DOCKET
08-AFC-13
DATE
RECD. JUN 30 2010

CALICO SOLAR

Applicant's Opening Testimony

Application for Certification (08-AFC-13)

June 2010

Submitted to:
Bureau of Land Management
2601 Barstow Road
Barstow, CA 92311

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

Submitted by:
SES Solar Three, LLC
SES Solar Six, LLC

Stirling Energy Systems
4800 N. Scottsdale Road, Suite 5500
Scottsdale, AZ 85251

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Tessera Solar™
power from stirling energy systems

June 30, 2010

Mr. Paul Krammer
Hearing Officer
Attn: Docket No. 08-AFC-13
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512

RE: Calico Solar (formerly SES Solar One) (08-AFC-13)
Applicant's Submittal of Testimony Compilation

Dear Mr. Meyer:

The Applicant today serves on all parties to this proceeding its prepared opening testimony. This testimony, along with Applicant's exhibits, has been provided on cd in two formats.

I certify under penalty of perjury that the foregoing is true, correct, and complete to the best of my knowledge.

Sincerely,

Felicia L. Bellows
Vice President of Development

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Table of Contents for Submittal of Prepared Direct Testimony For the Calico Solar Project (08-AFC-13)

Tentative Exhibit List*

Prepared Direct Testimony as follows:

Appendix A: Witness Resumes

*****Exhibits 1-62 have been provided electronically on cd, in Formats 1 and 2.

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BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814 - 1-800-822-6228 - WWW.ENERGY.CA.GOV

Docket Number: ***08-AFC-13*** Date: June 30, 2010

Project Name: **Application for Certification for the *CALICO SOLAR Project***

TENTATIVE EXHIBIT LIST

Exhibit	Brief Description Including Date of Document and Docketed Date	Admitted	Refused	CEC Use Only
1.	**Application for Certification**, dated December 1, 2008, docketed December 2, 2008			
a.	1.0 Executive Summary			
b.	2.0 Project Objectives/Need			
c.	App A MOU			
d.	App C Property Owners			
e.	App D Burlington Northern Santa Fe Railroad ROW			
f.	3.0 Project Description and Location			
g.	App B Solar Stirling Engine			
h.	App F Mechanical and Fire Protection Design Criteria			
i.	App G USGS Project Maps			
j.	App H System Impact Study			
k.	App I Electric and Magnetic Field calculations			
l.	App J Water Balance Flow Diagrams			

Exhibit	Brief Description Including Date of Document and Docketed Date	Admitted	Refused	CEC Use Only
m.	App K Hydrogen System Design			
n.	App L Hazardous Materials Handling			
o.	App M Structural Engineering Design Criteria			
p.	App N Initial Drainage Report			
q.	App O Civil Engineering Design Criteria			
r.	App P Electrical Engineering Criteria			
s.	App Q Control Systems Design Criteria			
t.	App R Fuel handling Design Criteria			
u.	App S Materials Safety/Equipment			
v.	App T Phase I Environmental Site Assessment			
w.	App EE Environmental Summary Lugo-Pisgah			
x.	4.0 Alternatives			
y.	5.1 Introduction			
z.	5.2 Air Quality			
aa.	App V – Air Quality Data			
bb.	5.3 Geologic Hazards			
cc.	App E Preliminary Geotechnical and Geologic Hazards Evaluation			
dd.	5.4 Soils			
ee.	App W Soil loss calculations			
ff.	5.5 Water Resources			
gg.	5.6 Biological Resources			
hh.	App Y – Biological Technical Report			
ii.	5.7 Cultural Resources			
jj.	App Z Cultural Tech Report			

Exhibit	Brief Description Including Date of Document and Docketed Date	Admitted	Refused	CEC Use Only
kk.	5.8 Paleontological Resources			
ll.	App AA Paleontological Resources Tech Report			
mm.	5.9 Land Use			
nn.	5.10 Socioeconomics			
oo.	5.11 Traffic and Transportation			
pp.	App BB Traffic Counts			
qq.	5.12 Noise			
rr.	App CC Noise Measurements			
ss.	5.13 Visual Resources			
tt.	5.14 Waste Management			
uu.	5.15 Haz Mat Handling			
av.	5.16 Public Health and Safety			
ww.	App DD Public Health and Safety Data			
xx.	5.17 Worker Safety			
yy.	5.18 Cumulative Impacts			
zz.	6.0 Financial Information			
aaa.	7.0 List of Preparers			
2.	**Application to MDAQMD**, dated January 28, 2009, docketed January 28, 2009			
3.	**Data Adequacy Supplement**, dated April 6, 2009, docketed April 6, 2009			
a.	Responses 1-5 Air Quality			
b.	Response 6 Economic benefits of alternate site			
c.	Responses 7-11 Biology			
d.	Responses 12-23 Cultural			
e.	Responses 24-26 Land Use			

Exhibit	Brief Description Including Date of Document and Docketed Date		Admitted	Refused	CEC Use Only
f.	Responses 27-28	Noise			
g.	Responses 29	Project Overview			
h.	Response 30-32	Site ownership			
i.	Response 33	Transmission Line Route			
j.	Response 34-36	Socioeconomics			
k.	Response 37	Fill disposal location			
l.	Response 38	Soils			
m.	Responses 39	Traffic			
n.	Response 40-41	Agency contacts and other permits			
o.	Response 42-44	One-lines and agencies			
p.	Response 45-46	Visual			
q.	Response 47	Waste Management			
r.	Responses 48, 53-55	Surface Water			
s.	Responses 49-52	Groundwater			
t.	Response 50	Back-up water supply			
4.	**Additional Information**, dated April 29, 2009, docketed April 29, 2009 Pump Test Data				
5.	**CEC/BLM Data Responses 49-70, 74, 75, 80, 82-84, 88-91**, dated July 17, 2009, docketed July 17, 2009				
a.	Response 49	Alternate site map			
b.	Responses 50-52, 54-56, 82-84	Biology, U.S. and State Waters			
c.	Response 53	Evaporation Pond			
d.	Responses 57-60	Hydrogen system			

Exhibit	Brief Description Including Date of Document and Docketed Date		Admitted	Refused	CEC Use Only
e.	Response 61	Paleontology			
f.	Responses 62-63	Project boundary			
g.	Responses 64-67	Land use			
h.	Response 68	Noise			
i.	Responses 69-70,	Groundwater			
j.	Responses 74,75, 80	Water requirements			
k.	Responses 86-87	Waste management and ore processing			
6.	**CEC/BLM Response 55 – Raven Monitoring and Control Plan,** dated July 17, 2009, docketed July 17, 2009				
7.	**CEC/BLM response 50 – Report to Map Federal and State Waters**, dated July 17, 2009, docketed July 17, 2009				
8.	**CURE Data Request Responses 1-228**, dated July 27, 2009, docketed July 27, 2009				
a.	Responses 1-162, 165, 224-228	Biology			
b.	Responses 163, 164	SunCatcher washing			
9.	**Response to Public Comments**, dated July 30, 2009, docketed July 30, 2009				
a.	Response 4	Aquifer recharge			
b.	Responses 5, 6, 17	Public Information			
c.	Response 13	Land Purchases			
d.	Response 14	Siting			
e.	Responses 8-12, 16, 18	Biology			
f.	Response 15	Cumulative Impacts			
g.	Responses 19, 20, 23-26	Phasing, POD, Access			

Exhibit	Brief Description Including Date of Document and Docketed Date	Admitted	Refused	CEC Use Only
h.	Responses 21, 22, 24 Technology			
10.	**CURE data request responses 229-275**, dated August 13, 2009, docketed August 13, 2009			
	Responses 229-275 Interconnection, Overloads, Mitigation			
11.	**CEC/BLM Responses 113-127**, dated August 20, 2009, docketed August 20, 2009			
a.	Responses 113, 114 Economics and fire funding			
b.	Responses 115, 117, 123,127 Access, site spacing			
c.	Responses 120, 124-125 Visual			
d.	Responses 116, 118, 119, 121, 122,124,126 ROW			
12.	**CEC/BLM Responses 1-48, 81, 109-112**, dated August 31, 2009, docketed August 28, 2009			
a.	Responses 1-8, 10, 11, 13, 19, 22-29, 31-43, 45-48 Air			
b.	Responses 9, 12, 14-18, 20, 21, 30, 44, Engineering			
c.	Responses 109-112 Public Health			
13.	**CEC/BLM Response 81**, dated August 31, 2009, docketed August 31, 2009 Response 81 DESCP			
14.	**CEC/BLM Info Request Responses (9/16/09 workshop)**, dated October 15, 2009, docketed October 15, 2009			
a.	Soil stabilizer and County contacts			
b.	Use of private parcels			

Exhibit	Brief Description Including Date of Document and Docketed Date	Admitted	Refused	CEC Use Only
15.	**CURE DR Responses 276-380**, dated November 13, 2009, docketed November 12, 2009			
a.	Responses 276-282 Hydrogen			
b.	Response 283-285 BNSF water			
c.	Response 286 Soil testing			
d.	Response 287 Worker Safety			
e.	Responses 288-295 BNSF water			
f.	Responses 296-297, 283-285 MTBF, emergencies			
g.	Responses 298-303 SunCatcher testing			
h.	Responses 304-306 Delay			
i.	Responses 307-309 Funding			
k.	Responses 310-312 Land Use			
l.	Responses 313-359, 361-374, 377-379 Biology			
m.	Response 360			
n.	Responses 375, 376, 380 Project description			
16.	**CEC/BLM DR Responses, Set 1, part 2**, dated November 19, 2009, docketed November 19, 2009			
a.	Response 92, 93 Geomorphology			
b.	Response 94-108 Cultural			
17.	**CEC/BLM DR Responses 71-73, 76-79, 85, 128-141**, dated November 23, 2009, docketed November 23, 2009			
a.	Responses 71-73, 77-79, 85 Groundwater and aquifer data			

Exhibit	Brief Description Including Date of Document and Docketed Date	Admitted	Refused	CEC Use Only
b.	Response 76, 137, 138, 139 Well location			
c.	Responses 128 Geotextile			
d.	Response 129-131, 136, 140 Road assumptions			
e.	Response 132-134 Alternatives			
f.	Response 135 Biology impacts			
g.	Response 141 Traffic			
18.	**CURE DR Responses 378-402**, dated December 2, 2009, docketed December 3, 2009			
a.	Response 378-394 Biology			
b.	Response 395-402 DWMA ACEC Upper Johnson Valley			
19.	**DOW and BRW DR Responses**, dated December 4, 2009, docketed December 4, 2009			
	DOW Responses 6-8, 11 Alternative sites			
a.	DOW Responses 9, 10 Alternatives			
b.	DOW Responses 1-5 Biology			
c.	BRW Responses 1-3 Biology			
20.	**CEC/BLM DR Responses, Set 2**, dated December 4, 2009, docketed December 4, 2009			
a.	Response 142 Channel grading			
b.	Response 143 Research overview			
c.	Response 144-153 Groundwater			
d.	Response 154-161 Sediment, culverts			
e.	Response 162-166 PCU luminance/mirror visibility			
	Response 167-174 Oil storage, SPCC, waste streams			
21.	**Updated project map**, dated December 21, 2009, docketed December 21, 2009			

Exhibit	Brief Description Including Date of Document and Docketed Date	Admitted	Refused	CEC Use Only
	Project Map Biology			
22.	**Donated Parcel Study**, dated December 17, 2009, docketed December 17, 2009			
a.	Biology			
b.	Cultural Resources			
c.	Geology			
d.	Soils			
e.	Land Use			
f.	Noise			
g.	Public Health			
h.	Visual Resources			
23.	**Project Description for 275 MW Interconnection**, dated December 23, 2009, docketed December 23, 2009			
	SCE Description for 275 Interconnection			
24.	**Biological Resources Technical Report, Biological Resources Baseline Study, and Noxious Weed Management Plan**, dated December 23, 2009, docketed December 23, 2009			
25.	**Geotech Engineering Report**, dated January 6, 2010, docketed January 8, 2010			
26.	**Responses to CURE letter**, dated January 7, 2010, docketed January 7, 2010			
	DR 10, 379, 380, 382			
27.	**CAISO, Corridor Conflict Analysis**, dated January 6, 2010, docketed January 8, 2010			
	Corridor Conflict & BLM letter			
28.	**Response to CEC transmission questions**, dated January 8, 2010, docketed January 8, 2010			
a.	Items 1-3, 7 Biology			
b.	Items 4, 9 and 11 SCE transmission			
c.	Items 5-6 Cultural			

Exhibit	Brief Description Including Date of Document and Docketed Date	Admitted	Refused	CEC Use Only
d.	Items 8 & 10, 12, 14 Flood zones			
e.	Item 13 BMPs for Erosion			
29.	**Additional Alternatives Analysis**, dated January 7, 2010, docketed January 8, 2010			
a.	Introduction, Land Use			
b.	Biological Resources			
c.	Cultural Resources			
d.	Water Resources			
30.	**Additional Information on Water Supply**, dated January 15, 2010, docketed January 15, 2010			
	Field efforts and back-up water supply			
31.	**MDAQMD Final Decision**, dated January 27, 2010, docketed January 27, 2010			
32.	**Supplemental Information**, dated January 27, 2010, docketed February 3, 2010			
a.	Sections 1.0 & 1.2 Cadiz water supply			
b.	Section 2.1 Introduction			
c.	Section 2.2 Air Quality			
d.	Section 2.3 Geology			
e.	Section 2.4 Soils			
f.	Section 2.5 Water			
g.	Section 2.6 Biology			
h.	Section 2.7 Cultural			
i.	Section 2.8 Paleontology			
j.	Section 2.9 Land Use			
k.	Section 2.10 Socioeconomics			
l.	Section 2.11 Traffic			
m.	Section 2.12 Noise			

Exhibit	Brief Description Including Date of Document and Docketed Date	Admitted	Refused	CEC Use Only
n.	Section 2.13 Visual			
o.	Section 2.14 Waste Management			
p.	Section 2.15 Hazardous Materials			
q.	Section 2.16 Public Health			
r.	Section 2.17 Worker Safety			
s.	Section 2.18 Cumulative			
33.	**Response to January 5, 2010 workshop items**, dated January 29, 2010, docketed January 29, 2010			
a.	Items 1-4, 6-21, Biology 23-34			
b.	Item 5, 22 Evaporation ponds			
34.	**Drainage Layout**, dated February 12, 2010, docketed February 12, 2010			
	Drainage Layout			
35.	**Construction Milestone Schedule**, dated February 12, 2010, docketed February 12, 2010			
	Construction milestones			
36.	**Burrowing Owl Survey**, dated February 19, 2010, docketed February 13, 2010			
37.	**CEC/BLM Responses**, dated February 24, 2010, docketed February 24, 2010			
	Response 102 and 103			
38.	**LGIA**, dated February 26, 2010, docketed February 26, 2010			
39.	**Clean Water Act 401 Application and Notification of Lake or Streambed Alteration**, dated March 4, 2010, docketed March 4, 2010			
40.	**Revised Project Layout**, dated March 8, 2010, docketed March 8, 2010			
41.	**Existing and Future Access Roads**, dated March 8, 2010, docketed March 8, 2010			
42.	**Use of Rail to Transport Water**, dated March 26, 2010, docketed March 26, 2010			
43.	**2010 Burrowing Owl survey results**, dated March 26, 2010, docketed March 26, 2010			

Exhibit	Brief Description Including Date of Document and Docketed Date	Admitted	Refused	CEC Use Only
44.	**Biological Assessment**, dated April 1, 2010, docketed April 1, 2010			
45.	**Comments on SA/DEIS**, dated April 14, 2010, docketed April 14, 2010			
46.	**Construction Schedule**, dated April 21, 2010, docketed April 21, 2010			
47.	**Additional information from April workshop**, dated April 20, 2010, docketed April 20, 2010			
a.	Soils			
b.	Access			
c.	Worker Safety			
d.	Efficiency			
e.	Traffic			
48.	**Suggested Revised Biological Conditions**, dated April 27, 2010, docketed April 27, 2010			
49.	**Federal NO2 1-hour Modeling Analysis**, dated April 30, 2010, docketed April 30, 2010			
50.	**Results from Helicopter Surveys for Golden Eagle Nests/Bighorn Sheep**, dated April 30, 2010, docketed April 30, 2010			
51.	**Letter pertaining to Glint & Glare**, dated April 30, 2010, docketed April 30, 2010			
52.	**Additional information**, dated May 4, 2010, docketed May 4, 2010			
53.	**Department of Army Permit**, dated May 6, 2010, docketed May 6, 2010			
54.	**2010 Early Spring Botany Survey Results**, dated May 20, 2010, docketed May 20, 2010			
55.	**2010 Desert Tortoise Survey Results**, dated May 18, 2010, docketed May 18, 2010			
56.	**Supplement to AFC**, dated May 14, 2010, docketed May 14, 2010			
a.	Site boundary			
b.	Hydrogen system			
c.	Water Supply			
57.	**Site Layout Alternative #2**, dated June 2, 2010, docketed June 2, 2010			
58.	**Maricopa Construction and Operation**, dated June 11, 2010, docketed June 11, 2010			

Exhibit	Brief Description Including Date of Document and Docketed Date	Admitted	Refused	CEC Use Only
59.	**Information in Response to 6/4/2010 CEC email**, dated June 11, 2010, docketed June 11, 2010			
60.	**Additional Information in Response to 6/4/2010 CEC email**, dated June 16, 2010, docketed June 16, 2010			
61.	**2010 Late Spring Botany Survey Results**, dated June 16, 2010, docketed June 16, 2010			
62.	**Submittal of Microphyllus Species Distribution**, dated June 22, 2010, docketed June 22, 2010			
63.	**Opening Direct Testimony for Felicia Bellows**			
64.	**Opening Direct Testimony for Sean Gallagher**			
65.	**Opening Direct Testimony for Mike Alhalabi**			
66.	**Opening Direct Testimony for Robert Byall**			
67.	**Opening Direct Testimony for Noel Casil**			
68.	**Opening Direct Testimony for Matt Dadswell**			
69.	**Opening Direct Testimony for Michael Hatch**			
70.	**Opening Direct Testimony for Shawn Johnston**			
71.	**Opening Direct Testimony for Angela Leiba**			
72.	**Opening Direct Testimony for Julie Mitchell**			
73.	**Opening Direct Testimony for Patrick Mock**			
74.	**Opening Direct Testimony for Matt Moore**			
75.	**Opening Direct Testimony for Rachael Nixon**			
76.	**Opening Direct Testimony for Rick Reiff**			
77.	**Opening Direct Testimony for Robert Scott**			
78.	**Opening Direct Testimony for Joe Stewart**			
79.	**Opening Direct Testimony for Mark Storm**			
80.	**Opening Direct Testimony for Waymon Votaw**			
81.	**Opening Direct Testimony for Tricia Winterbauer**			

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Exhibit 63

PREPARED DIRECT TESTIMONY
OF
FELICIA BELLOWS
Project Overview/Policy
Water Supply
Alternatives
Project Description/Facility Design
Visual Resources
Cumulative

Q.1 Will you please state your name and occupation?

A.1 My name is Felicia Bellows and I am Vice President of Development for Tessera Solar. My resume has also been included with this testimony.

Q.2 Are you sponsoring exhibits in this proceeding?

A.2 Yes, I am sponsoring multiple exhibits:

a) Exhibit 1: Section 1.0 Executive Summary, Section 2.0 Project Objectives/Need, Section 3.0 Project Description and Location, Section 4 Alternatives, Section 5.1 Introduction, Section 5.18 Cumulative, Section 6.0 Financial Information, Appendix C Property Owners, Appendix D Burlington Northern Santa Fe Railroad ROW, Appendix G USGS Maps, Appendix H System Impact Study, and Appendix EE Environmental Summary Lugo - Pisgah.

b) Exhibit 3 Data Adequacy Supplement dated April 6, 2009, Response 6 Economic Benefits of Alternate Site Response 29 Project Overview, Response 30-32 Site Ownership, Response 33 Transmission Line Route, Response 40-41 Agency Contacts and Other Permits, and Response 50 Back-up Water Supply.

c) Exhibit 5 CEC/BLM Data Responses, Response 49 Alternate Site Map, Response 62-63 Project Boundary, and Responses 74,75 and 80 Water Requirements.

d) Exhibit 9 Response to Public Comments dated July 30, 2009, Response 5,6, 17 Public Information, Response 13 Land Purchases, Response 14 Siting, Response 15 Cumulative Impacts, Response 19, 20, 23-26 Phasing, POD, Access, and Responses 21, 22, 24 Technology.

e) Exhibit 10 CURE data request responses 229-275, August 13, 2009, Responses 229 - 275

f) Exhibit 11 Cure Data Request Responses 113-127, August 20, 2009, Response 115, 117, 123, 127 Access, Site Spacing.

g) Exhibit 14 CEC/BLM Information Request Response (9/16/09 workshop) dated October 15, 2009 in regard to use of private parcels.

h) Exhibit 15 Cure Data Request Response dated November 12, 2009, Responses 283-285 BNSF Water, Responses 288-295 BNSF Water, Responses 296-297, 283-285 MTBF, emergencies, Responses 304-309, Delay, and Responses 375, 376, Project Description.

i) Exhibit 17 CEC/BLM DR Responses dated November 23, 2009, Response 132-134 Alternatives

j) Exhibit 19 DOW and BRW Responses dated December 4, 2009 , Responses 6-8, and 11 Alternative Sites

k) Exhibit 20 CEC/BLM DR Responses, Set 2 dated December 4, 2009, Response 143 Research Overview.

l) Exhibit 23 Project Description for 275 MW Interconnection dated December 23, 2009

m) Exhibit 28 Response to CEC transmission questions dated January 8, 2010, Items 4, 9 and 11 SCE Transmission

n) Exhibit 32 Supplemental Information dated February 3, 2010, Sections 1.0 & 1.2 Cadiz Water Supply, Section 2.1 Introduction, and Section 2.18 Cumulative.

o) Exhibit 38 LGIA dated February 26, 2010

p) Exhibit 40 Revised Layout dated March 8, 2010

q) Exhibit 41 Existing and Future Access Roads dated March 8, 2010

r) Exhibit 42 Use of Rail to Transport Water

s) Exhibit 45 Comments on SA/DEIS dated April 14, 2010

t) Exhibit 46 Construction Schedule dated April 21, 2010

u) Exhibit 47 Additional Information from April Workshop dated April 20, 2010 in regard to access

v) Exhibit 52, Additional Information dated May 4, 2010

w) Exhibit 53 Department of Army Permit dated May 6, 2010

x) Exhibit 56 Supplement to AFC including modified site map dated May 14, 2010 in regard to Site Boundary and Water Supply

y) Exhibit 57 Site Layout Alternative #2, June 3, 2010

z) Exhibit 59 Information in Response to 6/4/2010 CEC email, June 11, 2010

aa) Exhibit 60 Additional information in Response to 6/4/2010 CEC email, June 16, 2010

Q.3 What is the purpose of your testimony in this proceeding?

A.3 There are a number of objectives in submitting this testimony:

(a) Provide an overview of the project and describe its evolution to avoid environmental impacts at the request of the various agencies involved.

(b) Explain the reduction in site acreage and what that means to special status species, required mitigation and achievement of the Power Purchase Agreement (PPA) terms in regard to the 850 MW output.

(c) Discuss the status of the SunCatcher technology.

(d) Describe the water source for the project and why it was changed.

(e) Discuss the relationship of the Calico Solar project to the transmission upgrades being conducted by Southern California Edison.

(f) Assure the Commission and the public that Calico Solar conducted a thorough alternatives analysis and discuss our concerns with the 275 MW alternative contained in the SA/DEIS.

Q.4 Would you describe the project you are requesting that the CEC approve?

A.4 We are asking the Commission to approve the 850 MW Calico Solar project located on 6,215 acres of land administered by the BLM. We are also asking the Commission to approve all related facilities including the transmission interconnection, access road, and water pipeline from the well located on private land owned by the Applicant adjacent to the project site.

Q.5 How does this project differ from the description contained in the Application for Certification filed December 2, 2008?

