	Name	Section	Page	Paragraph	Comment	Response	Additional BLM Comments	Additional Responses
25	L Kastoll	3.9.11	3-59	Table 3-17	The area east of Dunaway has been identified on maps as a 25 acre staging area, and a 100 acre lay down area, yet this table only shows construction disturbance as 25 acres Also what is "construction administration area"?	Table 3-17 has been revised and is provided as Attachment C. The 25 acre staging area is contained within the 100-acre laydown area. The disturbed area acreage has been revised to reflect this, showing all 100 acres as disturbed. During construction the additional acreage (construction administration area) will be utilized for construction employee parking as indicated in section 3.9.3 (Site Mobilization).	Will the area be reclaimed after construction?	The area will not be reclaimed after construction. It will be used as a contigency area for additional Suncatcher dishes, should it be necessary to offset non-buildable areas in order to avoid recontouring wash areas.
26	J Whyte	3.10.1	3-67		Natural Hazards — The first paragraph addresses seismic activity, wind and dust, and heat; however, in this section they also address flood hazards, fire hazards which are not listed in the first paragraph.	The comment is noted and forthcoming submittals will reflect this correction, as appropriate.		
27	J Whyte	3.10.1.4	3-67, 3-68		The Flood Hazards are not addressed completely, they are vague, i e.., "Given the small area of the on-site watershed in comparison with the much larger off-site watershed, on-site flow peaks may pass before the off-site flows reach the Project Site.. Since thunderstorms typically cover small geographic areas, it is possible that localized flooding may occur in some parts of the site while other parts remain unaffected " This area has a lot of water flow during storms that would reach the project site. If the project site is considered to be the main building complex should be reworded. The hydrology report specifically states there are some major and minor washes thus there could be some significant water flow in the area during rains as the soils are easily eroded.	The project site covers approximately 6,500 acres, which includes the administrative complex buildings. Buildings, substations, tanks and other high risk and critical facilities will be located outside of 100-year floodplains on the major washes. They will also be elevated above the 100-year flood elevation for the contributing watershed. SunCatchers will all be located outside of the 10-year floodplains and generally will be outside of the 25- and 100-year floodplains which are mapped for the major washes across the entire site. Lifeline access roads will have to cross some major washes, however as indicated in section 3.5.9, the roads will be culverted and the finished grade will be above the 25-year flood level. It is acknowledged in the drainage report and in section 3.5.9 that there is considerable flood flow across the site, however the plan for the grading design is to keep all critical equipment and facilities away from identified flood hazard areas as mapped on the floodplain maps provided in the appendix.		
28	J Whyte	4.1	4-1	2	Environment should be "Environmental" (second to the last word).	The comment is noted and forthcoming submittals will reflect this correction, as appropriate.		
29	C Simmons	4.2.3.2.6	4-11	1 and 2	Check this paragraph- if the 900MW alternative includes all of the acreage from the original project area, then that is what needs to be described here, not the 750 MW alternative.. Review and revise this section.	The second paragraph of this section refers to the 750 MW project. This may be misleading to readers, therefore on subsequent documents we agree it might be best to remove.		

BLM Comment Table: SES POD and Appendices

Comment	Name	Section	Page	Paragraph	Comment	Response	Additional BLM Comments	Additional Responses
30	D Meeks	4.2.2.2.8	4-10		Cumulative impacts to recreation will be significant due to permanent loss of legal routes of travel.	The applicant understands the BLM is looking to assess potential cumulative impacts on a regional level (throughout the CDCA) with their Programmatic EIS. However, cumulative impacts to recreation from this project are anticipated to be less than significant.	What information was used to make a determination that cumulative impacts to recreation are anticipated to be negligible? The cumulative impacts of closing thousands of acres to the public will be seen as significant to the users. You're going to need to be able to provide the data behind the determination.	The project site consists of approximately 6,140 acres that can be accessed for OHV use on approved trails only (no cross country travel is allowed in Limited Use areas per the BLM Multiple-Use Categories). However, directly north of the Evan Hewes Highway, approximately 500 feet from the project site is the Plaster City Open Area which consists of 41,000 acres of designated OHV use land which may be used for cross country travel. In addition to the Plaster City Open Area, other nearby OHV use areas that allow cross country OHV use include the Ocotillo Wells State Vehicular Recreation Area (80,000 acres) immediately north of the Project site, Superstition Mountain Open Area (13,000 acres) northeast of the project site, and Imperial Sand Dunes (118,000 acres) east of the project site. These areas are all open to cross country travel and are within a 30 mile radius of the Project site. These areas represent significant amounts of more scenic, challenging, and varying types of terrain for recreational OHV use. Additionally there are opportunities for camping, hiking and other activities in these areas. In addition to these open OHV use areas, the limited use areas of Yuha, East Mesa, and Lark Canyon provide over 100 miles of designated OHV trails. Currently there are over 258,000 acres of designated OHV areas within an hour drive of the project site. These OHV use areas surround the project site and are more scenic, challenging and diverse locations to engage in a variety of recreational activities than the project site. The project site represents a very small (approximately 2%) portion of the land utilized by OHVs within Imperial County. It is unlikely that closure of the project site to OHV use will significantly affect recreational oportunities or economies within the project area, Imperial County, or the region. Sources: BLM El Centro Website: www.blm.gov/ca/st/en/fo/elcentro/recreation/ohvs.html, California State Parks Website: http://ohv.parks.ca.gov
31	L Kastoll	4.2.3.1	4-15		The original 900 MW project was proposed to be built in 3 — 300 MW phases.	When the POD was originally submitted, the 900 MW was proposed to be built in 3 phases, however as design advanced, it was determined to be optimal to build the Project in 2 phases, the first being 300 MW and the second 600 MW. The POD has subsequently been amended to reflect this.		