A.5 The primary difference between the current project and the one described in the AFC is the amount of land required. The AFC assumed the project would be constructed on 8,230 acres. Working with the state and federal agencies in an effort to avoid or minimize potential environmental impacts, we have reduced the project's footprint. The reduced acreage allows us to avoid or minimize impacts to protected animals, special status plants, and cultural resources. For example, the number of desert tortoise impacted by the project has been reduced from 104 to 57 (note that these numbers are based solely on the number of desert tortoise found in the Spring, 2010 survey). This has also reduced the amount of mitigation required and the number of tortoise to be relocated. Similarly, all special status plants will now be excluded from the site as a result of the reduction in footprint or avoided onsite.

Q.6 Some of the parties have expressed surprise that the acreage associated with the project has been reduced while the generating capacity has not. Can you explain this?

A.6 First, the generating capacity of the project is established by the PPA signed between Southern California Edison (SCE) and the Applicant. That agreement, originally signed in 2005, committed SCE to purchase up to 850 MW. Both parties have since agreed to a modification of the original agreement such that SCE now will purchase the entire 850 MW. The power is intended to help SCE meet its Renewable Portfolio Standard mandate as well as provide additional generation to meet system requirements and displace fossil powered generation to reduce SCE's greenhouse gas emissions.

Second, on an ideal square site with flat topography and no environmental or physical impediments, the SunCatcher technology requires 6 to 7 acres per megawatt. This means that an 850 MW power plant, consistent with the Calico PPA, would require approximately 5,950 acres of land on flat, unencumbered land.

Third, the 8,230 acres identified in the AFC reflects the expected project size filed with the Bureau of Land Management in 2005. The initial site map, prepared by the Applicant's consultant Stantec in October 2008, stamped as preliminary and shown as figure 3-3 in the AFC, was a general lay out of the site (Exhibit 1, referenced on page 3-3 with the figure located at the end of Section 3.0). It showed the solar field and support facilities based on preliminary engineering and initial site evaluation using the available land. It identified a 500 MW phase one occupying approximately 5,838 acres and a 350 MW phase two occupying the remaining 2,392 acres. Because final engineering and site design work had not been completed, the configuration of the solar field was very general. The amount of land included in the application for the Calico Solar Project was larger than the physical space required for the SunCatchers

and related facilities in order to accommodate for any potential environmental resources or physical features that might influence site development including cultural resources, biological resources, flood prone areas, and slope exceeding 10%.

The construction phasing of the project has been modified since the original Stantec drawings to a 275 MW Phase 1, and 575 MW Phase 2, as further described below.

The Applicant has been working with Mortenson Construction, the construction contractor, and Stirling Energy Systems, the Applicant's sister company, to complete final engineering, site design work, and detailed site layout. During this process, the Applicant asked Mortenson Construction to prepare an environmental avoidance/reduced boundary layout of the site. As a first step, Mortenson laid out the 275 MW first phase of the project in the east central portion of the site that avoided the majority of the cultural, biological, and flood prone areas of the site and minimized the distance needed to potential desert tortoise translocation. Mortenson also eliminated the satellite services complex, reduced the size of the construction lay-down area, and tightened up the land needed for other support facilities. Mortenson then distributed the phase two solar field on the site in a manner to make the footprint as small as possible while considering the environmental avoidance areas. Mortenson's initial map, dated April, 2010 and submitted in a supplement dated May 14, 2010 (Exhibit 56), shows that the Applicant is able to locate development of the SunCatchers and support facilities on a smaller footprint while achieving the same level of generation of 850 MW. This allowed the Applicant to meet the requirements of the Power Purchase Agreement, avoid sensitive cultural resources remaining in the site, reduce the impact on desert tortoise, avoid or reduce special status plants as well as pull the northern boundary of the site down from the toe of the Cady Mountains to create a wider wildlife movement corridor.

The site was further reduced in response to a request from the Desert Tortoise Recovery Office to move the northern boundary approximately 4,000 feet from the toe of the Cady Mountains to allow for a tortoise corridor to the north of the site. Through further adjustments reflecting cultural resource avoidance and biological resource mitigation requirements and engineering refinements, Mortenson was further able to compress the site to the current 6,215 acres. This lay-out was provided to the wildlife agencies and docketed on June 2, 2010 (Exhibit 58).

Overall these changes will make construction a bit more difficult, but the Applicant was able to significantly reduce impacts to the desert tortoise and avoid impacts to the bighorn sheep, special status plants, and cultural resources.

Q.7 Other parties claim that the SunCatcher is an unproven technology. Do you agree with this statement?

A.7 The SunCatcher is an innovative technology, I would not agree that it is an unproven or untested technology. The SunCatcher was developed over a number of years by a number of parties including Philips Electronics, Ford Motor Company and the Ford Aerospace & Defense Division, Boeing Aerospace & Defense, and McDonnell Douglas, who deployed field prototypes in 1984. The technology was installed in the Sandia National Laboratory in 2004-2006. Aggregate on-sun hours at Sandia National Laboratory were 30,080 hours through August 2009.

Maricopa Solar is a fully operational, commercial power plant using the SunCatchers developed and refined at Sandia. The Maricopa plant consists of 60 SunCatchers

capable of generating 1.5 megawatts of power. It represents the basic "building block" of the Calico Solar Project – the project will be made up of multiple groupings of 60 SunCatchers (each grouping generates 1.5 megawatts). Construction of the Maricopa Solar facility was completed in December of 2009 and has been in full commercial operation since March 2010. It has not only allowed Tessera Solar to demonstrate commercial operation of the technology, but as with any new technology, has taught Tessera Solar valuable lessons for larger commercial projects including the Calico Solar Project.

Q.8 Can you describe the proposed water supply for the project?

A.8 Water for the Calico Solar project will be provided by a well located on private land owned by the Applicant which lies within the Lavic Groundwater Basin. The Project will transport the water from the well via an underground pipeline through the Applicant's property to the Project site and then to the Main Services Complex. The length of the pipeline in total is approximately .51 miles. Testimony by Matt Moore provides additional details on the characteristics of the water and impacts on the Lavic Groundwater Basin aquifer.

The following water service providers were considered for the Calico Solar Project:

Mojave Water Agency – After filing the Calico Solar AFC, the Mojave Water Agency district expressed possible interest in providing reclaimed or ground water for the project. The source of the water would be from a groundwater well through purchase of water rights from water purveyors and delivered to the project site via truck or from a reclaimed water site within the Mojave Water Agency territory. This water would, however, be delivered outside of the Agency's boundaries and as a result gave rise to local opposition. This option was explored for approximately nine months (February 2009 to October 2009); with the Applicant attending several Mojave Water Agency board meetings to present the proposed export of water from the Agency's territory to the Project site. This option raised several concerns with the water master and sub-advisory committees.

The water master suggested that the Applicant pursue alternative sources for water. As such, this alternative is no longer a viable option.

Barstow Wastewater Treatment Facility – The Barstow Wastewater Treatment Plant is located at 2200 East Riverside Drive in Barstow, California. It is operated by the Public Works Department of the City of Barstow and is approximately 15 miles west of the project site. At the direction of Mojave Water Agency staff, Tessera Solar entered into discussions with Burlington Northern Santa Fe (BNSF).

BNSF holds export rights from MWA and could supply recycled (grey) water utilizing BNSF facilities at the City of Barstow Waste Water Treatment Facility. All of the water used by the Calico Solar project would have been fully offset. The water would be placed on BNSF rail cars and transported to the Project Site. Use and transport of the recycled water would have required approval from MWA for a change in purpose (use) as well as agreements with the appropriate water districts.

The recycled water (grey water) would be transported outside of the District's boundaries. The Applicant pursued discussions with BNSF and MWA. After several meetings with both entities, and another MWA board meeting, the export requirement from the District resulted in the same service complications as experienced with the MWA option. This option is no longer viable.

The current sources of water being proposed are the Cadiz Valley Groundwater Basin and the Lavic Groundwater Basin.

Cadiz Valley Groundwater Basin – The Applicant is in conversations with representatives from Burlington Northern Santa Fe regarding the use of water from a Burlington Northern Santa Fe (BNSF) owned and operated water well within the Cadiz Valley Groundwater Basin. This is now being proposed as an alternative water source for the project.

Lavic Groundwater Basin – While in discussions to use the Cadiz Valley Groundwater Basin source, Tessera Solar drilled three water wells on nearby properties in the NAP near the Project site. One of these wells on property owned by the Applicant has shown sufficient water supply and quality to satisfy the Project's needs. The wells, as well as the Project, lie within the Lavic Groundwater Basin. The Project will transport the water from the well via an underground pipeline through the Applicant's property to the Project site and then to the Main Services Complex. This is being proposed as the primary water source for the project.

Analysis of the water quality at the well determined that the groundwater is not suitable for drinking without treatment. The water will be treated at an onsite facility prior to use. The proposed method of treatment is to process the well water through a reverse osmosis (RO) system to remove the majority of the dissolved solids. A de-mineralization stage may be required for the mirror washing water and hydrogen generator. To prevent bacteria build up in the Plant raw water storage tank chlorine will be added. Aquifer testing indicated that groundwater extraction for the Project will not adversely affect water quality during construction or operation. Use of the well as the Project's water supply is not anticipated to affect water quality of the basin because pumping at the rates needed will result in limited drawdown over the duration of operations and the Zone of Influence is relatively small. Therefore, pumping at the well would have a low probability of causing movement of water that could be of poorer quality to replenish the Zone of Influence.

Q.9 Why were the changes in the water supply necessary?

A.9 As the Commission is aware, the water supply for this project has been a challenge. The Applicant initially proposed using on-site wells to access water from the Lavic Groundwater Basin. The AFC identified several potential locations for the development of water wells but because of permitting challenges, the test water wells for this source were later relocated from federal land to private land within the Project area.

Prior to this relocation, the Applicant, at the CEC's request, pursued obtaining ground water from the Mojave Water Agency and reclaimed water from the Barstow Waste Water Facility. While both of these sources initially appeared viable, the Mojave Water Agency ultimately determined that given the level of public discomfort with the exporting of the water to the Project, these options were not available because the project is outside the district's service area.

With the Mojave Water Agency's decision, Tessera Solar initiated negotiations with BNSF to purchase water from its wells in the Cadiz Valley Groundwater Basin and began drilling wells on private land immediately adjacent to the Calico Solar Project site as a backup alternative. In the Applicant's January 27, 2010 Supplement to the AFC, the Applicant provided information on the Cadiz water supply and requested the

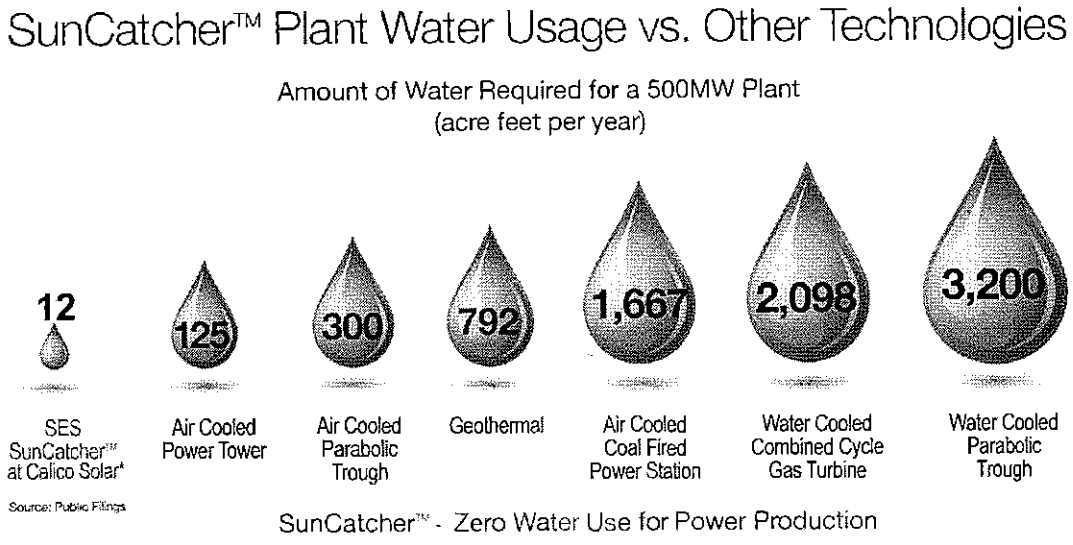
Commission and BLM consider this as the water supply for the project. The Applicant then submitted additional information on this source on March 26, 2010.

The January 27, 2010 submittal also described the Applicant's well drilling activities on the private lands immediately adjacent to Calico Solar and requested this be considered as a backup water source pending the well test results. While the first two wells did not produce any significant quantity of water, the third well proved to be very promising. After evaluating the water characteristics and hydrologic implications of using this well and the implications of a ½ mile pipeline to deliver the water to the main services complex, the Applicant determined that this source represented a preferred source of water for the project. It has the advantages of being located immediately adjacent to the site, avoiding air emissions associated with rail or truck transport, and being poorer quality water. On May 14, 2010 a Supplement to the AFC was submitted (Exhibit 58) in which the Applicant requested that the Commission consider this alternative as the primary water supply for the project.

Q.10 How much water does this project use and how does that compare with other technologies?

A.10 The SunCatcher technology does not use any water for cooling or process steam as do fossil fuel, nuclear, biomass, geothermal, or other solar thermal technologies. During operation, it only uses water for washing of the mirrors. The Calico Solar Project will use approximately 20 acre-feet of per year (AFY) of water (or 6,517,020 gallons per year) once all 850 MW are in operation or 97,170 MWh per acre-foot of water. Water use for construction is 136 AFY. Because the technology does not rely on water for the production of energy, if there is a lack of water it does not result in inoperability of the technology, it only reduces its solar conversion efficiency because of the accumulation of dust.

On a megawatt hour basis, the SunCatcher technology uses approximately .9% of the water consumed by a natural gas combined cycle power plant (500 MW facility uses 2098.2 AFY, approximately 683,700,568 gallons per year, or 856 MWh per AFY of water) or 2.5% of a direct-fired coal power plant (500 MW facility uses approximately 1666.7 AFY, or 543,095,862 gallons per year, or 2,391 MWh per AFY of water).



Q.11 In its draft analysis, the CEC staff recommended the SunCatchers be painted to reduce their visual contrast with the surrounding environment. Do you have any comment on that recommendation?

A.11 First let me say that we have worked with the BLM to select colors for the facility that are compatible with their requirements. The operation and administration building, maintenance building, and main services complex will be painted with BLM's Carlsbad Canyon color per the BLM Standard Environmental Colors chart and will be manufactured buildings. The water treatment building and the water holding tanks, including the potable water, raw water, and demineralized/fire protection water tanks located at the main services complex will also be painted with the Carlsbad Canyon color.

Painting of the SunCatchers is more difficult because color on the back of the dishes can affect the thermal performance of the mirrors and the overall operation of the facility. The condition set forth by the BLM/CEC in the SA/DEIS required that all visible, paintable surfaces be painted and the BLM sent Tessera Solar a swatch of proposed colors. The paint color selected for the SunCatchers was "Desert Sand". However for a number of technical and commercial reasons, it is not feasible to paint a high percentage of the components with any of the colors provided. In order to satisfy the VIS 1 requirements set forth by the BLM/CEC to minimize the visual impact of the SunCatcher system, Stirling Energy Systems, the entity responsible for the design and installation of the SunCatchers, has devised the treatment plan described in the following table that attempts to meet the necessary requirements without adversely affecting the system's overall performance. In response to Applicant's comments on VIS-1, BLM requested that Applicant provide a treatment proposal, and has indicated preliminary satisfaction with the proposal below.

Summary of Painted Surfaces on Dish Structures

SUMMARY OF PAINTED SURFACES ON DISH STRUCTURE				
Paintable Surface	**Color**	**Top Coating**	**Exposed Visible Area**	**Reason if not Desert Sand**
Facet (mirror) backs	Desert White	Powder Coat	Large	The colors proposed represent darker shades that are highly prone to heat absorption. This increase in heat results in advanced thermal degradation of the adhesive that is used to bind the mirror surface to the facets. As a result, the system would be highly compromised by the use of any paint shades that are darker than those proposed
Boom	Desert White	Powder Coat	Medium	The boom must be painted within the same line as the facets, therefore its color coating is dependent on the mirror facets
Azimuth Drive Housing	Desert White	Paint or Powder Coat	Small	Minimal Visibility
Elevation Drive Housing	Desert White	Paint or Powder Coat	Very Small	Minimal Visibility
Pedestal	Gray	Zinc-based paint	Large	Slip critical features. Coating the pedestal with another color would compromise the surface friction that keeps the fasteners in place.
Hub	Gray	Zinc-based paint	Large	Slip critical features.
Facet Support Structure	Gray	Galvanize	Large	Mat'l galvanized prior to fabrication. Post-fabrication coating not economically feasible.
Glint Shields	Gray	Galvanize	Large	Mat'l galvanized prior to fabrication. Post-fabrication coating not economically feasible.
Castings	Gray	Zinc-based paint	Very Small	Slip critical features. (Minimal visibility to observers.)

Q.12 What is the phasing of the project and its relationship to transmission work to be performed by SCE?

A.12 In addition to purchasing the power from the Calico Solar Project, SCE will transmit the power by way of the Lugo to Pisgah transmission line. At present there is sufficient capacity on the line to accommodate an additional 275 MW of generation with only a minor upgrade to the Pisgah Substation. The first phase of the Calico Solar Project is located in the east central portion of the project site and is capable of generating this 275 MW consistent with the interim upgrades to the Pisgah Substation and

transmission interconnection. The Applicant understands that SCE has filed the necessary documents with the BLM for these facilities and is currently working on clarifying various pieces of information on the application with the BLM. Calico Solar has posted security for these works and is making progress payments, and SCE has begun work on the upgrade on the permitting side as well as the engineering/design side.

The second phase of the Calico Solar Project is for the remaining 575 MW and is located on the project to the north, west, and southwest of the first phase. The construction and operation of this phase will correspond to the completion of the 500 kV upgrade to the Lugo to Pisgah transmission line being undertaken by SCE. This will require the reconductoring of one of the two 230 kV transmission lines between Lugo and Pisgah with a new 500 kV line. When completed, SCE will be able to transmit an additional 1,400 MW of power to Lugo including generation from Calico Solar. The California Public Utilities Commission (CPUC) and BLM will permit the upgrade, and SCE is working on the required permitting documents to submit to these two agencies.

Q.13 Please describe your concerns to the Reduced Acreage Alternative included in the SA/DEIS.

A.13 The Applicant does not believe the Reduced Acreage Alternative, as described in the SA/DEIS is feasible, nor does it meet most of the Project objectives.

The Reduced Acreage Alternative would increase costs dramatically. The development of the Reduced Acreage Alternative would not allow for a reduction in many of overhead costs on a per MWh basis. These costs include construction of a main services complex, the transmission upgrade, the bridge over the railroad, etc. that would be required in the development of both the proposed Project and the Reduced Acreage Alternative. In addition, SunCatchers are manufactured at high volume, so the more that are produced, the lower the cost over time. If only 11,000 SunCatchers were installed, rather than 34,000, the pricing averaged over these first 11,000 only would be much higher. The higher costs would also put ARRA funding at risk or at the least cause the Project's financing to be more expensive, since the costs would be higher than those projected for the funding arrangements and the margin much less causing coverage ratios to be lower. In addition, the operations and maintenance of a large field of SunCatchers is not much more expensive than for a smaller field. And in the Reduced Acreage Alternative, the cost will be very similar to that of the proposed Project thereby driving up the cost per MWh of the Project. When all these issues are taken into account, lower SunCatcher volume, higher funding costs, higher overheads and higher operations and maintenance, the cost of energy produced by Calico Solar would increase substantially. Accordingly, the increased costs would bring into question the entire feasibility of the Project as the PPA with SCE is not up for renegotiation. Impacts of the reduced acreage alternative would include:

- Higher SunCatcher costs due to only 11,000 being built
- Cost of bridge: cost would be amortized over many less MWh
- Cost of main services complex: same cost amortized over many less MWh
- Cost of transmission upgrades: same cost amortized over many less MWh
- Higher 1% interest rate on loan to compensate for additional risk of project due to higher cost
- Increased O&M costs

The economics of the project are capped. Under the Reduced Acreage Alternative, the price currently set in the PPA and negotiated with SCE would no longer be valid. SCE is limited by California's utility rate laws and regulations in the amounts that it is permitted to pay, and a substantial increase in price may be beyond SCE's ability to accept.

In fact, due to all these factors, the PPA was recently negotiated for 850 MW, rather than up to 850 MW. These factors would accordingly render the Reduced Acreage Alternative economically unfeasible, and implementation of this alternative would force noncompliance with the PPA and the LGIA resulting in large penalties to the Applicant. On the PPA alone, by dropping the additional acreage, the Applicant will lose $8.6 MM of its $12.75 MM development LOC outstanding with SCE. Yet another cost that could be factored into the analysis above.

Additionally, the Reduced Acreage Alternative would impact Project schedule and engineering. This would delay construction, causing the Project to possibly miss the ARRA funding deadline this year. Tessera Solar has also applied to the Department of Energy (DOE) for a loan guarantee for an 850 MW Project. Reduction of Project output could jeopardize the receipt of the loan. The project cannot proceed without ARRA funding and DOE loan guarantees, which are intended to facilitate the production of new renewable energy technology in the near term. The delay would interfere with these federal goals.

The Reduced Acreage Alternative would reduce the output of the project substantially. It would therefore interfere with SCE's and California's ability to comply with recently-enacted laws. In 2002, California established its Renewable Portfolio Standard Program, with the goal of increasing the percentage of renewable energy in the state's electricity mix to 20 percent by 2017. The 2003 Integrated Energy Policy Report recommended accelerating that goal to 20 percent by 2010, and the 2004 Energy Report Update further recommended increasing the target to 33 percent. In 2006 under Senate Bill 107, California's Renewables Portfolio Standard (RPS) was created and codified the 20 percent goal. It is one of the most ambitious renewable energy standards in the country. The RPS program requires electric utilities and providers to increase procurement from eligible renewable energy resources by at least 1 percent of their retail sales annually, until they reach 20% by 2010. Reaching the 20% goal, in turn, is a key factor in California's plans to reduce its greenhouse gas emissions as required by the California Global Warming Solutions Act of 2006.

The 850 MWs from this project are projected to provide approximately 11% of SCE RPS requirements. Reducing that output by more than half would significantly impact SCE's alibity to meet its RPS obligations. Alternative solar projects could not remedy such a deficit, since California needs the entirety of the Project and completion of other renewable projects currently pending before the CEC and BLM to attempt to comply with the 2010 goal. In fact, of all these projects, the ones on these BLM lands are critical since the BLM has identified the areas where solar power generation is most suitable. Not using this solar-suitable land for solar production would likely preclude California from meeting its RPS goals.

Q.14 Please describe your concerns regarding the Avoidance of Donated and Acquired Lands Alternative described in the SA/DEIS.

A.14 The applicant considers the Avoidance of Donated and Acquired Lands Alternative in the SA/DEIS infeasible in light of the option discussed in the May 14 supplement. As

described in the SA/DEIS, the Avoidance of Donated and Acquired Lands Alternative would:

> "...substantially reduce impacts to acquired and donated lands from the Calico Solar Project while meeting most or all of the project objectives as required by CEQA. It is assessed as a reasonable alternative under NEPA because it will avoid or minimize adverse effects of the proposed action and would be consistent with BLM interim management policy." (page B.2-3)

This alternative would have reduced the project's original footprint by 1,180 acres to 7,050 acres. The CEC staff estimated this alternative would reduce the project to 28,800 SunCatchers with a resulting generating capacity of 720 MW.

This alternative discussed by the CEC staff and the current site plan filed by the Applicant differ primarily in the location of the lands chosen for avoidance. The staff's alternative avoids lands scattered along the eastern and northern portion of the sites that, as stated in the Applicant's comments on the SA/DEIS, disrupts the site continuity. This makes construction more difficult and in particular interferes with placement of the basic 60 SunCatcher groupings. And more importantly destroys the value of the donated lands as they are interspersed among the SunCatcher field.

The Applicant's current site plan consolidates the lands to be avoided along the northern and northeastern boundaries of the project thus maintaining their value as conservation lands and allowing for more efficient utilization of the entire site and disruption of fewer 60 SunCatcher groupings. The Applicant also eliminated the satellite complex and reduced the area for construction laydown, which allowed the Applicant to retain the generation required by the PPA while at the same time avoiding the sensitive cultural resource areas and reducing the biological resource impacts beyond those possible in the CEC staff's Avoidance of Donated and Acquired Lands Alternative.

Q.15 Throughout the proceeding you have stressed the need for a decision no later than the end of September 2010. Why is that date critical?

A.15 There are two reasons why the end of September 2010 is critical. First, to meet the ARRA deadlines, the Applicant must be in construction, as determined by the federal government, before the end of December 2010. Without the ARRA grant, the Project cannot meet the pricing in the Power Purchase Agreement with SCE.

The most critical determinant to meeting these scheduling requirements, however, is the desert tortoise. Although there are 7 desert tortoise on the area occupied by the first phase of construction and the area south of the railroad where our access road is located, those tortoise must be removed and placed in appropriate habitat no later than October 31, 2010. The end of October is the outside window. If the weather this fall is cooler than usual, the desert tortoise translocation period could end earlier in October. Our biologists indicate it will take approximately two weeks to mobilize their experts, collect the tortoise in the areas to initially be impacted by the project, and move them to the appropriate locations. The timing of the tortoise translocation is critical to the success of this project in meeting both its ARRA and power delivery obligations.

Q.16 Do you have any comments on the conditions of certification proposed by the CEC staff in the SA/DEIS?

A.16 Prior to the close of the CEC's comment period on the SA/DEIS we submitted a number of comments proposing changes in the wording of the conditions. We also discussed these changes with the staff during workshops on the SA/DEIS. Most of these changes involved the timing of submissions or recommendations to move administrative details from the condition to the verification. While all of these changes are important in our opinion to allow the project to be completed on time and in an orderly manner, there are approximately 18 conditions where we believe modifications are critical. These are:

BIO-12 - Staff says they do not have enough information
BIO-13 - Biological compensation
BIO-17 - Tortoise mitigation
BIO-18 - Cap on Raven mitigation
BIO-19 - Pre-construction surveys
BIO-20 - Golden Eagle pre-construction surveys
BIO-27 - Unclear
CUL-1 – CUL-7 - Standard Cultural Resource Conditions
SOIL & WATER-5 - BNSF supply
SOIL & WATER-1,2,3 - staff said they do not have enough information to complete condition requirements
NOISE-1 - work hours
NOISE-4 - pure tone
TRANS-10 - park and ride
TRANS-11 bus to site
VIS-1 - paint suncatchers
VIS-4 - screening lay-down area
WORKER SAFETY-6 - $100,000 per year for the fire department

While our specific comments and proposals for each of these conditions are discussed in the appropriate technical areas, there are two I particularly want to comment on: BIO-17 and WORKER SAFETY-6. As proposed in the SA/DEIS, the CEC staff in BIO-17 is proposing that the Applicant provide 3:1 mitigation for the loss of donated and acquired lands. As we noted in our comments on the SA/DEIS, there is no biological or other rationale for requiring 3:1 mitigation in addition to the baseline mitigation requirements. The mitigation requirements should be at no more that a 1:1 ratio. Since these are federal lands, we believe that any mitigation or action should be determined by the BLM rather than the state. We also do not believe there is any justification or basis for any mitigation funds related to these lands go to the state as suggested by the staff.

Regarding WORKER SAFETY-6, we objected to the proposed condition in the SA/DEIS requiring $100,000 per year "for the support of additional fire department (County) staff". We are concerned with the long-term and significant payment amounts and hope to develop an acceptable course of action in concert with the respective fire departments. Our proposed modification to the condition is: "The project owner shall either (1) reach an agreement with the San Bernardino County Fire Department regarding funding of its project-related share of capital costs to provide appropriate equipment as mitigation of project-related impacts on fire protection, HazMat, and /or EMS services along with an annual payment to maintain and provide these services, or if no agreement can be reached shall (2) fund its share of the capital costs in the amount of $350,000.

Q.17 Does that complete your direct testimony?

A.17 Yes

I swear under penalty of perjury that the above that this testimony is true and correct to the best of my knowledge.

06/30/10

Date

Felicia Bellows

Exhibit 64

PREPARED DIRECT TESTIMONY
OF
SEAN GALLAGHER
PROJECT OVERVIEW / POLICY

Q1. Please state your name and occupation.

A.1 My name is Sean Gallagher and I am Vice President of Market Strategy & Regulatory Affairs with Tessera Solar. In this position I am responsible for Government and Regulatory Affairs for the company, including state and federal policy and legislation. My resume has also been included with this testimony.

Q2. Are you sponsoring any exhibits in this proceeding?

A.2 Yes, I am sponsoring Exhibit 1, Appendix A - The Memorandum of Understanding between the CEC and BLM

Q3. What is the purpose of your testimony?

A.3 My testimony addresses the factual and policy basis for the Commission to make the necessary findings for an override required as a result of any remaining significant adverse environmental impacts or non-conformance with other legal requirements as a result of constructing and operating the Calico Solar Project.

Q4. Will you please summarize your conclusions?

A.4 While the applicant has taken all steps to avoid, minimize, and mitigate environmental consequences of this project, we acknowledge there will be significant adverse visual impacts as a result of this project as well as impacts to some legally protected wildlife, specifically desert tortoise. We also believe that renewable energy projects are essential to reducing the more overreaching and serious environmental and economic impacts associated with global climate change and our state's and country's dependence on fossil fuels. We are confident that there is an overwhelming basis for the Commission to make any necessary override findings and that the benefits of this project significantly outweigh the potential significant adverse impacts or LORS compliance issues remaining in this case.

Q5. What findings are required if the Commission approves an override?

A.5 In the case of an unavoidable significant adverse environmental impact, according to Public Resources Code 15093, the Commission must consider whether the "...specific economic, legal, social, technological, or other benefits of a proposed project outweigh the unavoidable adverse environmental effects". If they do, the Commission may consider those impacts to be acceptable. The Commission does have to state in writing "the specific reasons to support its action based on the final EIR and/or other information in the record". The statement of overriding considerations shall be supported by substantial evidence in the record.

In the event that the project does not comply with a law, ordinance, regulation, or standard, according to Section 1752 (k) of the California Code of Regulations, the Commission must make "...findings and conclusions on whether the noncompliance can be corrected or eliminated; and if such noncompliance cannot be corrected, findings on both the following:

(1) Whether the facility is required for public convenience and necessity; and

(2) Whether there are no more prudent and feasible means of achieving such public convenience and necessity.

Q6. What is the most significant benefit resulting from this project that justifies an override?

A.6 While the Calico Solar Project will result in a number of significant benefits at the local, state, and national level that justify an override, the most significant is the reduction of greenhouse gas emissions associated with generation of electricity for Southern California Edison and California.

As the California legislature stated in the opening sentence of the California Global Warming Solutions Act of 2006 (AB32): "Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California." The Energy Commission echoed this concern in The 2009 Integrated Energy Policy Report and went on to state that "...reducing greenhouse gas emissions is of paramount concern." (page 1). Fossil fuel power plants represent one of the primary sources of greenhouse gasses in California and the nation.

When operating, the Calico Solar Project can displace the equivalent amount of power from a fossil-fired power plant. While there are greenhouse gas emissions associated with operation of the Calico Solar project, they are on the order of 250 times less than the state's greenhouse gas emission standard for new power plants (Calico SA/DEIS, page C.1-68) and even more than an existing coal-fired power plant. In fact, the Calico Solar project will displace 2.178 billion tons of carbon emissions per year. We concur with the conclusions of the CEC staff that:

> "The Calico Solar Project would emit considerably less greenhouse gases (GHG) than existing power plants and most other generation technologies, and thus would contribute to continued improvement of the overall western United States, and specifically California, electricity system GHG emission rate average. The proposed project would lead to a net reduction in GHG emissions across the electricity system that provides energy and capacity to California." (SA/DEIS, page C.1-79)

Q7. Are there other benefits resulting from this project?

A.7 Yes. The primary purpose of the Calico Solar project is to provide clean, renewable, solar-powered electricity and to assist Southern California Edison (SCE) in meeting its legislatively mandated obligations under California's Renewable Portfolio Standard (RPS) Program. The 2009 Integrated Energy Policy Report noted on Page 1 the importance of new renewable generation to California's electricity system. It discussed the importance of the "...loading order for electricity resources, which calls for meeting new electricity needs first with energy efficiency and demand response; second, with new generation from renewable energy and distributed generation resources..." The Renewables Portfolio Standard, established in 2002, requires retail sellers of electricity, including SCE, to procure 20 percent of their retail sales from renewable resources by 2010. In addition, on November 17, 2008, Governor Arnold Schwarzenegger signed Executive Order # S-14-08 that raises California's renewable energy goals to 33 percent by 2020. First, the generating capacity of the project is established by the PPA signed between Southern California Edison (SCE) and the Applicant. That agreement, originally signed in 2005, committed SCE to purchase up to 850 MW, and was approved by the CPUC. Both parties have since agreed to a modification of the original agreement such that SCE now will purchase the entire 850

MW. The electricity generated by the Calico Solar Power Plant will represent 11% of SCE's RPS requirement when fully operational.

In addition, the Calico Solar project will help displace generation from coastal power plants in California that use once-through cooling (OTC). The 2009 Integrated Energy Policy Report (Page 1 and 30) discussed the draft policy issued by the State Water Resources Control Board to "...phase out the use of once-through cooling in the state's 19 coastal power plants to reduce impacts on marine life from the pumping process and the discharge of heated water." That policy has since been adopted by the Board. The Calico Solar Project will contribute to this effort by providing power to SCE and be available to displace power currently generated by power plants in the SCE service territory that use once-through cooling technology.

In terms of water use, the SunCatcher technology does not use any water for power plant cooling. Its primary use of water is for mirror washing. Overall, the SunCatcher uses less water than any other solar thermal technology.

Q8. Will this project have employment and economic benefits that would support overriding considerations?

A.8 Yes, from a local perspective, the primary benefits of the Calico Solar project will be to provide jobs and contribute to the local economy. During construction, the project will support approximately 640 jobs per year (see Testimony of Matt Dadswell). When operational, the project will employ approximately 180 full-time employees, many from the local area, with an annual payroll of approximately $10.1 million. This direct employment in combination with indirect and induced effects would support about 425 jobs per year for the life of the project. Both construction and operation jobs will help reduce local unemployment since the majority of these jobs are expected to come from within a two-hour commute of the site. Currently, local unemployment rates are around 17% (see Testimony of Matt Dadswell).

These jobs and the spending on the project will also be a significant benefit. Annual construction-related indirect and induced income impacts would be approximately $9.1 million and $9.4 million, respectively. Construction of the Project would also generate approximately $30.7 million in indirect and induced output (sales) (AFC, page 5.10-24). In addition, the project will generate approximately $700,000 in sales tax over the construction phase of the Project (see Testimony of Matt Dadswell). Operation of the Project would also generate approximately $14.4 million in income and $8.4 million in indirect local expenditures each year of operation. These impacts would occur in San Bernardino County.

It will further be a project funded with support of the American Recovery and Reinvestment Act of 2009 and will be part of the national program to "create new jobs and save existing ones" and to "spur economic activity and invest in long-term growth." (http://www.recovery.gov/About/Pages/The_Act.aspx.) Because most of the components used in the SunCatcher design are built in the United States, the project will also generate jobs in other regions of the country, particularly the automotive industry.

Q9. Do you believe there is a broader policy basis for an override on this project?

A.9 I stated earlier my belief that renewable energy projects are essential to reducing the more overreaching and serious environmental and economic impacts associated with global climate change and our state's and country's dependence on fossil fuels. I believe the

Calico Solar project is an appropriate, timely, and necessary project to contribute to resolving these issues.

As the Commissioners well know, there are no easy solutions to our climate change dilemma. Each solution comes with an associated cost. The challenge is to find the appropriate balance and solutions that provide an overall benefit to our environment, economy, and quality of life in the short and long-term. Doing nothing or waiting for the ideal fix simply exacerbates and prolongs our climate challenge.

The Energy Commission in concert with my former agency, the California Public Utilities Commission, and the California Independent System Operator were far-sighted when they adopted the loading order as a policy tool to guide overall future actions regarding the electricity system. Placing renewables as the second item in that order highlighted the significant advantages of efficiency improvements in the system but recognized that efficiency alone would not meet our electricity demands or resolve broad environmental and economic issues. This placement also recognized that renewables, with their larger land requirements and own environmental concerns, are still superior to continuing down or expanding on our current fossil-fuel path. The Energy Action Plan where the loading order is described also emphasizes "action". And while each of the signatory agencies to the Energy Action Plan have demonstrated a commitment to avoiding, minimizing, and fully mitigating environmental impacts, they have also demonstrated a willingness to take action in resolving short and long term issues even with a less than perfect solution rather than wait for perfection and risk more significant consequences as a result of delay.

While it is extremely difficult for a large solar power plant like Calico Solar to avoid all environmental impacts, we have made every effort to work with the local, state, and federal agencies as well as the environmental community to minimize and fully mitigate any remaining impacts. We have worked with Southern California Edison and the California Independent System Operator to ensure this project is capable of integrating into the State's electricity system. We evaluated a number of options and worked closely with the Bureau of Land Management before selecting this site. We are not aware of a superior site and are not aware that any of the parties to this proceeding have identified a superior site. In total, the applicant has spent over five years on site selection, power procurement, transmission interconnection, site design and facility engineering, and multiagency permitting for this project. Given the few remaining impacts; the significant greenhouse gas emission, fossil-fuel reduction, and jobs benefits; and the amount of time required to develop and permit a substitute facility, we believe the Commission has ample justification to approve an override, if necessary, for the Calico Solar Project.

Q10. Does that complete your direct testimony?

A.10 Yes.

I swear under penalty of perjury that the above that this testimony is true and correct to the best of my knowledge.

6/29/10

Date

Sean Gallagher

Exhibit 65

PREPARED DIRECT TESTIMONY

OF

Mohamad (Mike) Alhalabi

Facility Design

Q.1 Will you please state your name and occupation?

A.1 My name is Mohamad (Mike) Alhalabi and I am the Senior EPC Mechanical Engineer for Tessera Solar. My resume has also been included with this testimony.

Q.2 Are you sponsoring exhibits in this proceeding?

A.2 Yes, I am sponsoring multiple exhibits:

a. Exhibit 1 AFC: Appendix F Mechanical and Fire Protection, Appendix K Hydrogen System Design, Appendix L Hazardous Materials Handling, Appendix R Fuel Handling and Appendix S Materials Safety

b. Exhibit 5, Responses 57-60 Hydrogen System

c. Exhibit 15, Response 276-282 Hydrogen

d. Exhibit 56 Supplement to AFC dated 5/14/2010 in regard to the Hydrogen System

Q.3 What is the purpose of your testimony in this proceeding?

A.3 There are several objectives in submitting this testimony:

a. Foremost I will describe the hydrogen system and requirements for the SunCatcher Technology.

b. I will also discuss how hydrogen is handled within the SunCatcher and the project in terms of safety, reliability, and system losses

Q.4 Please describe the design of the hydrogen system at the Calico Solar facility.

A.4 We are currently evaluating the relative economic and efficiency advantages between a centralized hydrogen system and a distributed hydrogen system. Using a centralized system, each SunCatcher is connected to pressurized hydrogen lines. These lines, along with the compressors and storage tanks located throughout the field, boost hydrogen gas pressure and replenish the lost hydrogen gas within the gas circuit. The hydrogen distribution system is maintained as a part of balance of plant maintenance. Using a distributed system, a compressor, two small storage tanks and a k-bottle is located on each SunCatcher. The compressor will boost the hydrogen gas and transfers hydrogen from the low pressure tank to the high pressure tank. The K-bottle will provide make-up hydrogen to replace leaked hydrogen gas. K-bottles will be and replenished approximately 3 times a year in conjunction with the mirror washing.

Q.5 What are the relative efficiency, reliability, and safety advantages and disadvantages of the two systems?

A.5 Centralized System: Is less sensitive to ambient conditions. It allows the storage of more hydrogen in underground piping. It is marginally safer to operate and less venerable to aboveground traffic. Overall system installation cost might be higher than the distributed system. Centralized system could be less reliable with compressor failure, since the compressor support 360 PCU's when compared with distributed system, where one compressor supports one PCU.

Distributed system requires one horse power (HP) compressor per PCU, while a centralized system requires one - 60 HP compressor for 360 PCU's.

The distributed system holds much less hydrogen gas and therefore loss of hydrogen in a distributed system will have much less impact on equipment performance when compared with losing hydrogen from a centralized system.

Q.6 Which system is used at the Maricopa Solar facility?

A.6 The Maricopa Solar facility has a centralized hydrogen system with approximately 7,000 to 8,000 feet of underground piping

Q.7 Will you please discuss hydrogen losses, if any, at Maricopa Solar?

A.7 There have been no leaks in the underground piping at the facility. There is continuous solid tubing with no underground connections or fittings thereby eliminating the possibility of a hydrogen leak underground. We have experienced hydrogen leaks in the manifolds and some aboveground fittings and valves, as we started out the system. There were also minor leaks when the system was commissioned which have been fixed. Since then, pressure has been maintained on the high and low side and maintained at the operating conditions. It is important to note, though, that there are expected regular hydrogen losses on the power conversion unit (PCU) itself. Minor amounts of the hydrogen gas escapes from the system due to the extremely small size of the molecule. This is expected and does not pose a safety concern because the gas does not build up in a confined space, but is released into the atmosphere.

Q.8 What system is being used at the Imperial Valley Solar project and why?

A.8 A centralized hydrogen system will be used at IVS. The permit application for IVS calls for use of a centralized system.

Q.9 You noted earlier that the Applicant has asked the Commission to permit both a centralized and a distributed hydrogen system at Calico Solar. What criteria will the Applicant use to determine which system to use at the facility?

A.9 We are presently performing a trade study to determine the economic and operational impact of centralized and distributed systems. Capital costs, operations and maintenance costs and energy efficiency will be the main determining factors in deciding which system to install.

Q.10 When will that determination be made?

A.10 In late July or August, 2010.

Q. 11 Will the election of either system result in a change in the type of potential environmental impacts associated with the project or the level of intensity?

A.11 No. The types of impacts associated with the hydrogen distribution system will remain the same with either system.

Q. 12 Would the election of either system require new or different conditions of certification to ensure that all potentially significant impacts are adequately mitigated.

A.12 No. As described above, the primary difference between the two systems relates to operational efficiency and cost. No new or different impacts will result with either system. Therefore, no new mitigation measures will be required.

Q.13 There has been an increase in the hydrogen requirement for the SunCatcher from 3.4 to 11 cubic feet. Will you please explain this change?

A.13 The change was made in the PCU itself, specifically as it relates to the heater head. The design was changed to increase the life of the heater head, therefore changing the parameters of how much hydrogen we support and allow to flow through the engine at a given time. This change has not increased the size of the engine, but will require more hydrogen on-site than initially anticipated.

Q.14 How is hydrogen produced for the project and will this change require modifications in the system to produce hydrogen?

A.14 Hydrogen is produced by using water, electricity and an electrolysis machine that separates water into oxygen and hydrogen. Hydrogen production is based on losses in PCU's due to leaks and therefore, hydrogen production will stay the same; however, we will have to store more hydrogen to support the operational changes to the PCU's.

Q.15 Will this change result in an increase in the amount of hydrogen stored on site or used on an annual basis

A.15 It will change the amount of hydrogen stored on site, but will not change the amount of hydrogen used annually.

Q.16 Will the change impact the efficiency and reliability of the SunCatchers?

A.16 This change will not impact the efficiency, but will impact the reliability of the engine by increasing the life of the heater head and reducing downtime and maintenance costs.

Q.17 Will the change impact the safety of the facility?

A.17 I believe that this change will improve safety of the PCU by minimizing damage to the heat exchanger and therefore reducing the chance of overheating in the eye of the PCU.

Q.18 What type of engine coolant will be used and will you change the coolant specification?

A.18 At the present time we have plans to use ethylene glycol, however, we are considering the use of propylene glycol since it is food grade and will not cause any environmental concerns if it is spilled on the ground.

Q.19 Does this complete your direct testimony?

A.19 Yes

I swear under penalty of perjury that this testimony is true and correct to the best of my knowledge.

6/28/2010
Date

Mohamed (Mike) Alhalabi

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PREPARED DIRECT TESTIMONY

OF

Robert Byall

Facility Design

Q.1 Will you please state your name and occupation?

A.1 My name is Robert Byall and I am the Senior Project Civil Engineer for Tessera Solar. My resume has also been included with this testimony.

Q.2 Are you sponsoring exhibits in this proceeding?

A.2 Yes, I am sponsoring multiple exhibits:

a) Exhibit 1 AFC: Appendix I Magnetic Field, Appendix J Water Balance and Appendix O Civil Design Criteria.

b) Exhibit 5, Response 53 Evap Pond

c) Exhibit 12, Responses 9, 12, 14-18, 20, 21, 30 and 44

d) Exhibit 13 CEC/BLM Response 81 DESCP

e) Exhibit 15, Response 360

f) Exhibit 20 CEC/BLM DR Responses, Set 2 dated December 4, 2009, Response 142 and 154-161

g) Geotech Engineering Report, January 8, 2010

h) Exhibit 33, Items 5 and 22 Water in evaporation ponds

i) Exhibit 34 Drainage Layout

j) Exhibit 35 Construction Milestone Schedule

Q.3 What is the purpose of your testimony in this proceeding?

A.3 My testimony discusses:

a) Modifications the Applicant is proposing in the on-site drainage system to reduce peak flows but maintain the existing drainages and allow sediment transport, and

b) The design of the evaporation ponds to avoid wildlife impacts.

Q.4 Will you please describe the existing drainage conditions of the site?

A.4 The Project Site lies at the foot of the Cady Mountains to the north and the Lava Bed Mountains to the south. The northern portion of the project consists primarily of undisturbed alluvial sands. The site is located generally on a gently sloping alluvial surface, with slopes varying from 2 percent to 6 percent. Slopes within the mountainous watershed north of the site are much steeper. These slopes promote rapid runoff of floodwater when the precipitation rate exceeds the infiltration rate of the soil. This water would then flow onto the area identified as the Project Site. There are also flows from the Lava Bed Mountains to the south and some flows from the east which converge along the BNSF railroad.

Q.5 Do the natural drainages represent a potential problem to the operation of the project?

A.5 The channels on alluvial fans are expected to change over time in width, depth and location, by definition. The channels are subject to abrupt changes in course of the stream. Although the channels on this site are relatively shallow and abundant avulsions that may occur are not expected to redesign the overall patterns of the existing fans. The current channels are more likely to increase or decrease in size to accommodate the changing flow conditions. The existing channels are expected to laterally migrate during the larger storm events. The migrating channels could adversely affect the operation and stability of the SunCatcher field.

Q.6 How has this concern been addressed in the project design?

A.6 We have designed the site to minimize the disruption of the natural drainages but by slowing down the runoff to avoid damage to the SunCatchers or other on-site facilities. To accomplish this, we are proposing a series of detention and debris basins located on the northern edge of the site that will slow the flow of water from the Cady Mountains but will still feed storm water into the existing major washes. The basins will also help to minimize the lateral migration of the existing drainage system. I want to emphasize that the general flow pattern will not be altered as the result of the Plant construction. The drainage layout for the Project is listed as Exhibit 34.

Q.7 What affect will the project have on the washes?

A.7 The project modifications will maintain flows in all of the current major washes. The peak flow volume will be reduced; however, the overall volume will remain basically the same. The detention basins will meter the flows through a discharge pipe and will drain within 72 hours.

Q.8 How will the detention basins be maintained?