BLM Comment Table: SES POD and Appendices

Comment	Name	Section	Page	Paragraph	Comment	Response	Additional BLM Comments	Additional Responses
32	L Kastoll	4.2.3.1	4-16	Top of page	"dependent on expansion of the Sunrise Powerlink transmission line (or comparable transmission), including an additional 500-kilovolt transmission line". Why expansion of Sunrise, and what additional 500 kV line?	Under Phase I, Solar Two will construct a solar power Project with a total capacity of 300 MW that will connect to the SDG&E Imperial Valley Substation via a new 230-kilovolt (kV) interconnect transmission line that the Applicant will construct. Transmission studies indicate that the addition of this volume of electricity to the grid will not require any additions or upgrades.	This does not respond to the comment. The POD/AFC says "*dependent on expansion of the Sunrise Powerlink transmission line (or comparable transmission), including an additional 500-kilovolt transmission line*".	Phase I of the Project will be connected to the grid at the SDG&E Imperial Valley Substation via a 10.3 mile, 230-kV interconnection transmission line that the Applicant will construct in a corridor parallel to the existing SDG&E 500-kV Southwest Powerlink transmission line. The renewable energy from Phase I will be transmitted out via the 500-kilovolt (kV) Southwest Powerlink transmission line, which is currently in operation. Transmission studies indicate that the addition of Phase II will require the proposed 500 kV Sunrise Powerlink (or equivalent) transmission line. Therefore, the construction and operation of Phase II is contingent on the approval and development of the Sunrise Powerlink transmission line or additional transmission capacity.
33	L Kastoll	4.5	4-30		The use of which BLM ROW?	Please refer to the response to Comment 24.		
34	L Kastoll	5.9.3.4	5.9-23	Bottom of page	EPA's notice does not initiate the Governor's consistency review. Ideally, BIM will initiate the review simultaneously. Should just say "at the same time, BLM will initiate...."	The comment is noted and forthcoming submittals will reflect this correction, as appropriate.		
35	L Kastoll	5.9 3.4	5.9-25	2, line 1	The project **WILL** block public access or use of previously used routes	Please refer to the response to Comment 30.	The POD/AFC needs to acknowledge that public access will be blocked. It currently says "may".	The comment is noted and forthcoming submittals will reflect this correction, as appropriate.
36	D. Meeks	5.9.4	5.9-26	1	In additional to Visual Resources, there will be cumulative impacts to recreation due to loss of legal routes of travel and land use for visitors.	Please refer to the response to Comment 30.	Please refer to BLM comments above (comment 30)	
37	L Kastoll	5.9.5	5.9-26		This whole section seems to give more emphasis on County LORS, with very brief mention of BLM. While we coordinate with the County, the County General Plan does not apply to Federal lands. There is no discussion of "Mitigation Measures" which is the title of the section.	Section 5.9.3 of the AFC contains a detailed discussion on the land use of BLM-administered public lands. As stated on page 5.9-26, no mitigation measures relating to land use controls are recommended at this time.	This section does not appear to address mitigation measures on federal lands (not even a negative statement). This section should be broke up into separate discussions for County and federal lands for clarification.	Impacts to land use are conisdered to be less than significant. Therefore, no mitigation measures relating to land use controls on federal lands are recommended at this time.
38	L Kastoll	5.9.6.5	5.9-33	Table 5 9-10	Permit/Approval for BLM is plan amendment and Right-of-way grant. When 12 month scheduled begins should be clarified.	The comment is noted and forthcoming submittals will reflect this correction, as appropriate. The 12 month schedule begins, according to the MOU, once the 12 month CEC process begins, after the document is deemed data adequate.		
39	L Kastoll	5.13.1.1	5 13-1	Bottom of page	The land is not "undesignated". Under the CDCA Plan the land is designated as Multiple Use Class L (limited use).	The comment is noted and forthcoming submittals will reflect this correction, as appropriate.		
40	L Kastoll	5.13.1.2	5.13-2	1st line	Same as above	The comment is noted and forthcoming submittals will reflect this correction, as appropriate.		
41	L Kastoll	5.13.1.2	5.13-2	2nd line	Should be Ocotillo, not Ocotillo Wells.	The comment is noted and forthcoming submittals will reflect this correction, as appropriate.		
42	L Kastoll	5.13.1.3	5.13-4	1, line 9	Why are you using the USFS Visual Management System?	The USFS Visual Management System was not used to perform the analysis but rather was included as a reference. BLM's Visual Resources Management (VRM) System was utilized for the visual assessment.		
43	L Kastoll	5.13.1.3	5.13-6	1	What is meant by "...the OHV Area is an open space sensitive resource area and considered to have potential for passive recreation activities" ? The Plaster City Open Area is an intensive use area.	Although Plaster City Open Area is classified an intensive use area, the nature of that use (OHV) allows for only passive recreation activities in terms of visual resources, as users of the area are more focused on off-highway vehicle activities than the surrounding viewshed.		

BLM Comment Table: SES POD and Appendices

Comment	Name	Section	Page	Paragraph	Comment	Response	Additional BLM Comments	Additional Responses
44	L Kastoll	5.13.1.5	5.13-9	1	Again, unclear what is meant by "sensitive resource area".	According to the BLM's VRM System, a sensitive resource area, when analyzing visual resources, refers to an area that has the potential to cause public concern for scenic quality. Factors to addressing sensitivity include type of users, amount of use, public interest, adjacent land uses and special areas.		
45	L Kastoll	5.13.1.5	5.13-34	1	Except for private lands within boundary, the Project is not located on property under the jurisdiction of Imperial County It is under the jurisdiction of BLM within the County of Imperial.	The comment is noted and forthcoming submittals will reflect this correction, as appropriate.		
46	L Kastoll	5.13.5.5	5.13-38	Table 5.13-8	Permit/Approval for BLM is plan amendment and Right-of-way grant. When 12 month scheduled begins should be clarified	The comment is noted and forthcoming submittals will reflect this correction, as appropriate. The 12 month schedule begins, according to the MOU, once the 12 month CEC process begins, after the document is deemed data adequate.		
47	L Kastoll			Figure 5.13-10	Should be Ocotillo, not Ocotillo Wells	The comment is noted and forthcoming submittals will reflect this correction, as appropriate. A revised Figure 5.13-10 is provided as Attachment D.		

BLM Comment Table: SES POD and Appendices

Comment	Name	Section	Page	Paragraph	Comment	Response	Additional BLM Comments	Additional Responses
48	L Kastoll	5.18.1.1	5.18-4	2, line 5	Should say that the Yuha Basin ACEC (not Yuha Limited Use Area) is south of Interstate 8 just the south of the project. The ACEC is a limited use area where vehicles are only allowed on approved routes of travel Also should mention that the FTHL MA overlaps the ACEC.	The comment is noted and forthcoming submittals will reflect this correction, as appropriate.		
49	L Kastoll	5.18.2.1	5.18-6	Table 5 18-3	This table should include the Truckhaven Geothermal Leasing Area, and the Navy/BLM geothermal project in the Superstition Mtn. area.	The comment is noted and forthcoming submittals will reflect this correction, as appropriate.		
50	J Whyte		5.18-10	Table 5.18-5	This table is labeled incorrectly as these projects are not BLM ROW projects.	The comment is noted and forthcoming submittals will reflect this correction, as appropriate.		
51	L Kastoll	5.18.3.8	5.18-17 and 18	Bottom & top of page	You need to separate the land uses under the County General Plan and BLM's CDCA Plan. Again, the County has no jurisdiction over Federal lands.	Please refer to the response to Comment 11.		
52	D Meeks	5.18.3.8	5.18-18	3	Cumulative effects to recreation will be significant due to the loss of legal routes of travel and access to public lands.	Please refer to the response to Comment 30.		
53	J Whyte				There is not section in the POD that examines the reclamation and site stabilization planning.	Site stabilization was discussed on page 3-22 and 3-54 of the AFC/POD. Site reclamation will be performed in a manner suitable to the BLM.	This comment refers to Facility Decommissioning which is listed under supplementary information of the POD template. This information is not required to be submitted with the initial POD, but must be filed prior to NEPA analysis. Additional information may be submitted during the Data Request phase.	
54	L Kastoll				You need to go through document and verify acreages There seems to be inconsistent numbers for BLM land to be included in fenced boundary, i.e.., pg 5 9-4 says 6,140 acs; pg 5.9-20 says 4810; acs.. pg 5.9-22 says 5,857 acs; Most of the time it is stated that 360 acs of private lands will be part of the project, but on pg 4.9-4 it says approximately 480 acs.	The Project will consist of approximately 360 acres of private land and approximately 6,140 acres of BLM-administered public land.		
55	L Kastoll				The area east of Dunaway has been identified on maps as a 125 acre staging/lay down area I did not see any clarification as to whether this area is a temporary use area that would be reclaimed upon completion of construction (or otherwise); or if it would be part of the permanent ROW, and if so for what purpose.	The area east of Dunaway is a 100-acre laydown area, 25 of which will be used as a staging area. The laydown area will be part of the permanent ROW.	For what purpose?	Please refer to the additional response to Comment 25.
56	L Kastoll				I have attached the legal land descriptions for BLM administered lands based on the POD/AFC description. Is this legal description correct? Is there a difference between the application (SF 299) and the project description in the POD? Please provide a legal description for the application if different from project description in POD.	The legal land descriptions for BLM-administered lands attached to these comments and presented in the AFC/POD is correct. Any other descriptions previously provided may be disregarded.		

BLM Comment Table: SES POD and Appendices

Comment	Name	Section	Page	Paragraph	Comment	Response	Additional BLM Comments	Additional Responses

BLM Comment Table: SES POD and Appendices - Wildlife

57	J Irwin	4.2.2.5.5	4-9	2	The 300 mw will have potential significant impacts on sensitive species using the criteria provided.	Paragraph 1 of section 4.2.2.2.5 states that the 300-MW alternative would have the same impacts as Phase 1 of the 750-MW alternative, but would have a smaller footprint and, therefore, fewer overall impacts (Page 4-8). The impacts created by the 750-MW project were described as not being potentially significant **after mitigation** due to the reasons listed in Section 5.6.2.1 (Page 5.6-15).		
58	J Irwin	4.2.3.1.1	4-15	4	Information in this paragraph could be used to locate cultural resources.	This comment is noted. In forthcoming submittals, as appropriate, any resources to the East of the site will be said to have "Environmentally Sensitive Resources" as opposed to cultural resources in order to avoid providing information that could lead to the location of cultural resources.		
59	J Irwin	4.2.3.2.5	4-17	2	Delete could from the 1st sentence.	The comment is noted and forthcoming submittals will reflect this correction, as appropriate.		
60	J Irwin	4.2.3.2.5	4-18	3	Cumulative impacts on biological resources will be significant Vehicle traffic and maintenance activities will have recurring long term impacts in addition to initial construction activities and habitat loss.	Because the entire site is expected to be impacted and the remaining biological value would be negligible, maintenance traffic around the perimeter of the site on existing roads is not expected to add additional significant impacts to those already present.	Note: This statement certainly contradicts the Estimated Disturbed Area Summary shown in Table 5.9-4, and many other sections of the AFC/POD.	The Estimated Disturbed Area Summary is intended to demonstrate the amount of ground that will be disturbed, not the area that will be impacted. It is understood that although ground disturbance is minimized, the site is expected to be impacted. Any remaining vegetation will be highly fragmented and of limeted value to most species of concern.
61	J Irwin	5.6.2.1	5.6-17	2	Based on measurements given, I calculate 125.5 acres of disturbance for the off-site transmission line (10 35mi x 5280' x 50' x 2)/43560 = 125.5 acres	Impact calculations were derived using GIS software. Portions of the proposed transmission line occur within the boundaries of the main site, and those areas previously disturbed in the form of existing roads, were excluded from those impact calculations.		
62	J Irwin	5.6.2.1	5.6.18	1	Based on the measurements given I calculate 9.9 acres of disturbance from the waterline (3.4mi x 5280' x 12' x 2)/43560 = 9.9 acres	Impact calculations were derived using GIS software. Portions of the proposed water line that occur within the boundaries of the main site or previously disturbed by roads and easements were excluded from those impact calculations.		
63	D Steward	5.6.2.1	5.6-18	5	Include increased predation as a potential source of mortality.	Potential for increased predation from raptor perching will be addressed, with agency direction, during the discovery phase of the regulatory review process.		
64	D Steward	5.6.2.1	5.6-19	2	Incorporate mitigation measures from FTHL Range-Wide Management Strategy (2003 rev.) into discussion.	Mitigation measures from the FTHL Range-wide Management Strategy will be reviewed and added, as appropriate, during the discovery phase of the regulatory review process through agency direction.		
65	L Kastoll	5.6.1.1	5.6-4	Table 5.6- 1	On-site Status for FTHL should indicate that transmission line is within Management Area.	The comment is noted and forthcoming submittals will reflect this correction, as appropriate.		
66	J Irwin	5.6.2.1	5.6-20	Table 5.6- 5	Revisit carrying capacity estimate In particular estimate for black-tailed gnatcatchers seems very low.	This species was only observed around mesquite hummocks concentrated along the eastern edge of the site. It is not expected to occur throughout the site. However, during the discovery phase, the carrying capacity estimate will be reviewed and updated with agency direction, as appropriate.		
67	D Steward	5.6.4.1	5.6-22	Bio 1	Incorporate mitigation measures from FTHL Range-Wide Management Strategy (2003 rev) including compensation for habitat loss at a 1:1 ratio.	Mitigation measures from the FTHL Range-wide Management Strategy will be reviewed and implemented, as appropriate through agency direction, during the discovery phase of the regulatory review process.		