A.8 Basins will be inspected after every significant rainfall event by Tessera Solar maintenance crews. The condition of the basins will be reported to the plant manager as to the remaining volume present, the condition of the retaining structure, the condition of the outfall structure, the condition of the upstream fence, etc. The plant manager will determine the extent of repairs required, if any, and authorize the repairs to the detention system. Excess sediment collected by the detention system will be used on site for repairs to the SunCatcher field. SunCatcher field repairs will include but not be limited to: the filling in scour holes by SunCatcher pedestals; roadway repairs; detention basin embankment repairs and; general earthwork. The excess sediment, if present, will be stored on site outside of existing flood plains.

Q.9 Some parties have expressed concern that the detention basins will become traps for desert tortoise. How will this be prevented?

A.9 The detention basins are to be constructed within the fenced project site. The project perimeter will be fenced with an eight foot high, wire fabric fence with a desert tortoise exclusionary fence placed at the foot. The perimeter fence will be inspected and maintained on a regular basis to prevent the desert tortoise from migrating on the site, excluding the tortoise from ever being in or around the detention basins.

Q.10 How will the evaporation ponds be designed to minimize impacts to local wildlife?

A.10 Impacts to wildlife have been wholly eliminated by using screens to cover the evaporation ponds.

Q.11 Will you please discuss the proposed fill disposal or fill procurement (borrow) sites?

A.11 The site will be balanced in terms of cut and fill and is expected to be minimal overall. There will be no off-site fill disposal or borrow.

Q.12 Will you please explain how storm water run-off from the local area will affect the project site?

A.12 Storm water run-off across the portion of the plant from the Lava Mountains and the flows generated off-site to the east of the project pose a flooding threat to the development of the Plant next to the BNSF right of way as the existing railroad bridges impede the natural flows through the area. The flood depths in the area between I-40 and the BNSF right of way will be addressed through a combination of channelization and avoidance or a combination of channelization and avoidance. These measures will ensure that the SunCatcher operations are not adversely affected by stormwater flow.

The alluvial fan area north of the BNSF right of way has the potential of impacting the site by depositing material wash down from the Cady Mountains across the alluvial flood plain. This material could over time be in excess of six inches, which will affect the 100-year storm depths throughout the SunCatcher field. The SunCatchers are capable of operating in water depths to 1.5 feet with a 0.5 foot freeboard. If the deposited material is 0.5 feet or greater the sheet flow across the alluvial flood plain could affect the SunCatcher operation. The proposed debris basins will adequately control the debris transported from the Cady Mountains onto the site such that the SunCatcher operations will adversely affected. The transitory nature of alluvial channels on this site is not as much as a concern as the existing channels appear to be shallow and well defined. The channels are expected to simply expand or contract for the volume of storm water reaching them with very little lateral migration.

Q.13 Does this conclude your direct testimony?

A.13 Yes

I swear under penalty of perjury that this testimony is true and correct to the best of my knowledge.

6/29/10
Date

Robert Byall

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Exhibit 67

PREPARED DIRECT TESTIMONY

OF

Noel Casil

Transportation and Traffic

Q.1 Will you please state your name and occupation?

A.1 My name is Noel Casil and I am a Senior Transportation Engineer for URS Corporation. My resume has also been included with this testimony.

Q.2 Are you sponsoring exhibits in this proceeding?

A.2 Yes, I am sponsoring multiple exhibits:

a. Exhibit 1, AFC, Section 5.11 Traffic and transportation, Appendix BB Traffic Counts
b. Exhibit 3, Data Adequacy Supplement, 4/6/09, response 39
c. Exhibit 11 Responses to CEC/BLM 116, 118, 119, 121, 122, 124, 126, 8/20/09
d. Exhibit 17, responses to CEC/BLM data requests, 11/19/09, Response 141
e. Exhibit 32, Supplemental information 2/3/10, Section 2.11 Traffic

Q.3 Some of the interveners in this case have expressed concern that development of the project will preclude them having access to their property. Will you comment on that concern?

A.3 The Project is not anticipated to impact the existing access nearby property owners have to their property. While BLM roads within the Project boundary will be closed to public access, the Applicant has agreed to provide access to private property owners via a Project road located outside of the Project fence. This road will connect to existing BLM-designated open roads on both the east and west side of the Project boundary and will run along the Project boundary giving access to property owners in Sections 1 and 36 as it stands today (as shown in Exhibit 41).

It should be noted; however, that legal public access over the BNSF railroad does not exist in the immediate project vicinity. While two at-grade crossings are located at the western and eastern ends of the Project boundary, both are private crossings owned by BNSF to the west and SCE to the east and, as such, any use by the public would need to be permitted through BNSF or SCE, respectively. The closest public crossings over the BNSF railroad track are located near Newberry Springs and Ludlow.

During permitting efforts, the Applicant requested use of the BNSF private crossing. Through an agreement with BNSF, the Applicant was granted permission to use the crossing. Any members of the public who would like authority to use the crossing would need to contact BNSF to determine their requirements.

Q.4 Questions have also been raised on the status of Hector Road and whether the applicant has precluded public use of what is being called Hector Road. Will you summarize your understanding of this issue?

A.4 According to discussions with the BLM, San Bernardino County, and BNSF, the publicly-designated Hector Road ends approximately 0.3 mile north of the exit from Interstate 40. The road becomes segmented into a BLM-designated open or unspecified area. The Calico Solar Project will not restrict or change the use of Hector Road as designated by the County of San Bernardino. As discussed above, upon development of the Calico

Solar Project, an access road outside of the Project fenceline would provide nearby property owners and other members of the public who currently use open BLM roads in the vicinity access to private parcels adjacent to the Project boundary.

Q.5 What is the entity that has the legal authority to designate roads and use of those roads?

A.5 On public land administered by the BLM, any use of a road or route, where it is not designated as open road, would require a permit from the BLM. The BLM has the authority to classify and designated roads on lands within their jurisdiction. On land not under the jurisdiction of the BLM, the BLM has no authority to designate motorized access routes on or across private land for which the BLM does not hold an authorization (i.e. easement). There are no known easements held by the BLM in this area. It is the discretion of San Bernardino County to publicly-designate roads within unincorporated county lands.

Q.6 What is the entity that makes determinations on access across railroad tracks?

A.6 The BNSF operates the railroad tracks and owns the right-of-way along the tracks and is responsible for granting crossing access across their property. All crossing devices whether active (flashing lights, bells and automatic gates) or passive (stop signs, crossbuck pavement markings) are deployed based on engineering design and studies approved by BNSF and in conformance with minimum standards for traffic control at rail grade crossing set forth in Part 8 of the Federal Highway Administration (FHWA) Manual of Uniform Traffic Control devices (MUTCD). It must be noted that in the State California portions of the MUTCD is amended resulting in a California Supplement that is specifically intended for use in the state. The California Public Utilities Commission (CPUC) is the ultimate authority over cross-jurisdictional grade crossings in California. The CPUC is the state regulatory agency with statutory authority over the fifty railroads and rail transit systems in California. CPUC approval must be obtained before any new highway-rail grade crossings traffic control system can be installed or before any modifications can be made to an existing system. The Highway-Rail Crossing Safety Branch of the CPUC reviews proposals for crossings; authorizes construction of new at-grade crossings, underpasses and overheads; investigates deficiencies of warning devices or other safety features at existing at-grade crossings; and recommends engineering improvements to prevent accidents. These activities include developing and enforcing uniform safety standards, analyzing data for crossing closures, reviewing environmental impact assessments, apportioning costs for maintenance of grade crossing warning devices, and analyzing rail accident data for the CPUC's Annual Rail Accident Report

Q.7 Do you believe the Project will result in any significant adverse traffic or transportation impacts?

A.7 No

Q.8 Do you believe the Calico Solar power plant, as described in the AFC and responses to data requests, will comply with all applicable LORS?

A.8 Yes

Q.9 Do you have any changes in the conditions of certification proposed by the CEC staff?

A.9 The applicant requests revisions to TRANS-10 which would allow the use of an existing Park and Ride ("L Street lot"). If, during construction of the Calico project, the L Street Lot is continuously full, the Applicant will implement a program to increase the number of

carpool spaces by 50. The project owner shall have the "L" street carpool lot inspected and include in its Monthly Compliance Reports the results of these inspections. If, and when, it is determined that the carpool lot is at capacity, the project owner shall either (a) increase the size of the "L" Street lot by 50 spaces, (2) create a temporary lot of 50 spaces or (3) determine if another method of facilitating carpool workers is achievable.

Additionally, The Applicant requests that condition of certification TRANS-11 be deleted. The Applicant agrees with Staff's intention of providing alternative transportation; however, there is no demonstrated nexus between the cumulative traffic impacts of the Calico Solar Project and the Abengoa Mojave Project. The employee travel patterns would not overlap as the Calico Solar workforce is expected to originate almost entirely in Barstow and Calico Solar is located in the opposite direction as the Abengoa Mojave Project when traveling from Barstow. Therefore, providing for the bussing of employees could put an undue burden on the Applicant and may not be feasibly for Project employees given the impracticability of working far distances from their vehicles.

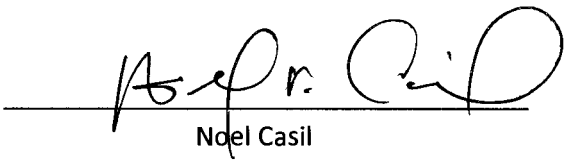
Q.10 Does this complete your direct testimony??

A.10 Yes

I swear under penalty of perjury that this testimony is true and correct to the best of my knowledge.

06-30-2010

Date



Noel Casil

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Exhibit 68

PREPARED DIRECT TESTIMONY
OF
Matt Dadswell
Socioeconomics

Q.1 Will you please state your name and occupation?

A.1 My name is Matt Dadswell and I am a Senior Social Scientist/Economist with Tetra Tech EC, Inc. My resume has also been included with this testimony.

Q.2 Are you sponsoring exhibits in this proceeding?

A.2 Yes, I am sponsoring multiple exhibits:

a. Exhibit 1, AFC Section 5.10 Socioeconomics
b. Exhibit 3, Data adequacy supplement, 4/6/09, Responses 34-36
c. Exhibit 11, Responses to CEC/BLM data requests 113, 114

Q.3 Will you please describe the socioeconomic environment of the surrounding area to the project site?

A.3 The project site is located primarily on BLM-administered land in central San Bernardino County, approximately 37 miles east of Barstow. San Bernardino County is part of the Riverside-San Bernardino-Ontario Metropolitan Statistical Area (MSA), as defined by the U.S. Office of Management and Budget. The Riverside-San Bernardino-Ontario MSA consists of San Bernardino and Riverside counties. This area (San Bernardino and Riverside counties) is also known as the Inland Empire region. San Bernardino County had an estimated 2008 population of 2,055,766. Barstow and Victorville—the closest incorporated communities to the project site—had respective estimated populations of 23,952 and 107,408 in 2008 (California Department of Finance 2008).

Major employers in the vicinity of Barstow include Fort Irwin National Training Center, the Marine Corps Logistics Base, BNSF Railroad, Northrop Grumman, a defense contractor, and the Barstow Unified School District (City of Barstow 2008). Total employment increased in San Bernardino County between 2001 and 2006, with a net gain of approximately 119,000 jobs or 16 percent. Statewide, total employment increased by just 4 percent over the same time period (U.S. Bureau of Economic Analysis 2008). Sectors with large absolute increases in job numbers included producer services, retail trade, and consumer services. There was also a large growth in the construction sector over this period, with the addition of 13,785 construction jobs between 2001 and 2006.

Unemployment rates for San Bernardino County and the incorporated communities in the vicinity of the project area were higher than the state average in September 2008 (the most recent data available when the AFC was prepared), with rates of 10.6 percent and 10.4 percent in Barstow and Victorville, respectively, compared to a statewide average of 7.5 percent (California Economic Development Department [EDD] 2008a). Unemployment rates are currently (May 2010) much higher across the board, with rates of 17.1 percent and 16.5 percent in Barstow and Victorville, respectively, compared to a statewide average of 11.9 percent (California EDD 2010).

Q.4 Where will the projected construction labor force be recruited from? Will a large construction labor force temporarily relocate to the area?

A.4 Every effort would be made to employ qualified subcontractors and construction personnel from the local area and the majority of the labor force is expected to be hired locally (within daily commuting distance) and commute daily to the project site. A study prepared for the Electric Power Research Institute (EPRI) found that power plant construction workers will commute as much as two hours to construction sites from their homes, rather than relocate (Gilmore et al. 1982). Data compiled from the U.S. Bureau of Labor Statistics (2008) and California Economic Development Department (2008a, 2008b) for 2007 indicate that approximately 68,000 construction workers reside within a two hour commute of the project site and there would be sufficient labor within this area to meet the project's projected peak labor demand.

Contact with the Executive Director of the San Bernardino, Riverside Building Trades Council also indicated that sufficient skilled labor was available in the local area to meet the average and peak labor demands of the project, with workers most likely commuting daily from Barstow, Victorville, Apple Valley, Riverside, and the San Bernardino area (Perez 2008). The Executive Director of the Building Trades Council indicated that construction workers are used to commuting long distances to job sites in the San Bernardino and Riverside counties and stated that given the large pool of skilled labor within daily commuting distance of the project site, construction is unlikely to involve large numbers of workers temporarily relocating to the project area (Perez 2008).

Some of the higher skill level positions required for essential trades, such as high voltage line electricians, controls and Information Technology (IT) specialists, and electrical engineers may, however, need to be hired from outside the local area, most likely from the Los Angeles or Las Vegas areas. These workers would likely commute weekly to the project area for the duration of their work on the proposed project, returning home at weekends. Workers temporarily relocating or commuting weekly to the project site are expected to comprise 15 percent of the projected construction labor force.

Q.5 How will the socioeconomic environment be affected during construction of the proposed project?

A.5 The majority of the projected construction workforce is expected to commute daily to the project site. Some of the higher skill level workers may be hired from outside the local area and would be expected to commute to the project site on a weekly basis from the Los Angeles or Las Vegas areas, staying in temporary housing or motels in the Barstow area during the week for the duration of their employment. Data compiled from the California Department of Finance (2008a), U.S. Census Bureau (2000), and Smith Travel Research (2008) indicate that the projected temporary relocation of construction workers is unlikely to affect the supply of temporary accommodation and rental housing in the project area.

Construction of the proposed project would have positive impacts on the local economy; current (May 2010) unemployment rates in Barstow and Victorville are 17.1 percent and 16.5 percent, respectively (California EDD 2010). Benefits associated with construction would be temporary, one-time impacts that would last for the duration of

the construction phase of the project, approximately four years. Average direct employment for the duration of the construction period would be 393 jobs. Construction materials and supplies purchased locally would likely include concrete, rebar, formwork materials, asphalt, fencing, and local purchases in support of field staff. Direct employment and expenditures would support jobs and income elsewhere in the economy through the multiplier effect, as initial changes "ripple" through the local economy and generate indirect and induced impacts.

Annual total economic impacts (direct, indirect, and induced impacts) for the construction phase of the project were estimated for San Bernardino County using IMPLAN modeling software and data. Construction of the project would support an estimated average total of 637 (393 direct, 99 indirect, and 145 induced) jobs each year for the duration of the construction period. Construction would also support an estimated $66.5 million in income, with $45.4 million associated with direct employment and $21.1 million generated elsewhere in the economy.

Local purchases of materials, supplies, equipment, and services are expected to total approximately $9.1 million during the construction phase of the project, which would extend for approximately four years. Assuming a San Bernardino County tax rate of 7.75 percent, the project would generate a total of approximately $700,000 over the life of the construction phase of the project.

Construction of the project is not expected to result in a substantial increase in demand for public services or utilities. The San Bernardino County Fire Department has indicated that additional resources may be required to enable the Fire Department to provide adequate fire protection and emergency response services during construction of the project (Horton 2008).

Q.6 How will the socioeconomic environment be affected by operation of the proposed project?

A.6 Operation of the proposed project would result in up to 20 operations workers permanently relocating with their families to the project area (within a one hour commuting distance of the project site). This potential increase would have negligible effects on local population and housing resources.

Operation of the proposed Solar One project would have positive impacts on the local economy through the creation of local employment opportunities and through local expenditures for supplies and services. As noted above, current (May 2010) unemployment rates in Barstow and Victorville are 17.1 percent and 16.5 percent, respectively (California EDD 2010). When completed, the project is expected to directly employ 182 full-time operations employees in San Bernardino County, with an annual payroll of approximately $10.1 million, which would include all salaries, overtime, benefits, and incentives. In addition, an annual operations and maintenance budget of $8.4 million would be spent locally on goods and supplies. This direct employment and expenditures would also generate indirect and induced impacts elsewhere in the local economy.

Annual total economic impacts (direct, indirect, and induced impacts) for the operation phase of the project were estimated for San Bernardino County using IMPLAN modeling software and data. Operation of the project would support an estimated average total of 425 (182 direct, 97 indirect, and 146 induced) jobs each year for the duration of project

operation, as well as a total of $14.4 million in income, with $10.1 million associated with direct employment and $4.3 million generated elsewhere in the economy.

Solar projects in California are presently covered by a taxation exemption (Section 73 of the California Taxation and Revenue Code) that extends to the 2015-2016 fiscal year (Endler 2008). Solar project components covered by this exemption include storage devices, power conditioning equipment, transfer equipment, and parts related to the functioning of these items. Non-solar project components, which include the proposed administrative offices, operations control room, and maintenance facilities, would not be exempt and would be expected to generate an estimated $220,000 in annual property taxes. Property taxes on the value of the BLM lease would generate approximately $4,300 in annual property taxes. These are approximate estimates developed to provide an indication of property tax revenues. Actual values would be calculated by the BLM (for the lease) and the San Bernardino County Assessor's office.

Local purchases of materials, supplies, equipment, and services are expected to total approximately $8.4 million a year once the project is fully operational. Assuming a San Bernardino County tax rate of 7.75 percent, the project would generate approximately $650,000 a year in sales tax.

Operation of the project is not expected to result in a substantial increase in demand for public services or utilities. The San Bernardino County Fire Department has indicated that additional resources may be required to enable the Fire Department to provide adequate fire protection and emergency response services during operation of the project (Horton 2008).

Q.7 Do you believe the Calico Solar power plant, as described in the AFC and responses to data requests, will comply with all applicable LORS?

A.1 Yes. The LORS identified in the Socioeconomics section of the AFC relate to NEPA, environmental justice, the Civil Rights Act of 1964, taxes, and construction fees.

Q.8 Does this complete your direct testimony?

A.2 Yes

I swear under penalty of perjury that this testimony is true and correct to the best of my knowledge.

6/29/10
Date

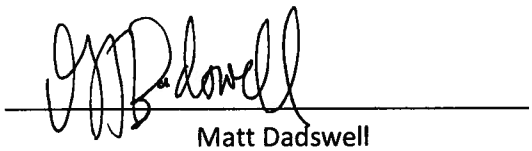
Matt Dadswell

Exhibit 69

PREPARED DIRECT TESTIMONY

OF

Michael Hatch

Geology / Soils

Q.1 Will you please state your name and occupation?

A.1 My name is Michael Hatch and I am a Principal Geologist for URS Corporation. My resume has also been included with this testimony.

Q.2 Are you sponsoring exhibits in this proceeding?

A.2 Yes, I am sponsoring multiple exhibits:

a) Exhibit 1 AFC, Section 5.3 – Geologic Hazards, Section 5.4 – Soils, Appendix E Preliminary Geotechnical and Geological Hazards Evaluation

b) Exhibit 22 Donated parcel study, 12/17/09, Geology and Soils Sections

c) Exhibit 32 Supplemental information, 2/3/10, Section 2.3 Geology, 2.4 Soils

Q.3 What is the purpose of your testimony in this proceeding?

A.3 To discuss the conformity of applicable LORS and the potential project impacts related to Soils and Geology.

Q.4 Will you please describe current soil conditions on the proposed project site?

A.4 Multiple soil types were identified on the project site upon initial analysis. These soil types include: Carizzo Soils, Rositas Soils, Gunsight Soils, Nickel Soils, Arizo Soils, Bitter Soils, Rock outcrop, Lithic Toriorthents, Calvista, Upspring, and Sparkhule. These soil types are further described in the AFC, Section 5.4 (Exhibit 1).

Q.5 Of these soil types, which are most prevalent on the proposed project area?

A.5 Based on this mapping and the current Project layout, primarily two soil associations will be affected by Project construction. The Carrizo-Rositas-Gunsight soil association occupies the majority of the site, while the Nickel-Arizo-Bitter association is present over much of the southern portion of the site, south of the railway. The Rock Outcrop-Lithic Torriorhents-Calvista association is present in the mountains along the northern site perimeter and the Rock Outcrop-Upspring-Sparkhule association is present on the southwest corner of the Project Site, as well as north and northwest of the site.

Q.6 Are these soil conditions ideal for agricultural use?

A.6 The soil conditions in the site area are not ideal for agricultural use. These soils are typically characterized as being unsuitable for agriculture.

Q.7 Will the project comply with all applicable LORS?

A.7 Yes

Q.8 Given the project compliance with all applicable LORS, what will be the potential project impact to geologic and soil resources?

A.8 I believe the Calico Solar Project will not result in any significant adverse impacts to geological and soil resources.

Q.9 Does this complete your direct testimony?

A.9 Yes

I swear under penalty of perjury that this testimony is true and correct to the best of my knowledge.

June 30, 2010

Date

Michael Hatch

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Exhibit 70

PREPARED DIRECT TESTIMONY

OF

Shawn Johnston

Biology – Plants

Q.1 Will you please state your name and occupation?

A.1 My name is Shawn Johnston and I am a botanist for URS Corporation. My resume has also been included with this testimony.

Q.2 Are you sponsoring exhibits in this proceeding?

A.2 Yes, I am sponsoring exhibit:

a) Exhibit 54, 2010 Early Spring Botany Survey results and Exhibit 61, 2010 Late Spring Botany Survey results.

Q.3 What is the purpose of your testimony in this proceeding?

A.3 There are a number of objectives in submitting this testimony. I will discuss:

a) The 2010 spring botany survey methodology.
b) The 2010 spring botany survey results,
c) Potential botanical impacts identified by the surveys.
d) Lastly, the adequacy of mitigation planned for mitigating these impacts.

Q.4 Will you please describe the survey methodology followed for the project?

A.4 I was the lead botanist for the 2010 spring botanical survey. In preparation for the survey, I first developed a target list of potentially occurring sensitive plant species for the Calico Solar project site prior to survey implementation. The target list included all species recommended by the BLM and California Energy Commission (CEC) Calico Solar Project Staff Assessment (Biological Resource Table 1 in the Staff Assessment/ Draft Environmental Impact Analysis [SA/DEIS]), all rare plants from the nine quadrangle CNDDB for USGS Sleeping Beauty Peak Quadrangle, and was further augmented through recommendations made by Mr. James Andre of the Sweeney Desert Mountain Research Center. The list of potential rare plants for the Calico Solar site was sent to the CEC, and BLM for their review and approval before the start of the spring surveys.

Survey timing was determined through reconnaissance-level site visits that were conducted prior to the survey to assess the phenology (progression of the blooming period), and also included monitoring of several special-status plant reference populations. Once timing of the surveys was determined, BLM and CEC were notified of the dates of the surveys. Two separate botanical surveys were conducted to capture the blooming period of potential occurring special-status species for the project site (April 5 – 15 and May 3 – 14).

Transect spacing was determined based on topography, and a particular habitat's potential to support focal rare plant species. The level of effort equaled or exceeded the effort level identified in BLM protocol (BLM 1996a, BLM 1996b, BLM 2001, and

BLM 2009) and by BLM staff. The typical rate of coverage was eight to 12 acres per hour.

Special-status plant species locations and number of individuals were documented on data forms and consumer-grade GPS units for import into geographical information system (GIS) database.

I would like to emphasize that all the survey work was performed according the appropriate (BLM, and CDFG) protocols and with the approval of all the appropriate (BLM and CEC) agencies.

Q.5 Will you please describe what surveys were performed on the proposed project site?