BLM Comment Table: SES POD and Appendices								
Comment	Name	Section	Page	Paragraph	Comment	Response	Additional BLM Comments	Additional Responses
68	J Irwin	5.18.3.5	5.18-15	1	Cumulative impacts resulting from this project are more than minor due to the scale of the habitat disturbance. Other reasonable foreseeable projects are also large scale.	As shown on table 5.18-3 of the AFC/POD, there are many large scale pending project in the area. Should these projects be completed, there is a potential for cumulative impacts. However, the likelihood that all of these will be constructed is unknown. Biological impacts from Solar Two, when considered cumulatively with other past, present and reasonably foreseeable projects are expected to be less than significant. Calculations for cumulative impacts were derived using the best information available regarding other potential projects in the area. In addition, mitigation as proposed is expected to reduce impacts to below a level of significance. Given the location of the project (outside of BLM designated areas of biological concern), cumulative impacts should be considered less than significant since regionally important areas will not be affected. This is consistent with BLM multi-use policy.	While FTHL habitat may not be regionally important, the loss of such habitat, even outside of a management area, is more than minor. Loss of habitat could lead to listing of the species.	
69	J Irwin	5.18.3.5	5.18-16	1	Cumulative effects likely to be significant.	Please refer to the response to Comment 68.		
70	J Irwin	5.18.3.5	5.18-16	3	The project has potentially for significant negative impacts to biological resources.	The Project does have the potential for significant negative impacts to biological resources, however it is anticipated that they may be mitigated to a level that is less than significant. As stated in Section 5.6.2.1 (Page 5.6-15), impacts to biological impacts would not be considered significant **after mitigation**.		
71	J Irwin	2.1	App. Y	1	Flat-tailed horned lizard Rangewide Management Plan 2003.	The comment is noted and forthcoming submittals will reflect this correction, as appropriate.		
72	J Irwin	3.2.3.1	App. Y	1	Remove population estimates, accuracy is too low to include in document.	Estimates were based on survey method assumptions. If agreed, these estimates can be removed from future documentation.		
73	J Irwin	4.1.1	App. Y		Include increased predation as an impact. The additional perching areas allow for more raptor predation.	Increased predation from raptor perching will be addressed during the discovery phase of the regulatory review process.		
74	J Irwin	5.1	App. Y	1	Mitigation will be consistent with the FTHL Rangewide Management Strategy 2003, which calls for 1:1 ratio.	Mitigation measures from the FTHL Rangewide Management Strategy will be reviewed and added as appropriate during the discovery phase of the regulatory review process through agency guidance.	Be aware that monetary compensation for FTHL habitat will likely be calculated on the entire project area at a 1:1 ratio; the transmission line at a 5:1 ratio.	
75	J Irwin				FTHL survey plot maps Change 26 acre cell to 10.5 hectare cell for consistency, or change all to acres.	For consistency, units throughout the document will be will be expressed as English Units. Forthcoming submittals will reflect this correction, as appropriate.		
BLM Comment Table: SES POD and Appendices - Archeology								
76	C Simmons	5.7	5.7-1	1	Sentence 1: Potential effects are not analyzed within this section. The actual effects are not directly analyzed or discussed Instead general mitigation measures are provided that may or may not be adopted through the Section 106 Process.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
77	C Simmons	5.7	5.7-1	2	Native American Consultation is conducted by the Federal Agency and not the proponent or the proponent's consultant.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
78	C Simmons	5.7	5.7-1	2	The results of the historic architecture pedestrian survey which this paragraph states are included in Section 5.7 are missing it is also not included in the technical report - appendix Z.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		

BLM Comment Table: SES POD and Appendices

Comment	Name	Section	Page	Paragraph	Comment	Response	Additional BLM Comments	Additional Responses
79	C Simmons	5.7	5.7-1	3	Sentence 1: AFC states that the study results indicate adverse effects to sites, however both the cultural report and this section of the AFC do not describe where and how those adverse effects will occur. The proposed mitigation then describes avoidance as the preferred option- avoidance is not mitigation, if you can avoid sites there shouldn't be any direct effects, possibly only indirect. Also, no formal site evaluations have *been* conducted and eligibility has yet to be determined therefore, this first sentence is incorrect Finally, the consultant is recommending that some sites are eligible to the NRHP.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
80	C Simmons	5.7.1.2	5.7-2	1	This description of the APE is not complete What about the transmission line, water pipeline, roads and substation? Are there any staging areas for construction? Also, as the original larger project area is now considered an alternative to be analyzed in the NEPA process (the 900MW alternative) these additional acres may need to be included back in as the Project Area as they could be considered within the Area of Potential Effects if that alternative is chosen. Also, define exactly what is meant by "Project Area" This should include all aspects of this project, including necessary transmission lines, staging, etc. but perhaps broken down into different categories.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
81	C Simmons	5.7.1.5	5.7-2	1	Change phrase "established Bureau of Land Management (BLM) roads" to "Bureau of Land Management (BLM) designated routes of travel"	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
82	C Simmons	5.7.1.6	5.7-2, 3-5		Reliance on Michael Moratto (1984) seems too heavy throughout discussion of CA prehistory Much Southern California research has been done since 1984.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
83	C Simmons	5.7.3.3	5.7-9, 10-11		Regional historic context is missing a focused local discussion and should include at minimum the development of US Gypsum Corporation, its mining operations and processing at Plaster City, its narrow gauge RR, sand and gravel mining, Dixieland, cattle ranching/driving, and the early routes (including old highway 80) up to Mt Springs and San Diego.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
84	C Simmons	5.7.5	5.7-12	2	The last sentence does not appear to be completely accurate Missing maps and reports in Appendix Z	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
85	C Simmons	5.7.5	5.7-13	1	2nd sentence is contradicted by Figure 5.7-1 and Table 5.7-1	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
86	C Simmons	5.7.5	5.7-13	1	There should be mention of the Sunrise Powerlink project here and a discussion of how that survey coincides with this effort- it also needs to be addressed in the technical report under previous research.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		

BLM Comment Table: SES POD and Appendices

Comment	Name	Section	Page	Paragraph	Comment	Response	Additional BLM Comments	Additional Responses
87	C Simmons	5.7.5	5.7-14	1	It is unclear if the previously identified resources in the Project APE include sites located along the proposed transmission line and/or other project ancillary areas Make sure this information is included but separated out under different headings.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
88	C Simmons	5.7.5	5.7-14	1 and Table 5 7-2	Where are the sites which make up the Yuha Discontinuous District which is on the NRHP? They need to be included and there needs to be a discussion of this district in the text.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
89	C Simmons	5.7.6	5.7-22	3	2nd sentence: The survey for the transmission line was a 300-ft corridor not a "right-of way" The ROW will be something smaller than the corridor that was surveyed for this project The same goes for the water line survey It is a survey corridor, not a ROW ROWs will be assigned, if and when this project is permitted.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
90	C Simmons	5.7.6	5.7-22 and 5.7- 23	4	If the information is still in process how can it be submitted for review? BLM has not approved the final report.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
91	C Simmons	5.7.6	5.7-23	Table 5.7- 3	Why was a Field Number and a Temporary number assigned to each site? One of these designations is extraneous information that does not need to be included on this table- stick with listing only numbers that are listed on the site form. Also, recommend including a column for NRHP recommendations.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
92	C Simmons	5.7.7	5.7-30	Title of section and paragraph 1	As described above, Native American Consultation is carried out by the lead Federal Agency not the consultant or proponent Use the terms "information gathering" or "data gathering" instead.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
93	C Simmons	5.7.7	5.7-30	1	This paragraph contains incomplete information, There were at least 2 requests sent in to the NAHC and different results were received each time The second time stated that there WERE sacred lands within or near the project areas BLM has copies of these letters and they should be included in the AFC and/or technical report.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
94	C Simmons	5.7.7	5.7-30	4	Where are the correspondence letters and the spreadsheet that are supposed to be included in Appendix Z?	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
95	C Simmons	5.7.8.1	5.7-31		Where is the discussion of eligibility recommendations of the contractor for all of these sites?	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		

BLM Comment Table: SES POD and Appendices

Comment	Name	Section	Page	Paragraph	Comment	Response	Additional BLM Comments	Additional Responses
96	C Simmons	5.7.8 and 5.7.9	5.7-31, 5.7-32		The discussion of direct effects is unclear and confused with Cumulative Effects- a separate section on direct effects will need to be included Separate those sections into 2 with specific descriptions of what the effects will be to both previously and newly recorded sites As it stands right now, this section is just a general overview of POSSIBLE effects and nothing specific.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
97	C Simmons	5.7.9	5.7-33	1 and 2	The last sentence of paragraph 1 contradicts what was stated at the beginning of this entire Section- here it states that the project site has been "specifically designed to avoid effects to cultural resources " At the beginning of this Section it states that there WILL be effects to NRHP eligible sites....	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
98	C Simmons	5 7.9 (and 5.7.10)	5.7-33	2 and paragraph 1 of section 5.7.10	Be careful about using CEQA language here- under Section 106 effects to NRHP are NOT mitigated to reduction Clarify this and describe the two different processes for dealing with cultural resources.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
99	C Simmons	5.7.10	5.7-33	1	Sentence 1 is contradictory again with the paragraph above in Section 5 7 9 which states that the project has been designed to avoid effects to resources	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
100	C Simmons	5.7.10	5.7-33	1	Sentence 3: this statement is made without evidence or supporting data to back it up Why is there a high probability for buried resources- explain.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
101	C Simmons	5.7.10	5.7-33	1	Should include that an MOU may be developed with the SHPO and other consulting parties as part of 106 process - it may include a HPTP and appropriate mitigation (if necessary) will be outlined. Do not commit the lead agency to anything at this stage.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		

BLM Comment Table: SES POD and Appendices

Comment	Name	Section	Page	Paragraph	Comment	Response	Additional BLM Comments	Additional Responses
102	C Simmons	5.7.10.1	5.7-33	1	Why do you need Data Recovery if effects to cultural resources can be avoided as stated above?	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
103	C Simmons	5.7.10.6	5.7-35	1	2nd sentence: BLM will decide if a site is considered significant, taking into consideration URS' recommendation.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
104	C Simmons	5.7.13	5.7-44	1	This statement is incorrect Permits were required for survey and if data recovery or testing is necessary, additional BLM permits will be required.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
105	C Simmons	5.7	5.7-13	Figure 5.7-1	Identifying numbers for survey projects on this map should correspond with a number on table 5..7-1. As it is, one cannot tell which survey area corresponds with which project title or author.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
Class III Cultural Resrouces Inventory Report - General Comments								
106	C Simmons				By pushing forward with the timeline for submitting the AFC and not allowing enough advance time to submit a cultural report and get it finalized and approved by BLM (and the CEC), it is making it very difficult to comment substantively Many sections of the report are unfinished, missing completely or contradictory The sheer numbers of sites that were found and sensitivity of the area requires extra careful attention and proper documentation- this will only help the Section 106 and NEPA processes along in a timely manner in the long run.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
107	C Simmons				The naming of each of the volumes needs to be more explicit for Volume 2 and 3 Each one of these has two parts and is provided under two separate covers- call each one A and B or something like that.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
108	C Simmons				Need to include large format fold out maps in the Appendix which document record search resource data, results of inventory and new sites.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
109	C Simmons		Site records		Include the temporary number as well as the field number on the site record.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
110	C Simmons		Site records		Many of the site record photographs included on the primary records are not acceptable. They are often blurry and don't show anything in particular at each site The description of the photo under P5b is missing for most if not all the site records.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
111	C Simmons		Site records		Location maps do not include a key/legend and the site in question is not called out for identification specifically- this makes it very difficult to locate-	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
112	C Simmons		Site records		Isolates should be separated out from site records and identified with a tabbed section, Organize site records in order of trinomial once these have been assigned Separate out previously recorded sites that have been relocated.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		