A.5 The following surveys have been performed to date on the project: Botanical surveys in 2007 and 2008 were conducted in the SES Assessment Area. Results from these previous surveys are not relied on for purposes of this testimony, as the surveys were conducted over a much larger area and in less detail than botanical surveys conducted in 2010. Additionally, I personally did not direct the botanical survey efforts or conduct any portions of these surveys and I will not comment on the validity of these surveys.

Comprehensive botanical surveys were conducted in spring of 2010. The 2010 botanical surveys were restricted to the proposed project site (originally 8,230 acres), plus a 250-foot survey buffer. In an effort to avoid and minimize biological impacts, additional design changes were made after the 2010 spring surveys, which further reduced the Project plan of development to 6,215 acres.

Q.6 Could you please explain the details of the survey results?

A.6 Two hundred and forty-four (244) vascular plant species were observed during the 2010 Spring Botanical Surveys. Of these, three are considered to be special-status plant species: *Penstemon albomarginatus* (white-margined beardtongue), *Androstephium breviflorum* (small flowered androstephium), and *Castela emoryi* (crucifixion thorn).

Small-flowerd androstephium (CNPS List 2.2), was found to be common throughout the sandy southern portion of the Project area. Over 1,500 individual occurrences were recorded during the 2010 spring botanical surveys.

Five distinct occurrences of white-margined beardtongue (*Penstemon albomarginatus*; CNPS List 1B.1, and BLM Sensitive), totaling 25 individuals, were detected during the 2010 surveys. With the revised project boundary, only eight individuals of this species occur within the proposed project area. One 2008 occurrence, representing one individual plant, was not relocated.

Additionally, four individuals of Crucifixion thorn (*Castela emoryi*; CNPS List 2.3) were detected within the survey area during the 2010 spring surveys area; however, the revised project boundary now avoids impacts to all individuals detected during the 2010 survey.

Q.7 What potential impact will the project have on these species?

A.7 Project implementation would impact a large majority of small-flowered androstephium; however, based on assessments made by the CEC and the BLM, the species is believe to be locally abundant and sufficiently common elsewhere. From my understanding, BLM and CEC would consider impacts to this species adverse but less

than significant. I feel that this is a fair assumption; if distribution and population numbers are as reported, the impact to the species will be relatively small overall.

The implementation of the project will not directly impact white-margined beardtongue individuals currently detected on site, because environmentally sensitive areas will be established around all occurrences within the project area. However, direct impacts to unoccupied white-margined beardtongue habitat will occur, as population fluctuation is likely the norm for this species and small isolated groups and individual plants may die-off at certain locations while new plants appear in suitable habitat nearby.

The project area is located at the western limits of the Pisgah/Lavic Lake white-margined beardtongue population group. The population is known to occupy roughly six miles of wash and sandy creosote habitat on both sides of Interstate 40 (I-40) east of Hector Road, extending to the base of Sleeping Beauty Peak to the northeast and south of I-40 into the margins of the basalt outcroppings of Pisgah Crater, with areas east of the Pisgah Substation and south of I-40 holding the highest density of plants. A BLM ACEC supports a significant portion of the Pisgah/Lavic Lake population.

I believe that Impacts to white-margined beardtongue habitat from project implementation would be adverse but unlikely to be a significant impact to the population as a whole, because of the extremely low density of this species within the project area situated at the fringe of its range

Q.8 Are any additional mitigation measures being taken?

A.8 Yes, remedial action will be identified in the Special-Status Plant Protection and Remedial Action Plan for Calico Solar. Remedial action would be triggered if on-site white-margined beardtongue populations fall below acceptable levels. Specific details of the plan will be disclosed once BLM and CEC approve the plan

Q.9 Do you have any changes to the conditions proposed by the CEC staff relative to botanical resources?

A.9 Yes. BIO-12 –Onsite conservation of List 1B plant species is included in the current project design. List 2 species (except *Androstephium*) have been avoided and any new List 2 species detections would be mitigated offsite if deemed appropriate. No mitigation is required for *Androstephium* because the species is common in the project vicinity and is adequately conserved in the region.

Q.10 Does this complete your direct testimony?

A.10 Yes.

I swear under penalty of perjury that this testimony is true and correct to the best of my knowledge.

6/30/2010 _____

Date

_____

Shawn Johnston

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Exhibit 71

PREPARED DIRECT TESTIMONY

OF

Angela Leiba

Visual, Land Use, and Policy

Q.1 Will you please state your name and occupation?

A.1 My name is Angela Leiba and I am the Senior Project Manager / Environmental Group Leader for URS Corporation. My resume has also been included with this testimony.

Q.2 Are you sponsoring exhibits in this proceeding?

A.2 Yes, I am sponsoring multiple exhibits:

a) Exhibit 1 AFC , Section 5.9, Land Use, Section 5.13 Visual Resources, and Section 7.0 List of Preparers
b) Exhibit 3 Data Adequacy Supplement, Responses 24-26, 45-46
c) Exhibit 5 CEC/BLM Data Responses 64-67
d) Exhibit 11 CEC/BLM Data Reponses 120, 124-125
e) Exhibit 15 CURE Data Responses 310-312
f) Exhibit 20 CEC/BLM Data Responses 162-166
g) Exhibit 22 Donated parcel study, 12/17/09, Land Use and Visual Resource Sections
h) Exhibit 27 Corridor Conflict Analysis, 1/8/2010
i) Exhibit 29 Additional Alternatives Analysis, Introduction and Land Use Section
j) Exhibit 32 Supplemental Information, 2/3/10, Section 2.9, Land Use and Section 2.13 Visual Resources
k) Exhibit 51 Letter Pertaining to Glint and Glare, 4/30/10

Q.3 What is the purpose of your testimony in this proceeding?

A.3 There are a number of objectives in submitting this testimony. These are to discuss:

a) The visual impacts of the project including the projects reduction in acreage and how that affects the visual impacts.
b) The land use impacts of the project and the County's land use requirements and the project's conformity particularly in regards to the water well and pipeline.

Q.4 From a visual standpoint, will you please describe the proposed project site?

A.4 From a regional perspective the landscape is mainly undeveloped desert within the Mojave Valley. The general area is characterized as relatively flat desert allowing for open, expansive views of the Cady Mountains to the north and Ord-Rodman Mountains to the south. Although the mountains are not particularly high, they are an effective visual barrier between each of the regions they define. The open views of the Cady Mountains to the north and the Mojave Plain stretching to the east are spotted with dry shrubs and divided by washes. The Barstow region consists mainly of low-lying desert terrain. The climate is extremely dry with hot summers and mild winters (characteristic of a high desert climate). Distant views from the project site consist

mainly of mountains to the north and south and open plains to the east and the Pisgah ACEC west.

The project site is largely vacant and currently consists of undesignated desert BLM-administered public lands. There are also some private parcels located adjacent to the project Site. The project site slopes gently to the northeast with elevations ranging from approximately 1925 to 3050 feet above mean sea level. Topographic land features obscure views of the Project Site intermittently as travelers approach from the east and west along I-40, including areas of lower elevation and small rolling hills.

Adjacent land uses include the Pisgah Substation adjacent to the southeastern border of the project site, as well as a small number of rural residences. The nearest residence is located approximately 2 miles to the east of the Project Site; however, this is the only residence to the east within the visual sphere of influence (VSOI) of the project. Five to seven miles to the west of the site there are some scattered residences with obstructed and partial views of the project site. Although few people live in the local area, the majority of viewers are anticipated to be travelers commuting to and from larger urban centers or to local industrial facilities.

The project site and surrounding area is further detailed in Exhibit 1 AFC, Section 5.13.

Q.5 Will the project have an effect on the area from a visual standpoint?

A.5 Visual effects to the surrounding areas are a direct result of the size and scale of the project. The development will be a newly introduced, highly dominant feature of the landscape. The current open and expansive views existing in the area will not be occluded by the presence of the project; however, existing integrity and continuity of views will be newly defined for many miles of the landscape. Scenic quality is currently moderate to low and the presence of the solar dishes will not affect visual quality to the extent that it will affect the character of the visual environment in this area. The rolling forms, distant horizon lines, and uniform textures of the desert will be significantly altered to the angular forms of structures and transmission lines, rows of SunCatchers, and edgy textures of industrial solar development. The drab browns, grays and tans of the desert will be altered to a lesser extent to the reflective, water-like surfaces of solar reflectors. The new visual environment will no longer evoke the desolate open space that it has historically, but rather will be a modern center for the production of renewable energy. Significant impacts to area visual resources are anticipated.

The project is expected to significantly alter the existing character of the site creating significant effects to the general scenic quality of the VSOI area as a whole. The project would be highly visible from adjacent locations in the area. Given the large scale of the project (approximately 6,215 acres), the lack of significant topographic features and the limited degree of existing landscape modification (e.g., I-40, a substation, transmission lines, and Railroad) within the VSOI, potentially significant effects on scenic quality are expected; however, landscapes inventoried within the VSOI are classified as retaining primarily moderate to low scenic quality. Also, activities at the project site would occur in areas previously disturbed due to off-highway vehicle (OHV) use and limited recreational activities and within areas classified as retaining moderate to low distinctive or diverse natural amenities or

lacking substantial positive cultural modifications. Therefore, significant effects would occur relative to existing scenic quality.

It should be noted that the project may also draw positive visual interest to the area. Some viewers may see the project as having a beneficial impact on the visual resources in the area. For example, since its development, the wind farm of approximately 4,000 wind turbine generators/windmills in the San Gorgonio Pass area (which includes portions of Palm Springs, Desert Hot Springs, and Coachella Valley) have become somewhat of a symbol of the area and are now included in the community plans as a tourist destination. The technology as well as the total size and number of wind turbines create a spectacle that attracts tourists, and there are numerous companies that offer tours to view the area. Before its development, the wind farm was seen as a potentially immitigable significant visual effect for travelers through the area.

Q.6 Concerns were raised on the Imperial Valley Solar Project about the glint and glare impacts of the SunCatchers, particularly on travelers on the adjacent freeway. Is that an issue on the Calico Solar Project?

A.6 To evaluate the potential impacts of glint and glare in Imperial Valley, Tessera hired an engineering firm to study glint and glare on viewers (specifically travelers along an adjacent freeway). Three questions were also studied in the report:

1) Will a 20-foot fence or earth berm reduce glint/glare to off-site viewers? The answer was that screening benefits of a 20-foot screen fence or berm are minimal for all situations studied.

2) Will highway travelers experience a flashing effect while driving next to rows of SunCatchers – If so, would a 20-foot fence or berm reduce flashing effects? The answer was that in certain, very rare conditions, a flashing effect may be experienced by motorists in their peripheral vision, outside their focused vision. Due to the location of the glint, high on the parabolic mirror, a 20-foot screen fence or berm in its proposed location would provide minimal glint screening.

3) What are the luminance readings from the SunCatchers (in cd/m2)? The answer to this question was that a separate luminance study, completed by John O'Farrell of Lighting Sciences, Inc. was performed at Maricopa (values were included in Appendix A of the Glint/Glare study. While the engineers did not perform a similar study on Calico, they did believe that the overall general characterization of the operations and impacts is applicable to Calico.

Q.7 Have visual impacts from the project been mitigated to the extent feasible?

A.7 To the extent feasible, yes. Setbacks from the highway to SunCatchers have been established at a minimum distance of 360-feet, consistent with Imperial Valley Solar. Additional mitigation relating to painting is covered in testimony for Felicia Bellow.

Q.8 Given this project is being developed on BLM land, how does BLM designate the land use for the proposed project site?

A.8 Currently, the project site lands are managed under Multiple-Use Class M (Moderate Use) categories in conformance with the California Desert Conservation Area (CDCA) Plan. The CDCA Plan describes Multiple-Use Class M (Moderate Use) management as based on a balance between higher intensity use, including energy and utility development, and conservation of desert resources. The Calico Solar Project (or any future renewable energy development on the site) would require a CDCA Plan amendment.

The project occurs entirely within a BLM-designated Solar Energy Study Area (SESA). The BLM has identified SESAs as areas where "sensitive lands, wilderness, and other high-conservation-value lands were excluded," (BLM News Release, July 27, 2009).

Q.9 The applicant recently added private lands to the project to accommodate what is now considered the primary water source. What are the land use designations of those lands and is development of the water wells and pipeline allowed uses?

A.9 Tessera Solar recently purchased the two parcels (APN 0529-281-23 and APN 0529-281-34) intersected by the well and waterline. These parcels are designated "Resource and Conservation" by San Bernardino County. The water well and waterline are allowed uses on the parcels, providing that at well permit is granted from the San Bernardino County Environmental Health Services Department.

The Water, Wastewater, Land Use Section of San Bernardino County Environmental Health Services' Well Water Sharing Guidelines allows well sharing to take place between contiguous parcels. To avoid an inconsistency with this requirement, Tessera Solar is pursuing a lot merge, such that the well parcel will be directly adjacent to the BLM-owned project site.

Q.10 What process is typically required by San Bernardino County for the permitting of the well and pipeline and has that process been complied with?

A.10 The applicant is currently coordinating approval of a well production permit with San Bernardino County. The SSA will serve as the CEQA document for the County's discretionary review of the well permit, and the County expects to provide a determination of adequacy of the CEQA analysis in the SSA approximately two weeks after the SSA is filed. The applicant is also currently developing a Groundwater Monitoring and Reporting Plan that is required by the County's Desert Groundwater Management Ordinance. The determination of adequacy of the Energy Commission's CEQA analysis for the well and the successful completion of a Groundwater Monitoring and Reporting Plan will meet the compliance requirements for the County well permit.

Q.11 Earlier you stated that the project was in conformance with all applicable local LORS. What is the basis for that statement?

A.11 The applicable land use LORS were identified and examined as a part of the AFC and subsequent supplemental filings for the project. As discussed above, the applicant is pursuing the merging of the two parcels intersected by the well and waterline (APN 0529-281-28 and APN 0529-281-34), and a production well permit from the County of San Bernardino. The successful pursuit of these two processes put the project in compliance with all applicable local land use LORS.

Q.12 In terms of land use, will you please explain the alternatives analysis and why this site was chosen for development?

A.12 Eight alternative sites were identified in the AFC and subsequent data responses. In January 2010, the applicant filed an Additional Alternatives Analysis (Exhibit 29) to provide additional information regarding the alternative sites given consideration in determining the current location of the Calico Solar Project.

With regards to land use, consideration was given to the current and planned land uses, locations of special management areas, and jurisdictional boundaries and zones within each alternative site area. The size of each alternative site was also analyzed for its ability to support a project that would meet the power purchase agreement (PPA). In addition to land use constraints, biological, cultural, and water resource considerations were analyzed for each site.

Fatal flaws were identified for all eight of the potential alternative sites. The fatal flaws were due to occurrence within a special management area that would conflict with the project objectives (such as desert tortoise Designated Critical Habitat [DCH] or BLM Area of Environmental Concern [ACEC]), due to the site size, lack of available water supply, and high potential concentrations of biological and/or cultural resources.

The current Calico Solar Project site was chosen based on its compatibility with existing and proposed land uses, as well as for other considerations for biological, cultural, water and other resources.

Q.13 Will you please describe the reduction in acreage for the project and how this has affected the land use of the area?

A.13 Some of the project area within the original project boundary occurred in the BLM Class L (Limited) category. With the reduction in acreage for the project, the entire project now falls within the Class M (Moderate) categories.

The reduction in potential impacts to biological and cultural resources associated with the reduced project acreage is consistent with the Class M (Moderate Use) category described in the CDCA Plan. The management of this category is based on a balance between higher intensity uses, such as energy and utility development, and conservation of desert resources, which the currently proposed project provides.

Q.14 Does this complete your direct testimony?

A.14 Yes

I swear under penalty of perjury that this testimony is true and correct to the best of my knowledge.

6/30/2010 _____ _____

Date Angela Leiba

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Exhibit 72

PREPARED DIRECT TESTIMONY

OF

Julie Mitchell

Air Quality

Public Health and Safety

Q.1 Will you please state your name and occupation?

A.1 My name is Julie Mitchell and I am a senior air quality scientist for URS Corporation. My resume has also been included with this testimony.

Q.2 Are you sponsoring exhibits in this proceeding?

A.2 Yes, I am sponsoring multiple exhibits:

a. Exhibit 1 AFC, Section 5.2 - Air Quality, Section 5.16 – Public Health, Appendix V - Air Quality Data and Appendix D - Public Health and Safety Data

b. Exhibit 2 Application to MDAQMD, 1/28/09

c. Exhibit 3 Data Adequacy Supplement, 1/28/09 Responses 1-5

d. Exhibit 12 Responses to CEC/BLM data requests, Responses 1-8, 10, 11, 13, 19, 22-29, 31-43, 45-48 and 109-112

e. Exhibit 14 Responses to CEC/BLM data requests, 9/16/09, soil stabilizer and contacts

f. Exhibit 17 Responses to CEC/BLM data requests 11/23/09 responses 129-131, 136, 140

g. Exhibit 22 Donated parcel study, Public Health and Safety Section

h. Exhibit 31 MDAQMD Final Decision, 1/15/10

i. Exhibit 32 Supplemental information 2/3/10 Section 2.2, Air Quality and Section 2.16, Public Health

j. Exhibit 49 Fed NO_2 1-hour modeling analysis, 4/30/10

Q.3 Please describe the air modeling analysis performed for the project.

A.3 Air quality impact and human health risk assessments have been conducted to show that emissions from the project's construction and operational phases do not cause a significant impact.

The most recent analysis demonstrated compliance with the new federal NO_2 1-hour standard (Exhibit 49) for project operations by summing the peak modeled 1-hour NO_2 concentration with the 98^{th} percentile background concentration. This background concentration is calculated by averaging three years of the 98^{th} percentile daily maximum 1-hour concentrations monitored at the Barstow station.

Q.4 Do you believe the Calico Solar power plant, as described in the AFC and responses to data requests, will comply with all applicable LORS?

A.4 Yes

Q.5 In your opinion, will there be any significant adverse impacts to air quality?

A.5 No

Q.6 Do you agree with all of the CEC staff's proposed conditions of certification for air quality?

A.6 In exhibit 45, the applicant suggests that generic equipment be specified in the equipment descriptions before conditions of certification AQ-1-8 and AQ9-15 for the diesel emergency generator and gasoline storage tank rather than specifying the manufacturer of the equipment. Additionally, the applicant requests that that verification of the submittal of an Air Quality Construction Mitigation Plan (AQCMP) and Operations Dust Control Plan (ODCP) be revised from 60 days to 30 days prior to ground disturbance.

Q.7 Does this complete your direct testimony?

A.7 Yes

I swear under penalty of perjury that this testimony is true and correct to the best of my knowledge.

6/30/2010 Julie Mitchell

Date

Exhibit 73

PREPARED DIRECT TESTIMONY
OF
Patrick Mock, PhD
Biology

Q.1 Will you please state your name and occupation?

A.1 My name is Patrick Mock and I am Principal Scientist at URS Corporation. My resume has also been included with this testimony.

Q.2 Are you sponsoring exhibits in this proceeding?

A.2 Yes, I am sponsoring multiple exhibits:

a. Exhibit 1 AFC, 2/2/08 Section 5.6 and Appendix Y
b. Exhibit 3 Data adequacy supplement, 4/6/09, Responses 7-11
c. Exhibit 5 CEC/BLM data request responses, 7/17/09, Responses 50-52, 54-56, and 82-84
d. Exhibit 6 CEC/BLM response 55, 7/17/09 – Raven Monitoring and Control Plan
e. Exhibit 7 CEC/BLM Response 50, 7/17/09 – Report to Map Federal and State Waters
f. Exhibit 8 CURE data request responses, 7/27/09, Responses 1-162, 165, 224-228,
g. Exhibit 9 Responses to public comments on biology, 7/30/09
h. Exhibit 15 CURE data request responses, 11/12/09, Responses 313-359, 361-375, 377-379,
i. Exhibit 17 CEC/BLM data requests, 11/23/09, Response 135
j. Exhibit 18 Responses to CURE data requests, 12/3/09, Response 378-402
k. Exhibit 19 DOW and BRW data requests, 12/4/09, DOW Responses 1-5, 9, 10 and BRW Responses 1-3
l. Exhibit 21 Updated project map, 12/21/09
m. Exhibit 22 Donated parcel study Biology Section, 12/17/09
n. Exhibit 24 Biological Resources Technical Report, Biological Resources Baseline Study, and Noxious Weed Management Plan 12/23/09
o. Exhibit 26 Responses to CURE letter, 7/7/10, Responses 10, 379, 380, 382,
p. Exhibit 28 Response to CEC transmission questions, 7/8/10, Items 1-3, and 7
q. Exhibit 29 Additional alternatives analysis, 7/8/10, Biology sections
r. Exhibit 32 Supplemental information, 2/3/10, section 2.6 – Biological Resources
s. Exhibit 33 Responses to January 5, 2010 workshop, 1/29/10, Items 1-4, 6-21, 23-34
t. Exhibit 36 Burrowing owl survey, 2/13/10
u. Exhibit 43 2010 Burrowing Owl survey, 3/26/10
v. Exhibit 44 Biological assessment, 4/1/10
w. Exhibit 48 Suggested revised biological conditions, 4/27/10
x. Exhibit 50 Helicopter Survey Results for Golden Eagles and Bighorn Sheep, 4/30/10
y. Exhibit 52 Additional Information, Burrowing Owl surveys, 5/4/10

z. Exhibit 55 2010 Desert Tortoise Survey Results, 5/21/10

aa. Exhibit 62 Submittal of Microphyllus Species Distribution, 6/22/2010

Q.3 What is the purpose of your testimony in this proceeding?

A.3 There are a number of objectives in submitting this testimony. I will discuss:

a) The biological survey methodologies.

b) The biological survey results,

c) Potential biological impacts identified by the surveys.

d) The approach for and adequacy of mitigating these impacts.

Q.4 Will you please summarize your overall conclusion?

A.4 All potentially significant impacts to biological resources have been fully mitigated by either the applicant's modification to the project boundary, conditions of certification proposed by CEC staff in the SA/DEIS or conditions of certification proposed to be modified by the applicant. There are no residual unmitigated impacts to biological resources.

Q.5 Will you please describe the survey methodology followed for the project?

A.5 All surveys conducted were implemented following agency approval of our survey protocols. The surveys used existing protocols established by one or more of the wildlife agencies. For example, the recent burrowing owl surveys followed the protocol recommended by CDFG. The 2010 desert tortoise surveys followed the protocol issued in 2010 by USFWS. Botanical surveys protocols followed CDFG and BLM guidance. The level of field effort was approved by CEC and BLM staff.

Q.6 Will you please describe what wildlife surveys were performed on and adjacent to the proposed project site?

A.6 The following surveys have been performed to date on the project:

(a) Most recently, Desert Tortoise Surveys were conducted for the project site, and for offsite relocation recipient sites and control areas in spring 2010. Desert tortoise sample plot surveys were also conducted in 2007 and 2008 over a 27000-acre assessment area that included the current project site.

(b) In 2010, a burrowing owl survey was conducted for the originally proposed project area, plus a 1000-foot buffer. Subsequently, potential owl burrows detected during the owl survey were checked for nesting activity and occupation.

(c) A golden eagle nest helicopter survey was conducted within a 10-mile radius of the project site in March, 2010.

(d) Nelsons bighorn sheep observations were recorded during the helicopter survey for golden eagles. Incidental detection of bighorn sheep sign were recorded during other surveys.

(e) A Mojave Fringe Toed Lizard presence-absence survey was conducted in 2008.

Q.7 Will you please describe the results of the Desert Tortoise surveys?

A.7 The CEC Staff Assessment notes 5,829 acres of "good quality habitat" north of the railroad. Based on the reduction in acreage of the project, the amount of project land now in this category is 4,075 acres. During the 2010 surveys, 104 tortoise were detected within the original project boundary. I emphasize original boundary because the applicant significantly reduced the footprint of the site to reduce tortoise impacts. With that boundary change, 57 of those individuals were detected within the reduced project boundary; 47 individuals were detected in areas that are now excluded from the project within the conserved habitat linkage corridor.