BLM Comment Table: SES POD and Appendices

Comment	Name	Section	Page	Paragraph	Comment	Response	Additional BLM Comments	Additional Responses
113	C Simmons		Site records		A13 (Interpretations) sections on the Archaeological site records should discuss resource in terms of recorded resources in proximity and relative association/interpretation (if any) For example - lake Cahuilla shoreline.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
114	C Simmons		Site records		Include point provenience/ locational data on the artifact records for diagnostic artifacts and features in the form of UTM coordinates Also many of the artifact records are missing descriptive information and have multiple blank cells.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
115	C Simmons		Site records		Many of these resources, if not all, can be lumped, not split and should be recorded as districts when appropriate (e.g., Ancient Lake Cahuilla shoreline, contributors to the Yuha discontinuous district, etc). There is some potential for a historic district as well perhaps related to sand and gravel mining.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
116	C Simmons		Site records		I will be going through each site record individually and providing specific comments separately.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		

BLM Comment Table: SES POD and Appendices

Comment	Name	Section	Page	Paragraph	Comment	Response	Additional BLM Comments	Additional Responses
Class III Cultural Resrouces Inventory Report - Specific Report Comments								
117	C Simmons	1.1	1-1	1	In the AFC it says that private land is included in the Project Area Was this land surveyed? If it is part of the Project Area it will need to be analyzed to the same extent that the public lands were Where is the description of the rest of the Project? This includes the transmission line, water pipeline, and any staging or ancillary areas. See comment above This information needs to be included and described in this section (project overview) not in the next section (project location, 1 2) The record search and survey data for these aspects of the project need to be included in this report and clearly delineated as components of the project.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
118	C Simmons	1.4	1-3	1	This paragraph includes some of the other project components in the APE but leaves out the private land that was mentioned in the previous section. Is or is not the private land part of the project?	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
119	C Simmons	1.4	1-4	5	This report must also conform to the California ARMR format and it currently does not.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
120	C Simmons	2.1	2-1	1 and 5	The description of Lake Cahuilla in these two paragraphs contradicts each other. One states that it formed during the last 1,000 years and the other states that it was in and out of existence from the Late Pleistocene into the Holocene.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
121	C Simmons	2.4	2.4		Regional historic context is missing more local discussion and should include development of US Gypsum Corporation, its mining operations and processing at Plaster City, its narrow gauge RR, sand and gravel mining, Dixieland, cattle ranching/driving, and the early routes (including old highway 80) across this area and up to Mt. Springs and San Diego.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
122	C Simmons	2.5	2-12	3	Include the record search map here documenting previous investigations which is included in the AFC, making changes suggested above to the associated table (in this report it is Tablet- 1)	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
123	C Simmons	2.5	2-12	3	The report states that 20 investigations were conducted within 1 mile of the project area and the AFC (page 5 7-13) states that 25 were conducted w/in 1 mile Inconsistant. Where is the discussion of the Sunrise powerlink project? The survey for geotech conducted by URS?	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
124	C. Simmons	2.5	2-13	5	Same comment as above in the AFC: Where are the sites which make up the Yuha Discontinuous District which is on the NRHP?- There needs to be a discussion of this district and the sites which make it up that are within the project area or 1 mile buffer zone called out explicitly.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		

BLM Comment Table: SES POD and Appendices

Comment	Name	Section	Page	Paragraph	Comment	Response	Additional BLM Comments	Additional Responses
125	C Simmons	2.6	2-22		This section is incomplete Only 2 prehistoric research issues? What about historic? Need to more fully flush out the research design and context which will guide the discussion during evaluations.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
126	C Simmons	3	3-1 to 3-2		This section is incomplete Include discussion of regulatory context for cultural resources under CEQA/CEC process. It also seems out of place here.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
127	C Simmons	3	3-2	5	The 2nd-4th sentences in this paragraph are out of place and do not relate to the first sentence, beginning with, "The area was used extensively....".	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
128	C Simmons	4.1	4-1	1	The BLM field office did not issue URS the Cultural Resource Use Permits listed here Those were issued by the BLM state office The BLM Field Office issued URS a series of Fieldwork Authorizations. Revise this.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
129	C Simmons	4.2	4-1	1	Same comment as above in the AFC: The survey for the transmission line was a 300- ft corridor not a "right-of way" The ROW will be something smaller than the corridor that was surveyed for this project. The same goes for the water line survey It is a survey corridor, not a ROW ROWs will be assigned, if and when this project is permitted. Also, what about the survey of the staging areas, laydown areas, access roads, and the private lands that are mentioned as being part of the project area in the AFC?	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
130	C Simmons	4.2	4-1	2	Survey intervals in this report states 15 meter transects The AFC states that it was 10 meter intervals. Which is it?	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
131	C Simmons	4.2	4-1	3	Change eligibility classes to: listed, consultant recommended eligible, needs data, and consultant recommended not eligible.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
132	C Simmons	4.2	5-1	1	Does the number 264 include previously recorded sites that were relocated? Also, provide a description of each site category describing how and why you used this catrgorizing method. How did you define each site as an isolate? How many of each site type was recorded? How many isolates, etc? This section (methods) and the next two (eligibility recommendations) need to be revised. There should be a section documenting methods used, a section documenting results or a report of findings, and a section of discussion/ interpreatations - this will conform to the ARMR formatting guidelines as well. As it stands currently in this report, everything is all mixed up and eligibility is offered before there is even a clear description of what was found.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		

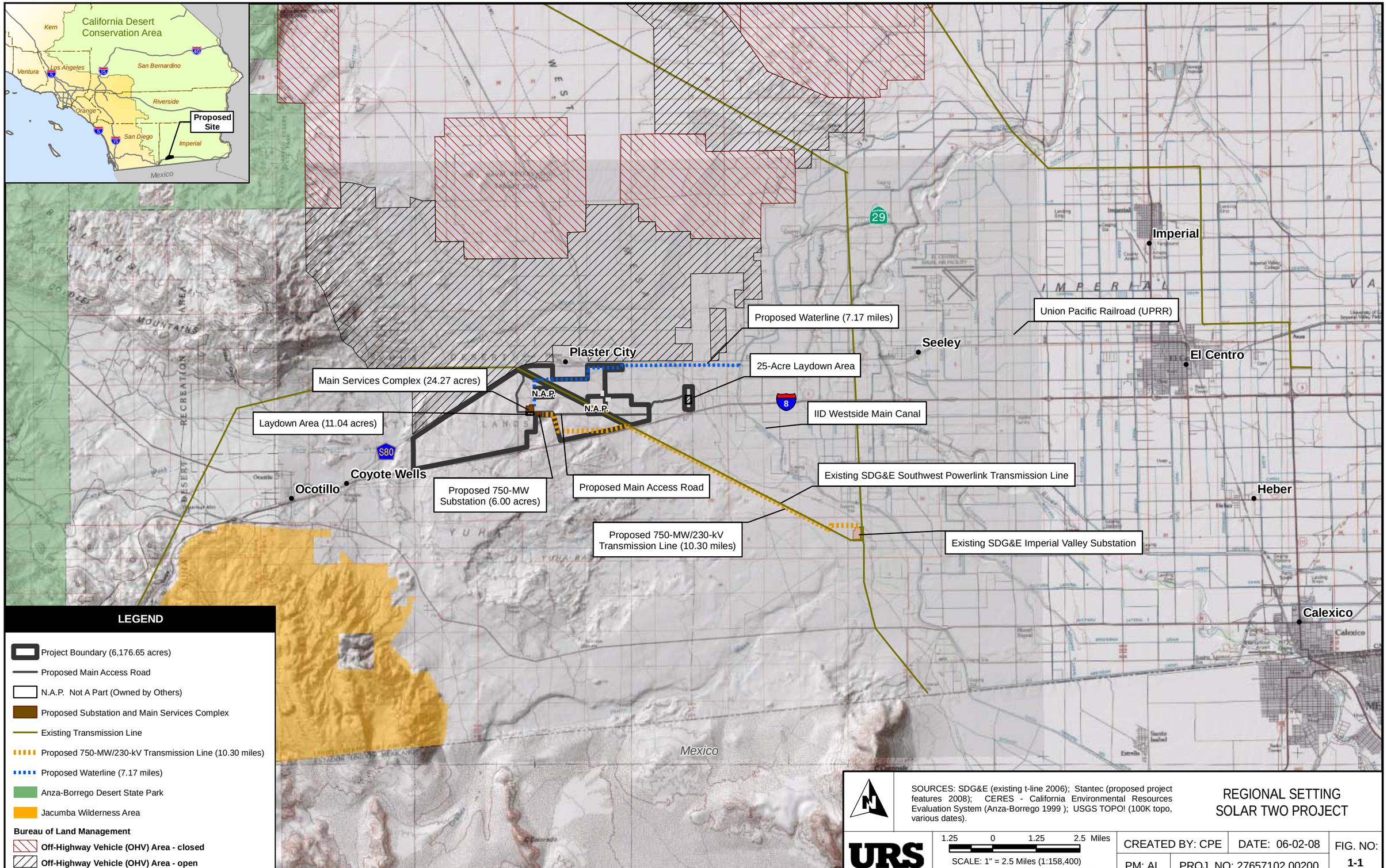
BLM Comment Table: SES POD and Appendices

Comment	Name	Section	Page	Paragraph	Comment	Response	Additional BLM Comments	Additional Responses
133	C Simmons	5.1	5-1	1	Unclear how this report can make eligibility reccomendations when the survey data has not been processed yet (as stated in the AFC) and a built environment has not been completed (or at least is not included for review).	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
134	C Simmons	5.1	5-1	1	This paragraph states that a rationale is included for each site eligibility reccomendation but in fact it is missing for almost every one.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
135	C Simmons	5.1			Have site records been submitted yet to the SIC? The final report must use permanent numbers (trinomials) to discuss sites.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
136	C Simmons	5.1.1	5-3	Table 5-1	Sites LL-024 and RAN-023 are not described in the text Prefer that Size match previous Table which used Dimensions rather than hectares. Change cells from the column NRHP Eligibility which say "Eligible" to "Recommended Eligible"	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
137	C Simmons	5.1.2	5-4	1	Why are trails separated out from the previous section? Where is the description of each one in the text? How did you treat associated materials along the trail? Explain methodology Are you proposing them as a District or as each individually eligible? This section isn't clear and I'm not convinced yet of your reasoning for eligibility Should definitely mention Geoglyphs to the South and if any trails may connect with those....	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
138	C Simmons	5.1.2	5-4	6	"A number of these have also been recorded along the trails found in the Project area " How many? Associated with which trails/sites? How did you record them in relation to the trails- are they included as part of the site? See previous comment.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
139	C Simmons	5.1.2	5-5	Table 5-2	Change size column to length and complete Change "Eligible" to "Recommended Eligible"	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
140	C Simmons	5.1.4	5-11	1	Eligibility rationale should be included in the report text- not in the site record or in an appendix.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
141	C Simmons	5.1.4	5-65	last paragraph	Are isolate primary records included in the appendices?	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
142	C Simmons	5.1			Need to separate out results from each portion of the survey project- what sites were found in the transmission line survey corridor, in the water pipeline corridor, staging areas, main project area, etc.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
143	C Simmons	5.1			Where is a discussion of the previously recorded sites which were relocated?	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
144	C Simmons	6.1	6-1		Now there is another section discussing eligibility- this is redundant. Separate out eligibility discussions from previous section which should only focus on investigation results and put it all in this section.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
145	C Simmons	6.1	6-1		Where is the eligibility discussion for the previously recorded sites?	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		

BLM Comment Table: SES POD and Appendices

Comment	Name	Section	Page	Paragraph	Comment	Response	Additional BLM Comments	Additional Responses
146	C Simmons	6.1	6-1		Need to tie back eligibility discussions to the research design, research questions and context.	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		
147	C Simmons	6.2	6-2		This section is incomplete and needs to include which sites will be affected by the project either directly or indirectly Also, what is the "current BLM-California SHPO Memorandum of Agreement"?	This comment has been addressed in the revised Cultural Resources Technical Report and revised AFC Section 5.7, Cultural Resources.		