The applicant has taken proactive measures to modify the project to reduce potential impacts to desert tortoise. With regards to connectivity of desert tortoise habitat, the Desert Tortoise Recovery Office (DTRO), USFWS, and CDFG expressed concern that there was insufficient tortoise habitat remaining between the originally proposed northern project fence line and the steep portions of the Cady Mountains. The applicant substantially reduced the project footprint to accommodate an east-west habitat linkage area that will provide sufficient live-in habitat for desert tortoise and other wildlife. The northern project boundary was moved about 4,000 feet south to allow for the habitat linkage requested by the wildlife agencies. This distance was established by the DTRO as approximately the distance of two typical desert tortoise home range widths.

Q.8 Will you please describe the proposed mitigation measures for Desert Tortoise?

A.8 Proposed mitigation measures for desert tortoise include a Compensatory Habitat Mitigation program. According to the Compensatory Habitat Mitigation program, the following habitat mitigation ratios would apply, based on the newly reduced project acreage:

1. 2,040 acres south of railroad will be mitigated at 1:1 ratio
2. 100 acres south of railroad will be mitigated at 3:1 ratio for Mojave fringed-toed lizard impacts. This would add 200 acres of mitigation lands above that required for tortoise habitat to the offsite land acquisition program.
3. 4,075 acres north of the railroad will be mitigated at 3:1 ratio

The total offsite habitat mitigation acreage requirement would be 14,565 acres.

This mitigation will be provided through the payment of in lieu fees to BLM or wildlife agencies. The fee is set at an amount that allows for acquisition, enhancement and management of habitat that support the species being affected (e.g., tortoise, MFTL, rare plants). Mitigation measures also include a Desert Tortoise Translocation Plan, perimeter exclusion fencing, and construction monitoring to minimize direct mortality and other impacts to desert tortoise. Under the Desert Tortoise Translocation Plan, individual tortoise onsite will be relocated offsite and monitored using radio telemetry. Control individuals will also be monitored. The translocation plan is currently being reviewed by the wildlife agencies. The level of monitoring included in the plan should ensure that adaptive management actions can be implemented to ensure success of the mitigation measures.

Q.9 How will indirect effect to tortoise be mitigated for?

A.9 The potential indirect effects of raven predation and non-native plant introduction are minimized through the implementation of a Raven Monitoring, Management, and Control Plan and a Weed Management Plan.

Q.10 Do these measures adequately mitigate the effects on the Desert Tortoise?

A.10 Yes. The proposed mitigation measures will reduce the impacts to the Desert Tortoise to a less than significant level and will ensure that all unavoidable impacts are fully mitigated. They are consistent with the West Mojave Plan and they also meet State requirements for compliance with the California Endangered Species Act. Impacts to tortoise are mitigated to the maximum extent practicable.

Q.11 Will you please describe the results of the Burrowing Owl surveys?

A.11 In recent surveys, there were two Burrowing Owl detections in the northern area within the originally proposed project boundary. The proposed reduced project boundary excludes all of the owl detection locations. Potential owl burrows occur onsite, but these burrows were assessed and found to be inactive during Spring 2010. Based on the owl survey results and an overall assessment of habitat onsite, it is my estimate that there is still potential for one or two owls to be resident onsite within the current project footprint.

Q.12 Will you please describe the proposed mitigation measures for Burrowing Owls?

A.12 The project will include pre-construction burrowing owl surveys, passive relocation of any detected owls (per CDFG protocol) during the non-breeding season, and construction of alternate, new owl burrows offsite. These measures are expected to avoid incidental mortality of burrowing owls and reduce potential impacts to burrowing owls to a less than significant level.

Q.13 Do these measures adequately mitigate the effects on the Burrowing Owls?

A.13 Yes.

Q.14 Will you please describe the results of the Golden Eagle surveys?

A.14 In March 2010, helicopter surveys were conducted to identify potential nesting habitat within a 10-mile radius of the project site. During these surveys, one active eagle nest was detected approximately 3.6 miles from the eastern project boundary. The nearest inactive eagle nest site was located about 2.7 miles north of the current project boundary.

The potential impacts of the project on golden eagle foraging lands is considered minimal. All open desert lands are potential foraging habitat for eagles, and an extensive agricultural area west of the site is the likely preferred foraging habitat for eagles and other raptors in the project vicinity.

Q.15 Will you please describe the proposed mitigation measures for the Golden Eagles?

A.15 Pre-construction nest surveys for Golden Eagles will be conducted annually within one mile of the site if construction activities will occur during the breeding period (from February 1 through August 15). The Designated Biologist or Biological Monitor conducting the surveys will be an experienced bird surveyor familiar with the ecology and nesting habits of Golden Eagles. Surveys will be conducted in accordance with a

set of guidelines provided in the SA/DEIS unless other guidelines are presented and approved by the BLM, CPM, CDFG, and USFWS. If active nests are detected, a no-disturbance buffer zone (0.2 mile unless otherwise determined by the Designated Biologist in consultation with CDFG, BLM, USFWS, and CPM) will be implemented and a monitoring plan will be developed to ensure nest protection. Any detected, active nests will be monitored by the Designated Biologist until it is determined that any nestlings have fledged and dispersed or when the nest becomes inactive.

Q.16 Will these measures mitigate the effects on the Golden Eagles to a less than significant level?

A.16 Yes

Q.17 Will you please describe the results of the Nelson's Bighorn Sheep observations?

A.17 A total of 62 Bighorn sheep were observed during the eagle nest survey. The nearest detection of bighorn sheep was about 2.4 miles north of the current project boundary. Sheep sign detected during other survey effort was located within the area that is now excluded from the project site.

Q.18 Will you describe the potential impacts from the project on Nelson's Big Horn Sheep?

A.18 Nearly 500 acres of potential Big Horn Sheep (BHS) habitat were included within the original project boundary. When the northern project boundary was moved approximately 4,000 feet to the south, all of this BHS habitat has been excluded from the site. Consequently, the project presents no impediments to BHS movement in the project vicinity, and impacts to potential BHS habitat are less than significant. With the reduced project footprint, the requirement (BIO-24) for installing a water feature (guzzler) is no longer needed. Additionally, the project poses no operational noise impacts to BHS.

Q.19 Are there any mitigation measures required for Nelson's Big Horn Sheep?

A.19 Construction work will be ceased if BHS are sighted within 500 feet of the activities. Perimeter fencing will preclude onsite interactions with BHS.

Q.20 Will these measures mitigate impacts to the BHS to a less than significant level?

A.20 Yes

Q.21 Will you please describe the results of the Mojave Fringe Toed Lizard surveys?

A.21 Presence-absence surveys were conducted in 2008. Limited suitable habitat south of the railroad was deemed occupied by MFTL. The CEC recently conducted a habitat assessment and added additional areas deemed suitable for MFTL, totaling 100 acres.

Q.22 What impacts do you expect on the Mojave Fringe Toed Lizard?

A.22 About 100 acres of potential MFTL habitat was assessed by the CEC. MFTL is a BLM species of concern that occupies select areas in the project vicinity. The BLM has designated several ACEC areas in the project vicinity that provides conserved habitat for this lizard. The MFTL habitat onsite occurs between the railroad and Interstate highway and is isolated by these linear features from other habitat areas occupied by this species. Mitigation for this loss of habitat will reduce the impacts on MFTL to less than significant.

Q.23 Will you please describe the proposed mitigation measures for Mojave Fringe Toed Lizard?

A.23 Staff has proposed a 3:1 ratio for 100 acres of potentially suitable habitat mapped onsite. I believe this will mitigation will reduce impacts to the Mojave Fringe Toed Lizard to less than significant. This mitigation will be provided through the payment of in lieu fees to BLM or wildlife agencies. The fee is set at an amount that allows for acquisition, enhancement and management of habitat that support the species being affected.

Q.24 Other parties have indicated the project has the potential for posing significant adverse impacts to other wildlife. Will you comment on the potential for these significant impacts?

A.24 Mitigation measures to avoid incidental mortality of badger and kit fox are proposed by the CEC. The single badger sighting location is now excluded from the project boundary. Kit fox is a common non-sensitive species in the region that will not be significantly affected by the project. Excluding these species from the site will be done concurrently with the tortoise and burrowing owl clearance surveys and burrow closure program, and the impacts on badger and kit fox will be less than significant.

Q.25 Do you have any comments on the conditions of certification outlined in the SA/DEIS?

A.25 Information satisfying Conditions of Certification – SA/DEIS page C.2-6

(a) BIO-12 – Yes. Onsite conservation of List 1B plant species is included in the current project design. List 2 species (except *Androstephium*) have been avoided and any new List 2 species detections would be mitigated offsite if deemed appropriate. No mitigation is required for *Androstephium* because the species is common in the project vicinity and is adequately conserved in the region.

(b) BIO-13 – Offsite mitigation requirements for MFTL should take into account the current level of protection BLM has already afforded this species through the establishment of several ACECs that benefit this species in the project vicinity. To the extent suitable, compensatory lands obtained to mitigate for impacts and habitat loss to the Desert Tortoise may be deemed to mitigate for impacts and habitat loss to the MFTL as well

(c) BIO-17 – This condition should reflect the reduced project footprint alternative and the associated reduced compensatory mitigation lands requirement as discussed in testimony by Felicia Bellows.

(d) BIO-18 – The Raven Monitoring, Management and Control Plan is under review by the resource agencies. The applicant has requested a $50,000 cap on the monetary contribution to the regional raven management program.

(e) BIO-19 – This condition addresses compliance with Migratory Bird Treat Act and related Fish & Game Code. Impact to nesting birds will be avoided through scheduling of habitat clearing/mowing during the non-breeding season to the extent practicable. Nest surveys will be conducted prior to any vegetation clearing conducted during the bird breeding season. The applicant has suggested an appropriate buffer distance (50 feet) that is consistent with similar conditions from other projects dealing with this issue.

(f) BIO-20 – Pre-construction nest surveys for Golden Eagles shall be conducted annually if construction activities will occur within 1.0 mile of potential nesting sites during the breeding period (from February 1 through August 15). The Designated

Biologist or Biological Monitor conducting the surveys shall be experienced bird surveyors familiar with the ecology and nesting habits of Golden Eagles. Surveys shall be conducted in accordance with the following guidelines unless approved by the BLM, CPM, CDFG, and USFWS. If active nests are detected during the survey, a 0.2-mile no-disturbance buffer zone shall be implemented within the project boundaries if the active nest site is within the line of sight of the project area.

(g) BIO-24 – The reduced project boundary avoids potential bighorn sheep habitat and the condition is no long necessary.

(h) BIO-27 – To the extent suitable, compensatory lands obtained to mitigate for impacts and habitat loss to the Desert Tortoise, rare plants, and MFTL should be deemed to mitigate for impacts and habitat loss to State jurisdictional waters as well.

I swear under penalty of perjury that this testimony is true and correct to the best of my knowledge.

June 30, 2010

_____ _____

Date Patrick Mock, PhD

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PREPARED DIRECT TESTIMONY

OF

Matt Moore

Water / Hydrology

Q.1 Will you please state your name and occupation?

A.1 My name is Matt Moore and I am a Water Resources Project Engineer for URS Corporation. My resume has also been included with this testimony.

Q.2 Are you sponsoring exhibits in this proceeding?

A.2 Yes, I am sponsoring multiple exhibits:

a) Exhibit 1 AFC, Section 5.5 Water Resources, Appendix W Soil Loss Calculations
b) Exhibit 3 Data Adequacy Supplement, 4/6/09, Responses 38, 48-50, 53-55
c) Exhibit 17 Responses to CEC/BLM data requests, 11/23/09, Response 128
d) Exhibit 28 Responses to CEC transmission questions, 1/8/10, Items 8, 10,12-14
e) Exhibit 47 Additional Information from April Workshop, 4/20/10, Soils information

Q.3 What is the purpose of your testimony in this proceeding?

A.3 I have a number of objectives in submitting this testimony. These are:

a. Provide the surface water hydrologic setting for the project.
b. Address soils and water quality impacts due to erosion and sedimentation.
c. Propose changes to the Conditions of Certification.

Q.4 Will you please explain the hydrologic setting of the project site?

A.4 The project site is in the southwest portion of the Mojave Desert, which is characterized by broad alluvial fans and fluvial terraces, playas, and scattered mountains. There are no perennial streams within the project site or in the area. The nearest major ephemeral stream is the Mojave River which is approximately 15-miles northwest of the site and is separated from the site by a watershed divide. The site is located within two different hydrologic regions, depending on whether surface water or groundwater is being considered. With respect to surface water, the site is located in the Troy Valley Hydrologic Subarea of the Newberry Springs Hydrologic Area of the Mojave Hydrologic Unit of the Lahontan Hydrologic Region. For groundwater, the site was previously within the Troy Valley Groundwater Basin, however, a reclassification places the site within the Lavic Valley Groundwater Basin, part of the Colorado River Hydrologic Region located to the south. The Troy Valley basin was incorporated into Lower Mojave River Valley Groundwater Basin to the west, now divided from the Lavic Valley basin by the Pisgah fault.

The overall landform is relatively flat with shallow slopes trending from the north to south and in some areas to the southwest. The ground generally slopes in a northeast to-southwest direction, ranging from two percent to five percent across the site, except for the western portion where the slope reduces to one percent. There are occasional small hills (buttes) and sand dune areas on the project site. Several drainage patterns occur on the site. These drainage patterns follow the gradient of higher elevations in the mountains north and east of the site towards lower elevations

southerly and westerly across the site. The land between I-40 and the BNSF railroad slope to the west, ultimately towards Troy Dry Lake, a playa that is located west of the site. There are no well-defined channels onsite, although some discontinuous flood terraces occur in a few areas on-site. The drainage features on-site are not well-defined channels resulting from active flow but consist of discontinuous floodplains with areas that exhibit a mixed pattern of sheet flow or shallow concentrated flow across isolated, wide areas of land. Relatively undefined drainage features traverse most of the site with evenly distributed desert scrub vegetation throughout.

The climate in the site vicinity is semi-arid, with long, hot, dry summers and mild, intermittently wet winters. Average annual rainfall in the area is approximately three to four inches. The average annual precipitation at the Daggett FAA Airport weather station, located approximately 17.4-miles northwest of the site, is 3.83-inches, based on the 62 years of data (source: www.worldclimate.com). According to the NOAA Atlas 14 internet-based Precipitation Frequency Data Server, the 100-year 24-hour storm event will generate approximately 3.5 inches of rain. Potential for flooding at the site is limited to infrequent high volume (flash flood) events that may occur due to heavy rainfall in the adjacent Cady Mountains. Flash flooding, if it occurs, will primarily affect the established, entrenched drainages that cross the site from approximately northeast to southwest, and it is considered unlikely that significant overbank flow would occur. When water does flow on-site, it is usually the result of precipitation occurring during five- to 10-year storm events. These flows are ephemeral and occur only during periods of brief intense rainfall.

Q.5 Will you please explain how storm water run-off from the local area will affect the project site?

A.5 In general, the drainage in the Project area flows southwest from the Cady Mountains. However, some flows are diverted by the railroad and flow straight west. The ephemeral washes onsite do not normally flow except in response to large storm events (typically five to 10-year rainfall/runoff events).

The watershed affecting the Phase 1 area is located in the Cady Mountains to the north of the project site. Flows that traverse the site emanate from the Cady Mountains watershed, drain through the trestles on the railroad and then continue west through the Phase 2 site. Upstream of the railroad trestles, the railroad embankment has diverted and channelized much of the flow creating numerous ponding areas. The trestles and ponding areas attenuate the peak flow and allow most of the sediment to drop out on the upstream (north or east) side of the railroad embankment. Additional drainage flows south from the Cady Mountains, west of the Phase 1 property limits, is diverted at the railroad tracks and then flows south in the Phase 2 area. In addition to the Cady Mountain watershed, a second watershed is located south of the freeway and includes the Pisgah Crater and lava flow area. Runoff from this watershed generally flows either north or west. It reaches I-40 and then continues north through numerous culverts and bridges into the Phase 2 project area. After flowing through the culverts at the highway, the runoff commingles with the flow from the Cady Mountains and then flows west to the outfall. As with the Cady Mountain watershed, the Pisgah watershed runoff is diverted by the I-40 road embankment and associated dikes and berms and is routed through culverts. Ponding occurs at these culvert locations and this reduces the peak flow and sediment loads which pass through the culverts.

The runoff from Phase I flows through the existing trestles at the railroad. Some of the trestles may have insufficient capacity to pass 100-year flows; however, these flows are diverted west along the railroad on the southern boundary of the Project Site and eventually cross through trestles along the southern boundary of the Phase I site.

It is assumed that the 100-year flood will generally be conveyed along the railroad and through the trestles along the railroad right-of-way. This right-of-way is excavated and maintained by the BNSF Railroad to allow the water to pond and flow at low velocities. The right-of-way is delineated along the north line with a barbed wire fence.

Q.6 What are the potential impacts from the proposed project related to erosion and sedimentation.

A.6. Construction of the proposed project would include soil excavation, grading, installation of utility connections, installation of SunCatcher foundations, road building, paving, erection of structures and the use of groundwater. Potential storm water impacts could result in an increase in flooding and sedimentation downstream if there is an increase in runoff flow rates and volume discharges from the site. In addition to sediment, water quality could also be impacted by discharge of hazardous materials released during construction.

Q.7 How will the proposed site affect erosion and sedimentation patterns on and downstream from the site?

A.7 The project stormwater design is intended to protect the project site from flooding, sediment deposition, and scour, while maintaining existing flows and sedimentation patterns to the extent practicable downstream (see testimony of Bob Byall).. Implementation of Conditions of Certification Soil & Water -1 and Soil & Water (Drainage, Erosion, and Sedimentation Control Plan), and Soil & Water -3 (Storm Water Damage Monitoring and Response Plan), along with a Construction Stormwater Pollution Prevention Plan (in accordance with State regulations) will minimize potential soil erosion and sedimentation on and downstream of the site. Minimal erosion would be expected post-construction because the only soil disturbance during operation would be from periodic inspection and maintenance activities when needed.

Q.8 Has the applicant performed any detailed analyses of erosion and sedimentation affects of the project?

A.8 As part of the AFC submittal, the Applicant completed a hydrologic study and hydraulic modeling of the major stream channels on the project. Additionally the Applicant prepared estimated pre- and post construction soil and wind erosion calculations based upon the soils data for the site. Based on this work and subsequent analysis by staff, the project can be designed to withstand flash flood flows with minimal damage to SunCatchers. Condition of Certification **SOIL&WATER-3** ensures such a design.

Q.9 What mitigation is the applicant proposing to reduce potential impacts?

A.9 A Drainage, Erosion, and Sedimentation Control Plan mitigates the potential project-related storm water and sediment impacts. Conditions of Certification **SOIL&WATER-1** and **SOIL&WATER-3** have been developed that define specific methods of design analysis, development of best management practices, and monitoring and reporting procedures to mitigate impacts related to flooding, erosion, sedimentation, and stream morphological changes. Compliance with LORS, particularly the Clean Water

Act requirements, will insure no adverse impacts to waters of the U.S. With implementation of these Conditions, the potential effects of the proposed project would be less than significant.

Q.10 Do you have any changes to the conditions of certification proposed by the CEC staff?

A.10 Yes. With respect to condition Soil&Water 1, the Applicant requests revising submission of the final DESCP from 90 days to 60 days prior to start of construction.

Regarding condition Soil&Water 3, The Applicant requests that the bullet points detailing the specific elements of the Storm Water Damage Monitoring and Response Plan, monitoring and inspection, and short- and long-term incident-based response be removed from the Condition and included in the Verification. The Applicant also requests staff revise the following text: "Monitor and Inspect Periodically, Before First Seasonal and After Every 10-Year Storm Event:"

On condition Soil&Water 4: The Applicant requests staff makes the following revision to the Condition: "The proposed project's use of groundwater for all construction activities shall not exceed 150 AFY."

Condition Soil&Water 5 can be eliminated since the Applicant is no longer seeking to use BNSF water for the project.

On condition Soil&Water 7, the Applicant requests that the verification requires submission of the decommissioning plan 30, rather than 90, days prior to the start of construction.

Finally, the Applicant requests that the Condition of Certification SOIL&WATER-8 be amended or revised to reflect the currently proposed groundwater supply well. The condition requires a Groundwater Level Monitoring and Reporting Plan in accordance with the County of San Bernardino Code Title 2, Division 3, Chapter 6, Article 5 (Desert Groundwater Management Ordinance).).

Q.11 With these conditions, do you expect the project to result in a significant adverse impact on soil and water resources?

A.11 With implementation of the soil and water conditions of certification provided by the CEC, it is my professional opinion that the project will not result in significant adverse impact on soil and water resources.

Q.12 Does that complete your direct testimony?

A.12 Yes

I swear under penalty of perjury that this testimony is true and correct to the best of my knowledge.

June 30, 2010

_____ _____

Date Matthew C. Moore, PE

Exhibit 75

PREPARED DIRECT TESTIMONY

OF

Rachael Nixon

Cultural

Q.1 Will you please state your name and occupation?

A.1 My name is Rachael Nixon and I am a Senior Archaeological Project Manager for URS Corporation. My resume has also been included with this testimony.

Q.2 Are you sponsoring exhibits in this proceeding?

A.2 Yes, I am sponsoring multiple exhibits:

a. Exhibit 1 AFC section 5.7 Cultural Resources and Appendix Z, Cultural Resources Technical Report

b. Exhibit 3 Data adequacy supplement, 4/5/09, Responses 12-23

c. Exhibit 9 Response to public comments, 7/30/09, Response 15

d. Exhibit 16 Responses to CEC/BLM data requests, 11/19/09, Responses 92-108

e. Exhibit 22 Donated parcel study, 9/17/09, Cultural Resources Section

f. Exhibit 28 Response to CEC transmission questions, 1/8/10, Items 5-6

g. Exhibit 29 Additional alternative analysis, 1/8/10, Cultural Resources

h. Exhibit 32 Supplemental Information, 2/3/10, Section 2.7 – Cultural Resources

i. Exhibit 37 CEC/BLM Responses, 2/24/10, Responses 102 and 103

Q.3 What is the purpose of your testimony in this proceeding?

A.3 There are a number of objectives in submitting this testimony. I will discuss:

a. The survey methods, agency approvals, agency coordination and summarize non-confidential results

b. My conclusions regarding impacts.

c. The proposed avoidance areas and other proposed mitigation

d. The role of BLM in cultural resource management, inadvertent discoveries plan, and Native American consultation.

Q.4 . Will you summarize your conclusions?

A.4 Based on my analysis and with the avoidance areas proposed and BLM inadvertent discoveries plan and treatment measures agreed to by the applicant, I do not believe the project will result in any significant adverse impacts on cultural resources. I also believe the BLM is the primary agency responsible for managing cultural resources on BLM owned lands and has the full responsibility to identify, require, and implement project inadvertent discoveries plan and treatment requirements.

Q.5 Please describe the methodology when performing the cultural surveys?

A.5 The initial survey of the proposed project site was conducted between August and October 2008. In that period all accessible areas within the Project Area of Potential Effect were intensively surveyed in no greater than 15 meter wide spaced transect intervals. Cultural resources identified were recorded on Department of Parks and Recreation (DPR) forms, photographed, and mapped into a mobile sub-meter accuracy geographic information system (GIS). In response to BLM and CEC data requests, additional field work was conducted between October 2009 and March 2010. In October 2009, 25 percent of the total number of sites within the Project APE were revisited and re-recorded (refer Exhibit 16 for results). Concurrent with that effort, geoarchaeological studies were completed of areas within the Project APE (refer to Exhibit 16 for results). Between January and March 2010, the remaining 75 percent of the sites within the Project APE were revisited and re-recorded (results are presented in the Draft Final Class III Cultural Resources Technical Report submitted to BLM June 14, 2010 – copies of this report must be requested from BLM).

Q.6 Please explain recent developments and conclusions regarding impact?