Attachment A



SOURCES: SDG&E (existing t-line 2006); Stantec (proposed project features 2008); CERES - California Environmental Resources Evaluation System (Anza-Borrego 1999); USGS TOPO! (100K topo, various dates).

REGIONAL SETTING
SOLAR TWO PROJECT

URS

1.25 0 1.25 2.5 Miles

SCALE: 1" = 2.5 Miles (1:158,400)
SCALE CORRECT WHEN PRINTED AT 11X17

CREATED BY: CPE	DATE: 06-02-08	FIG. NO:
PM: AL	PROJ. NO: 27657102.00200	1-1

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Attachment B

REFERENCES

CAISO (California Independent System Operator). 2007. Five-Year Strategic Plan for 2008-2012.

California Public Utilities Commission, "Renewable Energy," web site www.cpuc.ca.gov/static/energy/ electric/renewableenergy.

California Energy Commission, *Renewable Energy Program: Overall Program Guidebook*, CEC-300- 2006-008-F (Sacramento, CA, April 2006), web site www.energy.ca.gov/2006publications/CEC-300-2006- 008/CEC-300-2006-008-F.pdf.

Revision 1
August 22, 2008

Attachment C

E A S				
P C I	A		P L	C
	C	O P		
O SITE E ELOP ENT				
Offsite Access Road	4.5 Acres	3.6 Acres	1.3 Miles	30-foot width for roadway and drainage
Offsite Transmission Line	91.6 Acres	Included Below	7.6 Miles	50 ft. ea. side of center
Tower Structures	Included Above	1.2 to 1.4 Acres		50 to 60 Towers x 1024 SF per Tower
Water Line & Pumping Station	8.0 Acres	1 Acre	3.4 Miles	9.5 ft. ea. side of center
Offsite Electrical & Communications Overhead Service	0.3 Acres	Included Below	539 Feet	12 ft. ea. Side of center
Poles	Included Above	26 SF		2 poles x 13 SF per pole
S	A	A		
ONSITE ALANCE O PLANT E ELOP ENT				
Construction Staging & Construction Administration Area East of Dunaway Road	100 Acres	Not Applicable		NA
Onsite Construction Lay-down	12 Acres	Not Applicable		NA
Site Boundary Fence Line	29.9 Acres	14.9 Acres	20.5 Miles	12-foot width construction access 3 ft. ea. side of the fence
Site Paved Roadways	137.6 Acres	137.6 Acres	25.2 Miles	45-foot width for roadway and drainage
Unpaved Perimeter Roadways	16.2 Acres	16.2 Acres	11.2 Miles	12 ft. wide
Main Complex, Parking and Services	14.4 Acres	14.4 Acres		
Assembly Buildings and Storage	14 Acres	Not Applicable		
Onsite Wet & Dry Utilities Access				
Water Pipeline	8.7 Acres	Not Applicable	3.8 Miles	9.5 ft. ea. side of center
Onsite Electrical & Communications Overhead Service	3.8 Acres	Not Applicable	6,914 Feet	12 ft. ea. side of center
SOLAR2 Substation	7.7 Acres	5.2 Acres		650 ft x 350 ft
Onsite Transmission Line	34.1 Acres	Not Applicable	2.8 Miles	50 ft. ea. side of center
Transmission Access Road	Included Above	4.1 Acres	2.8 Miles	12 ft. wide
Transmission Tower Structures	Included Above	0.5 to 0.7 acre		20 to 30 Towers at 1024 SF per Tower

[1] Refer to Drawing S2-G-0001 Sheet 2 for locations of project components
[2] Assumes 750MW Net development of 30,000 SunCatchers

E A S				
P C I	A		P L	C
	C	O P		
34.5kV Overhead Runs to SOLAR 2 Substation	4.0 Acres	Not Applicable		10.95 Miles x 12-foot wide with a significant portion overlapping other construction disturbed areas (75%)
Poles	Included Above	0.1 Acres		
34.5kV Runs to Overhead Lines	5.2 Acres	Not Applicable		
S	A	A		
SOLAR IEL E ELOP ENT W S G [3]				
N-S Access Routes	245 Acres	245 Acres	168 Miles	1,709 ft. per 1.5MW (0.47 Acres-total) Based upon 12-foot wide road
E-W Access Routes	148.3 Acres	148.3 Acres	102 Miles	1,033 ft. per 1.5MW (0.28 Acres-total)
Electrical Collection System				
600V Underground	35 Acres	Not Applicable	576 Miles	5,850 Feet per 1.5MW (0.52 Acres-total) Based upon 2-foot ea. side of center
34.5kV Underground	20 Acres	Not Applicable	45 Miles	460 Feet per 1.5MW (0.06 Acres-total) Based upon 3-foot ea. side of center
SunCatcher Installation				
N-S Access/SunCatcher	440 Acres	440 Acres		1,600 Feet per 1.5MW (0.88 Acres-total) Based upon 20-foot by 32-foot access/unit
E-W Access/SunCatcher	1,735 Acres	1,735 Acres		4,200 Feet per 1.5MW (3.47 Acres-total) Based upon 36-foot by 70-foot access/unit
S	A	A		
TOTAL AREA	A	A		

Attachment D

Residence at Boundary Ave and Imperial Ave in Ocotillo

C ARACTER P OTO
SOLAR TWO PROJECT

URS	NO SCALE	CREATED BY CL	DATE: 5-22-08	FIG. NO:
		PM: AL	PROJ. NO: 27657102.00413	**5.13-10**

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