A.6 Based on the results of the findings of this study, I recommend that out of the 335 total cultural resources within the Project APE, a total of three archaeological resources are recommended eligible for NRHP and CRHR. The applicant is proposing to completely avoid areas that contribute to the eligibility of these sites. As a result, I do not believe there will be any adverse effects or impacts to these three sites as a result of this Project. Additionally, there are four historic built resources recommended eligible, however I found that the Project will have no significant adverse effect/impact these sites. The applicant is proposing to also avoid these sites; therefore there are no anticipated significant impacts to historic properties as a result of this Project.

Q.7 Will you please describe the proposed mitigation for this project and how it will affect the significance of the potential impacts?

A.7 It is possible that the project may result in a loss to currently unknown historic properties, which might inadvertently be discovered during construction that could result in significant impacts. However, an inadvertent discoveries plan shall provide measures that shall reduce impacts below the level of significance through recordation, data recovery, partial preservation, and public interpretation in accordance with federal and state guidelines. The inadvertent discoveries plan shall be prepared by BLM consultants and approved by BLM prior to permitting. With proper implementation of an approved inadvertent discoveries plan, I believe that adverse impacts would be adequately mitigated or avoided.

The applicant recommends the following cultural resource conditions of certification:

CUL-1 Prior to the start of ground disturbance (includes “preconstruction site mobilization;” “construction ground disturbance;” and “construction grading, boring, and trenching,” as defined in the General Conditions for this project), the project owner shall obtain the services of a Cultural Resources Specialist (CRS), and one or more alternate CRSs, if alternates are needed. The CRS shall manage all consultation, monitoring, treatment plans, curation, and reporting activities required in accordance with the Conditions of Certification (Conditions). The CRS may elect to obtain the services of Cultural Resource Monitors (CRMs) and other technical specialists, if needed, to assist in monitoring, treatment plans, and curation activities. The project owner shall ensure that the CRS makes recommendations regarding the

eligibility to the National Register of Historic Places (NRHP) and the California Register of Historical Resources (CRHR) of any cultural resources that are newly discovered or that may be affected in an unanticipated manner. No ground disturbance shall occur prior to CPM approval of the CRS, unless specifically approved by the BLM's Authorized Officer and the CPM. Approval of a CRS may be denied or revoked for non-compliance on this or other projects.

CULTURAL RESOURCES SPECIALIST

The resumes for the CRS and alternate(s) shall include information demonstrating to the satisfaction of the BLM's Authorized Officer and the CPM that their training and background conform to the U.S. Secretary of Interior Guidelines, as published in the Code of Federal Regulations, 36 CFR Part 61. In addition, the CRS shall have the following qualifications:

1. The CRS's qualifications shall be appropriate to the needs of the project and shall include a background in anthropology, archaeology, history, architectural history, or a related field; and

2. At least three years of archaeological or historic, as appropriate, resource mitigation and field experience in California.

The resume of the CRS shall include the names and telephone numbers of contacts familiar with the work of the CRS on referenced projects, and demonstrate that the CRS has the appropriate education and experience to accomplish the cultural resource tasks that must be addressed during ground disturbance, grading, construction, and operation.

CULTURAL RESOURCES MONITORS

CRMs shall have the following qualifications:

1. a BS or BA degree in anthropology, archaeology, historical archaeology or a related field and one year experience monitoring in California; or
2. an AS or AA degree in anthropology, archaeology, historical archaeology or a related field, and four years experience monitoring in California; or

3. enrollment in upper division classes pursuing a degree in the fields of anthropology, archaeology, historical archaeology or a related field, and two years of monitoring experience in California.

CULTURAL RESOURCES TECHNICAL SPECIALISTS

The resume(s) of any additional technical specialists, e.g., historical archaeologist, historian, architectural historian, and/or physical anthropologist, shall be submitted to the BLM's Authorized Officer and the CPM for approval.

Verification:

1. At least 30 days prior to the start of ground disturbance, the project owner shall submit the resume for the CRS, and alternate(s), if desired, to the BLM's Authorized Officer and the CPM for review and approval.

2. At least 10 days prior to a termination or release of the CRS, or within 10 days after the resignation of a CRS, the project owner shall submit the resume of the proposed new CRS to the BLM's Authorized Officer and the CPM for review and approval. At the same time, the project owner shall also provide to the approved new CRS the AFC and all cultural documents,

field notes, photographs, and other cultural materials generated by the project. If there is no alternate CRS in place to conduct the duties of the CRS, a previously approved monitor may serve in place of a CRS so that construction may continue up to a maximum of 3 days without a CRS. If cultural resources are discovered, then construction will remain halted until there is a CRS or alternate CRS to make a recommendation regarding significance.

3. At least 20 days prior to ground disturbance, the CRS shall provide a letter naming anticipated CRMs for the project and stating that the identified CRMs meet the minimum qualifications for cultural resource monitoring required by this Condition. If additional CRMs are obtained during the project, the CRS shall provide additional letters to the BLM's Authorized Officer and the CPM identifying the CRMs and attesting to the qualifications of the CRMs, at least five days prior to the CRMs beginning on-site duties.

4. At least 10 days prior to beginning tasks, the resume(s) of any additional technical specialists shall be provided to the BLM's Authorized Officer and the CPM for review and approval.

5. At least 10 days prior to the start of ground disturbance, the project owner shall confirm in writing to the BLM's Authorized Officer and the CPM that the approved CRS will be available for onsite work and is prepared to implement the cultural resources Conditions.

CUL-2 Prior to the start of ground disturbance, if the CRS has not previously worked on the project, the project owner shall provide the CRS with copies of the AFC, data responses, and confidential cultural resources reports for the project. The project owner shall also provide the CRS, the BLM's Authorized Officer, and the CPM with maps and drawings showing the footprint of the power plant and all linear facilities. Maps shall include the appropriate USGS quadrangles and a map at an appropriate scale (e.g., 1:2000 or 1" = 200') for plotting cultural features or materials. If the CRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the CRS and CPM. The BLM's Authorized Officer and the CPM shall review submittals and, in consultation with the CRS, approve those that are appropriate for use in cultural resources planning activities. No ground disturbance shall occur prior to CPM approval of maps and drawings, unless specifically approved by the BLM's Authorized Officer and the CPM.

If construction of the project would proceed in phases, maps and drawings, not previously provided, shall be submitted prior to the start of each phase. Written notification identifying the proposed schedule of each project phase shall be provided to the CRS and CPM.

At a minimum, the CRS shall consult weekly with the project construction manager to confirm area(s) to be worked during the next week, until ground disturbance is completed, and the project owner shall ensure that the project construction manager is available for such weekly consultations.

The project owner shall notify the CRS and CPM of any changes to the scheduling of the construction phases. No ground disturbance shall occur prior to CPM approval of maps and drawings, unless specifically approved by the BLM's Authorized Officer and the CPM.

Verification:

1. At least 30 days prior to the start of ground disturbance, the project owner shall provide the AFC, data responses, and confidential cultural resource documents to the CRS, if needed, and

the subject maps and drawings to the CRS and CPM. The BLM's Authorized Officer and the CPM will review submittals in consultation with the CRS and approve maps and drawings suitable for cultural resources planning activities.

2. If there are changes to any project related-footprint, revised maps and drawings shall be provided at least 15 days prior to start of ground disturbance and construction for those changes.

3. If project construction is phased, if not previously provided, the project owner shall submit the subject maps and drawings 15 days prior to each phase.

4. On a weekly basis during ground disturbance, a current schedule of anticipated project activity shall be provided to the CRS and CPM by letter, email, or fax.

5. Within five days of identifying changes, the project owner shall provide written notice of any changes to scheduling of construction phase.

CUL-3 Prior to the start of ground disturbance, the project owner shall submit the Cultural Resources Monitoring and Mitigation Plan (CRMMP), as prepared by or under the direction of the CRS, to the BLM's Authorized Officer and the CPM for review and approval. The CPM shall provide the project owner with a model CRMMP to adapt for project use. The CRMMP shall identify general and specific measures to minimize potential impacts to sensitive cultural resources. Implementation of the CRMMP shall be the responsibility of the CRS and the project owner. Copies of the CRMMP shall reside with the CRS, alternate CRS, each monitor, and the project owner's on-site construction manager. No ground disturbance shall occur prior to CPM approval of the CRMMP, unless specifically approved by the BLM's Authorized Officer and the CPM.

The CRMMP shall include, but not be limited to, the following elements and measures:

1. The following statement included in the Introduction: "Any discussion, summary, or paraphrasing of the Conditions in this CRMMP is intended as general guidance and as an aid to the user in understanding the Conditions and their implementation. The Conditions, as written in the Commission Decision, shall supersede any summarization, description, or interpretation of the Conditions in the CRMMP. The Cultural Resources Conditions of Certification from the Commission Decision are contained in Appendix A."

2. A proposed general research design that includes a discussion of archaeological research questions and testable hypotheses specifically applicable to the local prehistory and history of the project area, and a discussion of artifact collection, retention/disposal, and curation policies as related to the research questions formulated in the research design, if deemed necessary. The research design shall specify that the preferred treatment strategy for any buried archaeological deposits is avoidance. An inadvertent discoveries plan and treatment plan shall be prepared for any NRHP-eligible resource (as determined by the BLM's Authorized Officer) or any CRHR-eligible resource (as determined by the CPM), impacts to which cannot be avoided. A prescriptive treatment plan may be included in the CRMMP for limited data types.

3. Specification of the implementation sequence and the estimated time frames needed to accomplish all project-related tasks during the ground disturbance and post-ground–disturbance analysis phases of the project.

4. Identification of the person(s) expected to perform each of the tasks, their responsibilities, and the reporting relationships between project construction management and the mitigation and monitoring team.

5. A description of the manner in which Native American observers or monitors will be included, the procedures to be used to select them, and their role and responsibilities.

6. A description of all impact avoidance measures (such as flagging or fencing), to prohibit or otherwise restrict access to sensitive resource areas that may be found during construction and/or operation and may subsequently need to be avoided, and identification of the areas where these measures are to be implemented. The description shall address how these measures would be implemented and how long they would be needed to protect the resources from project-related effects.

7. A statement that all cultural resources encountered shall be recorded on a DPR form 523 and mapped and photographed. In addition, all archaeological materials collected as a result of the archaeological investigations (survey, testing, and data recovery) shall be curated in accordance with the State Historical Resources Commission's "Guidelines for the Curation of Archaeological Collections," into a retrievable storage collection in a public repository or museum.

8. A statement that the project owner will pay all curation fees for artifacts recovered and for related documentation produced during cultural resources investigations conducted for the project. The project owner shall identify three possible curation facilities that could accept cultural resources materials resulting from project activities.

9. A statement that the CRS has access to equipment and supplies necessary for site mapping, photographing, and recovering any cultural resource materials that are encountered during ground disturbance and that cannot be treated prescriptively.

10. A description of the contents and format of the Cultural Resource Report (CRR), which shall be prepared according to ARMR Guidelines.

Verification:

1. Upon approval of the CRS proposed by the project owner, the CPM will provide to the CRS an electronic copy of the model CRMMP.

2. At least 30 days prior to the start of ground disturbance, the project owner shall submit the subject CRMMP to the BLM's Authorized Officer and the CPM for review and approval. Ground disturbance may not commence until the CRMMP is approved, unless specifically approved by the BLM's Authorized Officer and the CPM.

3. At least 30 days prior to the start of ground disturbance, a letter shall be provided to the BLM's Authorized Officer and the CPM indicating that the project owner agrees to pay

curation fees for any materials collected as a result of the archaeological investigations (survey, testing, data recovery).

CUL-4 The project owner shall submit the Cultural Resources Report (CRR) to the BLM's Authorized Officer and the CPM for approval. The CRR shall be written by or under the direction of the CRS and shall be provided in the ARMR format. The CRR shall report on all field activities related to the implementation of the CRMMP including dates, times and locations, findings, samplings, and analyses. All survey reports, Department of Parks and Recreation (DPR) 523 forms, and additional research reports not previously submitted to the California Historic Resource Information System (CHRIS) and the State Historic Preservation Officer (SHPO) shall be included as an appendix to the CRR.

If the project owner requests a suspension of ground disturbance and/or construction activities, then a draft CRR that covers all cultural resources activities associated with the project shall be prepared by the CRS and submitted to the BLM's Authorized Officer and the CPM for review and approval on the same day as the suspension/extension request. The draft CRR shall be retained at the project site in a secure facility until ground disturbance and/or construction resumes or the project is withdrawn. If the project is withdrawn, then a final CRR shall be submitted to the BLM's Authorized Officer and the CPM for review and approval at the same time as the withdrawal request.

Verification:

1. Within 90 days after completion of ground disturbance (including landscaping, if deemed appropriate), the project owner shall submit the CRR to the BLM's Authorized Officer and the CPM for review and approval. If any reports have previously been sent to the CHRIS, then receipt letters from the CHRIS or other verification of receipt shall be included in an appendix.

2. Within 90 days after completion of ground disturbance (including landscaping), the project owner shall provide to the BLM's Authorized Officer and the CPM a copy of an agreement with, or other written commitment from, a curation facility that meets the standards stated in the California State Historical Resources Commission's *Guidelines for the Curation of Archaeological Collections*, to accept cultural materials, if any, from this project. Any agreements concerning curation will be retained and available for audit for the life of the project.

3. Within 10 days after CPM approval of the CRR, the project owner shall provide documentation to the BLM's Authorized Officer and the CPM that copies of the CRR have been provided to the SHPO, the CHRIS, the curating institution, if archaeological materials were collected, and to the Chairperson(s) of any Native American groups requesting copies of project-related reports.

4. Within 30 days after requesting a suspension of construction activities, the project owner shall submit a draft CRR to the BLM's Authorized Officer and the CPM for review and approval.

CUL-5 Prior to and for the duration of ground disturbance, the project owner shall provide Worker Environmental Awareness Program (WEAP) training to all new workers within their first week of employment at the project site and on the linear facilities. The training shall be

prepared by the CRS, may be conducted by any member of the archaeological team, and may be presented in the form of a video. The CRS shall be available (by telephone or in person) to answer questions posed by employees. The training may be discontinued when ground disturbance, including landscaping, is completed. The training shall include:

1. A discussion of applicable laws and penalties under the law;

2. Samples or visuals of artifacts that might be found in the project vicinity;

3. A discussion of what such artifacts may look like when partially buried, or wholly buried and then freshly exposed;

4. A discussion of what prehistoric and historical archaeological deposits look like at the surface and when exposed during construction, and the range of variation in the appearance of such deposits;

5. Instruction that the CRS, alternate CRS, and CRMs have the authority to halt construction in the area of a discovery to an extent sufficient to ensure that the resource is protected from further impacts, as determined by the CRS;

6. Instruction that employees are to halt work on their own in the vicinity of a potential cultural resources discovery and shall contact their supervisor and the CRS or CRM, and that redirection of work would be determined by the construction supervisor and the CRS;

7. An informational brochure that identifies reporting procedures in the event of a discovery;

8. An acknowledgement form signed by each worker indicating that they have received the training; and

9. A sticker that shall be placed on hard hats indicating that environmental training has been completed.

No ground disturbance shall occur prior to implementation of the WEAP program, unless such activities are specifically approved by the BLM's Authorized Officer and the CPM.

Verification:

1. At least 30 days prior to the beginning of ground disturbance, the CRS shall provide the training program draft text and graphics and the informational brochure to the BLM's Authorized Officer and the CPM for review and approval, and the CPM will provide to the project owner a WEAP Training Acknowledgement form for each WEAP-trained worker to sign.

2. On a monthly basis, the project owner shall provide in the Monthly Compliance Report (MCR) the WEAP Training Acknowledgement forms of persons who have completed the training in the prior month and a running total of all persons who have completed training to date.

CUL-6 The project owner shall ensure that construction is immediately halted should anyone discover buried archaeological materials on the project site or linear facilities (Discovery).

Archaeological materials may include, but are not limited to, such items as whole or fragmentary flaked or ground stone tools, stone flaking debris, discolored, fire-altered rock, animal bone, charcoal, ash, discolored, burned earth, rocks and minerals not common to the project site, and fragments of ceramic, glass, or metal. In the event of such a Discovery, the project owner shall ensure the immediate notification of the CRS, who shall either evaluate the NRHP and CRHR eligibility of the Discovery, in person, on the project site, or supervise the evaluations that a CRM or an appropriate cultural resources technical specialist would make of the historical significance of the Discovery, also in person, on the project. The recommendations of significance shall be substantiated by and reported to the BLM's Authorized Officer and the CPM by the CRS. Redirection of ground disturbance shall be accomplished under the direction of the construction supervisor, in a manner agreed to by the CRS.

In the event cultural resources that are over 50 years of age or that may be considered NRHP- or CRHR-eligible are found, or impacts to such resources can be anticipated, construction shall be halted or redirected in the immediate vicinity of the Discovery sufficient to ensure that the resource is protected from further impacts. The halting or redirection of construction shall remain in effect until either the CRS, a CRM, or appropriate cultural resources technical specialist has made evaluations of the historical significance of the Discovery, and all of the following have also occurred:

1. The CRS has notified the project owner, and the BLM's Authorized Officer and the CPM have been notified within 24 hours of the Discovery, or by Monday morning if the cultural resources Discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning, including a description of the Discovery (or changes in character or attributes), the action taken (i.e. work stoppage or redirection), recommendations of eligibility, and recommendations for mitigation of any cultural resources Discoveries, whether or not a determination of significance has been made.

2. The CRS has ensured completion of field notes, measurements, and photography for a DPR 523 primary form. The "Description" entry of the 523 form shall include a recommendation on the significance of the find. The project owner shall submit completed forms to the BLM's Authorized Officer and the CPM.

3. The CRS, the project owner, and the BLM's Authorized Officer and the CPM have conferred, and the BLM's Authorized Officer and the CPM have concurred with the recommended eligibility of the Discovery and approved the CRS's proposed data recovery, if any, including the curation of the artifacts, or other appropriate mitigation; and any necessary data recovery and mitigation have been completed.

4. The CRS, the BLM's Authorized Officer, and the CPM have conferred, and the BLM's Authorized Officer and the CPM have determined whether the Discovery reveals new information about the subsurface archaeological character of the project site that warrants the initiation of monitoring for portions of the project site.

5. When the BLM's Authorized Officer and the CPM make a determination that a Discovery does reveal new information about the subsurface archaeological character of the project site that warrants the initiation of monitoring for portions of the project site, the BLM's Authorized Officer and the CPM shall provide notification, by letter or e-mail, to the project owner and the

CRS, where on the project site monitoring shall be necessary and why, and notification that **CUL-7** shall be implemented for the subject portions of the project site.

Verification:

1. At least 30 days prior to the start of ground disturbance, the project owner shall provide the BLM's Authorized Officer, the CPM, and the CRS with a letter confirming that the CRS, alternate CRS, and CRMs have the authority to halt construction activities in the vicinity of a cultural resources Discovery, and that the project owner shall ensure that the CRS notifies the BLM's Authorized Officer and the CPM within 24 hours of a Discovery, or by Monday morning if the cultural resources Discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning.

2. Completed DPR form 523s shall be submitted to the BLM's Authorized Officer and the CPM for review and approval no later than 24 hours following the notification of the BLM's Authorized Officer and the CPM, or 48 hours following the completion of data recordation/recovery, whichever is more appropriate for the subject cultural material.

CUL-7 If there is a discovery of archaeological material, and after the BLM's Authorized Officer and the CPM notify the project owner and the CRS that the initiation of monitoring is necessary for portions of the project site or linear facilities, the project owner shall ensure that the CRS, alternate CRS, or CRMs shall monitor full time on the portions of the project site and linear facilities which the BLM's Authorized Officer and the CPM may specify, and ground disturbance full time on the portions of the laydown areas or other ancillary areas which the BLM's Authorized Officer and the CPM may also specify, to ensure there are no impacts to further undiscovered resources and to ensure that newly found resources are not further impacted in an unanticipated manner.

Full-time archaeological monitoring for this project shall be the archaeological monitoring of all earth-moving activities on the portions of the construction site or the linear facility routes which the BLM's Authorized Officer and the CPM may specify for as long as the activities are ongoing. Full-time archaeological monitoring shall require one monitor per active earthmoving machine working in archaeologically sensitive areas, as determined by the CRS in consultation with the BLM's Authorized Officer and the CPM. If an excavation area is too large for one monitor to effectively observe the soil removal, one or more additional monitors shall be retained to observe the area.

In the event that the CRS determines that the current level of monitoring is not appropriate in certain locations, a letter or e-mail detailing the justification for changing the level of monitoring shall be provided to the BLM's Authorized Officer and the CPM for review and approval prior to any change in the level of monitoring.

The research design in the CRMMP shall govern the collection, treatment, retention/disposal, and curation of any archaeological materials encountered, if required.

On forms provided by the CPM, CRMs shall keep a daily log of any monitoring and other cultural resource activities and any instances of non-compliance with the Conditions and/or applicable LORS. Copies of the daily logs shall be provided to the BLM's Authorized Officer and the CPM by the CRS as directed by the BLM's Authorized Officer and the CPM. The CRS shall use these logs to compile a monthly summary report on the progress or status of cultural

resources-related activities. If there are no monitoring activities, the summary report shall specify why monitoring has been suspended. The CRS or alternate CRS shall report daily to the BLM's Authorized Officer and the CPM on the status of cultural resources-related activities at the project site, unless reducing or ending daily reporting is requested by the CRS and approved by the BLM's Authorized Officer and the CPM.

The CRS, at his or her discretion, or at the request of the BLM's Authorized Officer or the CPM, may informally discuss cultural resource monitoring and mitigation activities with Energy Commission technical staff.

Cultural resources monitoring activities are the responsibility of the CRS. Any interference with monitoring activities, removal of a monitor from duties assigned by the CRS, or direction to a monitor to relocate monitoring activities by anyone other than the CRS shall be considered non-compliance with these Conditions.

Upon becoming aware of any incidents of non-compliance with the Conditions and/or applicable LORS, the CRS and/or the project owner shall notify the BLM's Authorized Officer and the CPM by telephone or e-mail within 24 hours. The CRS shall also recommend corrective action to resolve the problem or achieve compliance with the Conditions. When the issue is resolved, the CRS shall write a report describing the issue, the resolution of the issue, and the effectiveness of the resolution measures. This report shall be provided in the next MCR for the review of the BLM's Authorized Officer and the CPM.

A Native American monitor shall be obtained to monitor ground disturbance in areas where Native American artifacts may be discovered, as deemed necessary. Informational lists of concerned Native Americans and Guidelines for monitoring shall be obtained from the Native American Heritage Commission. Preference in selecting a monitor shall be given to Native Americans with traditional ties to the area that shall be monitored.

Verification:

1. At least 30 days prior to the start of ground disturbance, the CPM will provide to the CRS an electronic copy of the form to be used as a daily monitoring log.

2. Daily, the CRS shall provide a statement that "no cultural resources over 50 years of age were discovered" to the BLM's Authorized Officer and the CPM as an e-mail or in some other form acceptable to the BLM's Authorized Officer and the CPM. If the CRS concludes that daily reporting is no longer necessary, a letter or e-mail providing a detailed justification for the decision to reduce or end daily reporting shall be provided to the BLM's Authorized Officer and the CPM for review and approval at least 24 hours prior to reducing or ending daily reporting.

3. On a monthly basis, while monitoring is on-going, the project owner shall include in each MCR a copy of the monthly summary report of cultural resources-related monitoring prepared by the CRS. Copies of daily logs shall be retained by the project owner and made available for audit by the BLM's Authorized Officer and the CPM.

4. At least 24 hours prior to implementing a proposed change in monitoring level, documentation justifying the change shall be submitted to the BLM's Authorized Officer and the CPM for review and approval.

Q.8 Will you please discuss BLM's role in cultural resources?

A.8 This Project is a federal undertaking that requires permits from the Bureau of Land Management (BLM), which is lead agency for the Project's compliance with the National Environmental Policy Act (NEPA) and Section 106 of the National Historic Preservation Act (NHPA). The Project's effects on cultural resources eligible for or listed in the National Register of Historic Places (NRHP) must be taken into account per Section 106 of the NHPA, codified under 36 Code of Federal Regulations (CFR) §800. URS on behalf of the Applicant conducted a BLM Class III , intensive field survey and provided these results to the BLM in *Archaeological Resource Management Format* report in compliance with NEPA, Section 106 of NHPA, as well as the California Environmental Quality Act. BLM has reviewed the June 14, 2010 report and accepted it as complete and final.

BLM is the lead federal agency and consultation between interested Native American groups and BLM is ongoing. Letters offering formal consultation were issued by the BLM Barstow Field Office on November 5, 2008. As of the date, interested Native American groups are continue to consult with the BLM regarding the proposed project and surrounding area.

Q.9 Does this complete your direct testimony?

A.9 Yes

I swear under penalty of perjury that this testimony is true and correct to the best of my knowledge.

6/30/2010 _____

Date

_____

Rachael Nixon

Exhibit 76

PREPARED DIRECT TESTIMONY

OF

Rick Reiff

Reliability

Q.1 Will you please state your name and occupation?

A.1 My name is Rick Reiff and I am a Senior Project Manager for R. W. Beck. My resume has also been included with this testimony.

Q.2 Are you sponsoring exhibits in this proceeding?

A.2 No.

Q.3 What is the purpose of your testimony?

A.3 The purpose of my testimony is to describe the reliability and performance of the Maricopa Solar project and discuss the applicability of that to the proposed Calico Solar Project.

Q.4 Why have you been monitoring the performance of Maricopa Solar?

A.4 The Maricopa Plant is a 1.5 MW power generation facility that was built to 1) demonstrate the ability to scale up the SunCatcher technology for use in a utility-scale application, 2) help SES gain more knowledge and have a better understanding of the field assembly process in preparation of constructing large commercial-size facilities, and 3) to provide additional operation and maintenance information. We have been monitoring Maricopa Solar so that we can identify the risk factors associated with constructing and operating a utility-scale SunCatcher-based power generation facility and identify how to mitigate any risks identified.

Based on our review, the X0, X1, and Gen 1 SunCatcher designs, as proposed by SES, are based on sound engineering and product development practices. As with any innovative technology, only long-term operation will ultimately prove the reliability of the proposed design. SES, however, has demonstrated the capability for identifying and resolving technical and design issues as they occur.

The PCU is capable of producing increasing amounts of electricity with increases in DNI levels. Under the Design Conditions and with an optical efficiency of at least 97 percent, and a PCU efficiency of 27.3 percent, SES's PCU should be capable of achieving a net power output of 25.0 kW.

Q.5 Will you summarize the results of your work to date?

A.5 We have been reviewing the SunCatcher technology and operating data for over a year. We have visited the major supply chain vendors, visited the Sandia test facility where SES conducts research and development activities, and on multiple occasions visited the Maricopa Plant site. We have reviewed operating and design data and the results of our review are presented in a report we issued regarding the SunCatcher technology and an Independent Engineer's Report issued in association with another project that is to be built in California.

From March 16, 2010 through June 5, 2010, the Maricopa Plant has generated 788,230 kWh, representing a capacity factor of 26.7 percent at an availability of 95.1 percent. Overall for being a new technology in its first commercial application, the Maricopa

Plant has been operating reasonably well, as indicated by the achieved availability of 95.1 percent.

Q.6 Do you believe the information on Maricopa Solar is applicable to the Calico Solar Project?

A.6 Yes, the SunCatcher technology is a modular technology based upon the 25 kW SunCatcher dish Stirling design. Maricopa Solar uses 60 SunCatcher units, (1.5 MW total) and Calico is to incorporate similar units as the basis for the overall design. As such, Calico is a replication of the Maricopa units and the information gained from construction and operation the Maricopa plant are applicable to the construction and operation of Calico. Therefore, we consider the information gained from the construction and operation of Maricopa Solar to be applicable to the Calico Solar Project.

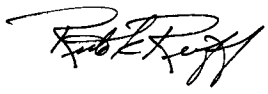
Q.7 Do you consider the SunCatcher technology appropriate for large-scale commercial application?

A.7 Based on our review, the SunCatcher design, as proposed by SES, is based on sound engineering and product development practices. While only long-term operation will prove the reliability of the proposed design, SES has demonstrated the capability for resolving technical and design issues as they occur. As demonstrated by the operation of Maricopa Solar, the SunCatcher design can be replicated and used in a large-scale commercial application. As such, the SunCatcher design is appropriate for large-scale utility application.

Q.8 Does this complete your direct testimony?

A.8 Yes

I swear under penalty of perjury that this testimony is true and correct to the best of my knowledge.



June 30, 2010

Date

Rick Reiff

Exhibit 77

PREPARED DIRECT TESTIMONY

OF

Robert K. Scott

Water Supply

Q.1 Will you please state your name and occupation?

A.1 My name is Robert K. Scott I am Vice President and Principal Geologist with URS Corporation and a registered Professional Geologist and Certified Hydrogeologist in California. My resume has also been included with this testimony.

Q.2 Are you sponsoring exhibits in this proceeding?

A.2 Yes, I am sponsoring multiple exhibits:

a) Exhibit 5 Responses to CEC/BLM data requests, 7/17/09, 69-70, 80, 84
b) Exhibit 9 Response to public comments, 7/30/09, response 4 aquifer recharge
c) Exhibit 15 Response to CURE data requests 286, 287, 11/12/09
d) Exhibit 17 Responses to CEC/BLM data requests 71-73, 76-79,85, 128, 137-139
e) Exhibit 20 Responses to CEC/BLM data requests 144-153
f) Exhibit 28 Responses to CEC trans, items 8, 10,12-14 , 1/8/10
g) Exhibit 29 Additional alternatives, 1/8/10, Water
h) Exhibit 30 Additional info on water, field efforts and back-up supply
i) Exhibit 32 Supplemental information, Cadiz
j) Exhibit 56 Discussion and analysis of water supply in the Supplement to AFC, 5/14/10

Q.3 What is the purpose of your testimony?

A.3 Foremost, my testimony will discuss the Applicant's proposed primary water source, the testing performed on that well, and the potential for significant adverse impacts on the local ground water.

Q.4 Will you please summarize your conclusions?

A.4 The water source for Calico Solar Project is groundwater drawn from the Lavic Lake Groundwater Basin. Our tests showed there is sufficient volume to provide water for the life of the project with no significant adverse impacts to the groundwater basin or adjacent wells. The water is of poor quality and not suitable for domestic use.

Q.5 Will you describe the water source?

A.5 The applicant is proposing to use water from what we refer to as Well #3 – it was the third well boring drilled on private land immediately adjacent to the project site. The aquifer is located in a sequence of interbedded sedimentary and volcanic strata at depths ranging from the level of the water table which is approximately 350 feet to 1,150 feet below the ground surface. There are no other known wells that are currently being used in the valley that penetrate to this depth. The Lavic Lake Groundwater Basin is approximately 159 square miles and is bounded by non-water bearing rocks of the Cady Mountains on the north and east, the Bullion Mountains on the south and east, the Lava Bed Mountains on the southwest, and the Pisgah Fault on the west. It is

believed that the Pisgah Fault serves as a barrier to groundwater flow. Our research and a site reconnaissance have not identified other wells using this aquifer.

Q.6 Have aquifer tests been performed on the Lavic Lake Groundwater Basin well, requested by the Applicant to be the primary water source?

A.6 Yes, the aquifer tests were conducted on the proposed primary water source well in April 2010.

Q.7 What were the procedures associated with aquifer testing?

A.7 The tests included two short-term stress tests and a constant-rate test. The stress tests were conducted at multiple pumping rates to identify a pumping rate for the constant-rate test. The constant-rate test was performed for approximately 24 hours. Field monitoring activities were conducted in accordance with general guidelines in American Society for Testing Materials standard D4050-91 (ASTM, 1994). Water levels were monitored in the pumping well during testing and after pumping stopped to monitor water level recovery

Q.8 Please describe the impact of water requirements and supply from the Lavic Lake Groundwater Basin well on the aquifer.

A.8 Our conclusions were presented in a filing made on May 14, 2010. We found that after 244 hours of pumping at approximately 100 gpm, 6.60 of drawdown was observed in Well #3. Drawdown in the proposed pumping well stabilized within the first minute of pumping and remained stable throughout the remainder of the pumping test. In addition, the well recovered within a few seconds of stopping the pumping phase of the test indicating that the aquifer is very transmissive. This corresponds to an estimated specific capacity (*Sp)* of 15.15 gpm/ft. The estimated transmissivity value for an unconfined aquifer and a confined aquifer range from 22,700 to 30,300 gallons per day per foot (gpd/ft) based on the results of the constant-rate test. Long-term drawdown was estimated for the construction and operation phases of the project assuming a range of storage values representing confined and unconfined conditions. Water-level measurements in wells suggest that the aquifer is likely to be unconfined. Under the confined scenario, one foot of drawdown may be experienced in the aquifer at a distance of up to 11,000 feet from the pumping well. It should be noted that under confined conditions, this represents a pressure change and not an actual change in water-level elevation. In the unconfined scenario, it is estimated that greater than 1 foot of drawdown may be experienced in the aquifer to a distance of approximately 1,900 feet. Based on the analysis, Pumping of the well at the prescribed rates (93 gallons per minute for construction for 5 years and 13 gpm during 30 years of operation) will have no significant impact to water levels in the area, as the zone of influence (ZOI) is relatively small. Results of the analysis indicate a zone of influence (ZOI) of 210 feet at 10 years, 290 feet at 20 years, and 353 feet at 30 years at the operations pumping rate of approximately 13 gpm, and 390 feet for pumping at a rate of approximately 93 gpm for a 5-year period of construction. This zone of influence is calculated without including the effects of recharge.

Q.9 Were water quality tests performed?

A.9 Yes. The groundwater was sampled and analyzed for a number of constituents to evaluate background water quality. Based on these results, it was found that the

groundwater is not suitable for drinking purposes without treatment because some constituents [arsenic, fluoride, iron, manganese, sulfate, specific conductance and total dissolved solids (TDS)] were present at concentrations that are above their respective maximum contaminant levels (MCLs) established for drinking water in California. The TDS concentration in the groundwater was 1,340 milligrams per liter (mg/l). The water would be treated before being used in the Project.

Q.10 Will the use of this well degrade groundwater quality?

A.10 The results of the ZOI calculations indicate that the distance that the water will move during pumping is relatively small. As such, the proposed pumping during construction and operation of the Project will not significantly affect water quality and the environment.

Q.11 Given the previously discussed test results, would the proposed primary water source submitted by the Applicant provide sufficient and adequate water supply for the Project?

A.11 The results indicate that the proposed primary water source will provide sufficient and adequate water supply for the project. Because there is limited information related to groundwater occurrence in the basin from the depth interval that will be pumped in the proposed supply well, some groundwater monitoring will be conducted during pre-construction, construction and operational phases of the project. This will enable the Applicant to monitor potential changes in water levels and well yield at the site and vicinity and address these changes as needed.

Q.12 Please provide the measured depth to the static water levels.

A.12 In 2009, the depth to water was measured in the existing well on Section 1. The depth to water was 310 feet below the top of casing (btoc). The depth to water in each of the wells installed by the applicant was measured prior to aquifer testing. The depth to water in Well#1 on March 6, 2010 was 353.42 feet btoc and the depth to water in Well#3 on April 18, 2010 was 343.56 feet btoc. Well#3 is the proposed production well for the project.

Q.13 Will you please describe the potential impacts from groundwater extraction on other users and the environment (plants and animals)?

A.13 Based on the cones of depression and ZOIs calculated using the aquifer testing data, the impacts associated with groundwater extraction for the project using the well installed on the site (Well#3) will not be significant..

Q.14 Does that complete your direct testimony?

A.14 Yes

I swear under penalty of perjury that this testimony is true and correct to the best of my knowledge.

Robert K. Scott

6/30/2010

Date

Robert K. Scott

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Exhibit 78

PREPARED DIRECT TESTIMONY

OF

Joe Stewart

Paleontological Resources

Q.1 Will you please state your name and occupation?

A.1 My name is Joe Stewart and I am principal paleontologist for URS Corporation. My resume has also been included with this testimony.

Q.2 Are you sponsoring exhibits in this proceeding?

A.2 Yes, I am sponsoring multiple exhibits:

a. Exhibit 1 AFC Section 5.8 Paleontological Resources and Appendix AA, Paleontological Resources Technical Report

b. Exhibit 5 Response to CEC/BLM Response 61

c. Exhibit 32 Supplemental information, 2/3/10, Section 2.8

Q.3 What is the purpose of your testimony in this proceeding?

A.3 I will re-affirm conclusions and have no changes to staff's conditions of certification

Q.4 . Please describe the methodology when identifying potential significant paleontological sites?

A.4 The procedures I am about to describe (those used to develop the paleontological resource inventory of the Proposed Project site and surrounding area) follow guidelines from the CEC (2007) and the Society of Vertebrate Paleontologists (SVP) (1995) and included both a literature search and field investigation.

Both published and unpublished literature concerning area paleontological and geological topics was consulted. It is possible to define the surface distribution of the formations involved to estimate their subsurface distribution and gain some estimate of the paleontological productivity of these units from the literature. Another important source for data concerning areal distribution of known paleontological localities and productivity of various rock units is the records of pertinent paleontological collections. An archival database search was executed by the San Bernardino County Museum (SBCM) to determine whether any of the stratigraphic units found within the project vicinity had previously yielded significant paleontological resources and whether any known localities lie within or near the site.

A field survey for any visible fossil remains within the Proposed Project site and a one-mile radius was conducted from September 23 to 26, 2008 by myself and Darryl Dang (paleontological technician). A search was performed for exposures of sediment appropriate for producing fossils. During the field survey, attempts were made to detect the presence and nature of subsurface native sediments. Tertiary volcanic rocks were not surveyed, nor were areas of younger alluvium [both have low sensitivity for paleontological resources according to SVP Guidelines (1995)].

Q.5 Please explain conclusions that have been drawn based on these criteria for identification?

A.5 There are five geologic units within the Proposed Project boundaries. They are Tertiary volcanics, Basalt of Pisgah flow, older alluvium, and surficial alluvium. Of these, only the older alluvium is considered to have a high sensitivity to paleontological resources. However, older alluvium may underlie surficial alluvium in many parts of the site. The project ground disturbance will most likely disturb paleontological resources; however, these impacts can be mitigated to less than significant levels.

Q.6 Do you believe the project will have any significant adverse paleontological resource impacts that cannot be fully mitigated?

A.6 No

Q.7 Please briefly describe CEC staff's conditions of certification in regard to paleontological resources?

A.7 The staff recommends qualified Paleontological Resource Monitors (PRMs) prepare and submit a Paleontological Resource Monitoring and Mitigation Plan (PRMMP) to identify general and specific measures to minimize potential impact to significant paleontological resources. Weekly CPM-approved training for project managers, construction supervisors, foremen, and general workers involved with or who operate ground-disturbing equipment or tools. The aplicant shall ensure that the monitoring is performed consistent with the PRMMP for all construction-related grading, excavation, trenching, and augering in areas where potential fossil-bearing materials have been identified, both at the site and along any constructed linear facilities associated with the project, and the applicant shall ensure preparation of a Paleontological Resource Report (PRR).

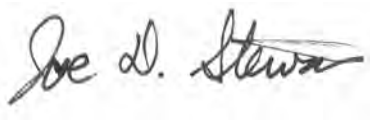
Q.8 Does the applicant propose any changes to these conditions of certification?

A.8 No

Q.9 Does this complete your direct testimony?

A.9 Yes

I swear under penalty of perjury that this testimony is true and correct to the best of my knowledge.



24 June 2010

_____ _____

Date Joe Stewart

Exhibit 79

PREPARED DIRECT TESTIMONY
OF
Mark Storm
Noise

Q.1 Will you please state your name and occupation?

A.1 My name is Mark Storm and I am a Senior Project Engineer from the Acoustics and Noise Control Practice at URS Corporation. I am a Board-Certified Member of the Institute of Noise Control Engineering (INCE) and my resume has also been included with this testimony.

Q.2 Are you sponsoring exhibits in this proceeding?

A.2 Yes, I am sponsoring multiple exhibits:

a. Exhibit 1 AFC Section 5.12 Noise and Appendix CC, Noise measurements
b. Exhibit 3 Data Adequacy Supplement, 4/6/09, Responses 27-28
c. Exhibit 5 Responses to CEC/BLM data requests, 7/17/09, Response 68
d. Exhibit 22 Donated Parcel Study, 12/17/09, Section 3.4 Noise
e. Exhibit 32 Supplemental information, 2/3/10, Section 2.12 Noise

Q.3 What is the purpose of your testimony in this proceeding?

A.3 I am proposing two changes to the conditions of certification, one to the method of sound measurement and the other to the work hours

Q.4 What changes are you proposing for sound measurement?

A.4 As part of CEC Condition of Certification NOISE-4, as appearing in the SA/DEIS, CEC staff states no new pure-tone components shall be caused by the project. The Applicant believes that the suggested text below helps clarify the definition of "pure tone" that is suitable for this context and provides a quantitative means of evaluation with one-third octave band data collected from the post-construction field noise survey as required by the NOISE-4 verification language.

"NOISE-4 The project design and implementation shall include appropriate noise mitigation measures adequate to ensure that the operation of the project will not cause the noise levels due to plant operation alone to exceed an average of 51 dBA Leq measured at or near monitoring location SR2, and an average of 57 dBA Leq measured at or near monitoring location SR1. No new pure-tone components shall be caused by the project, whereby "pure-tone" shall be understood to mean, for purposes of this condition, a prominent one-third octave band with prominence evaluated between adjacent one-third octave band project operation sound levels and using frequency-dependent prominence ratio criteria values (ΔL_p) similar to those as defined by ANSI S1.13-2005 A.8.6. No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints."

Q.5 What changes do you believe are necessary to work hours?

A.5 The Applicant anticipates that certain construction processes, such as concrete pours, will need to occur outside the hours of 7:00 a.m. to 7:00 p.m. Hence, the Applicant requests that CEC Condition of Certification NOISE-1 as appearing in the SA/DEIS be

revised as recommended below. The Applicant submits that this special notice, combined with the requirements of mitigation measure NOISE-2 that require the project owner to "[t]ake all feasible measures to reduce the noise at its source" if there is a complaint about project-related noise, with oversight from the CPM, would mitigate any noise impacts from necessary nighttime construction to less-than-significant and would meet the intent of the San Bernardino County LORS.

"**NOISE-1** At least 15 days prior to the start of ground disturbance, the project owner shall notify all residents within 2 miles of the site, by mail or other effective means, of the commencement of project construction. At the same time, the project owner shall establish a telephone number for use by the public to report any undesirable noise conditions associated with the construction and operation of the project and include that telephone number in the above notice. If the telephone is not staffed 24 hours per day, the project owner shall include an automatic answering feature, with date and time stamp recording, to answer calls when the phone is unattended. This telephone number shall be posted at the project site during construction in a manner visible to passersby. This telephone number shall be maintained until the project has been operational for at least one year. If construction outside the hours of 7:00 a.m. to 7:00 p.m. is required for any construction activity, the project owner shall provide an additional notice, to the CPM as well as to all residents within 2 miles of the site, by mail or other effective means, of the commencement and anticipated duration of the nighttime construction, at least 15 days prior to the commencement of the nighttime construction."

Q.6 Does the County have any noise restrictions that would relate to this project?

A.6 As described on page C.9-5 of the SA/DEIS, the San Bernardino County General Plan Noise Element establishes noise performance standards for stationary sources, and these limits are specified in Chapter 83.01 of the San Bernardino County Development Code. The Code allows these limits to be increased, if necessary, to reflect measured ambient noise level. Construction noise is exempt from these limits between the hours of 7:00 a.m. and 7:00 p.m., excepting Sundays and federal holidays.

Q.7 Do you believe the Calico Solar power plant, as described in the AFC and responses to data requests, will comply with all applicable LORS?

A.7 Yes

Q.8 Do you believe the project will have any significant adverse noise impacts?

A.8 No

Q.9 Does this complete your direct testimony?

A.9 Yes

I swear under penalty of perjury that this testimony is true and correct to the best of my knowledge.

6/29/10 _____ _____

Date Mark Storm, INCE Bd.Cert.

Exhibit 80

PREPARED DIRECT TESTIMONY
OF
WAYMON VOTAW
Facility Design/Reliability/Efficiency

Q.1 Will you please state your name and occupation?

A.1 My name is Waymon Votaw and I am the Senior Director and Head of Asset Management for Tessera Solar. My resume has also been included with this testimony.

Q.2 Are you sponsoring exhibits in this proceeding?

A.2 Yes, I am sponsoring multiple exhibits:

a) Exhibit 1: Appendix B Solar Stirling Engine, Appendix P Electrical Engineering Criteria, and Appendix Q Control System Design Criteria

b) Exhibit 3, Response 42-44 One-lines and agency

c) Exhibit 8, Responses 163 and 164 SunCatcher Washing

d) Exhibit 15, Responses 298-303 SunCatcher Testing and Responses 360, 376, 380 Site and Water Requirements

e) Exhibit 20 CEC/BLM DR Responses, Set 2, December 4, 2009 Responses 167-174 Oil storage, SPCC, waste streams

f) Exhibit 58 Maricopa Construction and Operation, June 11, 2010

Q.3 What is the purpose of your testimony in this proceeding?

A.3 There are a number of objectives in submitting this testimony:

(a) Foremost I want to describe the technology and the facility design.

(b) Second, I would like to discuss the reliability of the technology and the real world experience to date.

(c) Lastly, I would like to discuss water use of the technology.

Q.4 Will you please describe the Solar Stirling Engine and its application within the SunCatcher technology?

A.4 Today, Stirling engines are used in some very specialized applications, such as in submarines or auxiliary power generators, where quiet operation is important. Stirling engines are unique heat engines because their theoretical efficiency is nearly equal to their theoretical maximum efficiency, known as the Carnot Cycle efficiency.

The heart of the Suncatcher Power Conversion Unit is a 380 cm3 displacement, four-cylinder alpha configuration Stirling engine with twin crankshafts each connected to two reciprocating pistons. The engine has two sections: a hot section consisting of the cylinder head, regenerators, gas coolers, and hydrogen gas circuits connected to the heater head within the solar receiver; and a cold section consisting of the engine block, crankcase, pistons, rotating components and coolant circuit. The pistons move the gas between the hot and cold sections through the regenerator. Power is extracted with the pistons by allowing the heated gas to expand at constant pressure, before being cooled, compressed and heated again.

Changes to the SunCatcher Stirling engine have been primarily accomplished with the addition of the Solar Receiver. The receiver consists of an insulated cavity with an aperture to allow the concentrated sunlight to enter. Within the cavity are four heater heads. Each heater head is a tube network for one quadrant of the engine. The metal tubes along with the engine form a closed system that contains the working fluid, hydrogen gas.

The Solar Stirling Engine is also further described in Exhibit 1, Appendix B Solar Stirling Engines.

Q.5 Please describe how the SunCatcher will be utilized in the Calico Solar project.

A.5 Each SunCatcher consists of a Power Conversion Unit (PCU) and a mirrored-surface dish assembly operating as a solar concentrator that autonomously tracks the sun. The dish assembly collects and focuses solar energy onto the PCU to generate electricity. Each PCU consists of a solar receiver heat exchanger and a closed-cycle, high-efficiency Solar Stirling Engine specifically designed to convert solar power to rotary power via a thermal conversion process. The engine drives an electrical generator to produce grid-quality electricity. Power generated by each 1.5 MW group of 60 SunCatchers is collected through a 600-volt power collection system. This collection system combines the output from the units and connects each 1.5 MW group to a medium voltage transformer with an output voltage of 34.5 kilovolt (kV). This is repeated until the full project electrical size is reached.

The design and modularity of the SunCatcher allows for significant flexibility in specific site usage and design. Each site is constructed using three basic building blocks; the dish, 1.5 MW group, then scaling up to 9 MW groups. Power will be placed on the grid at completion of each 9 MW block. This allows power production and earning of revenue earlier in the process than a solar facility using another technology.

The Electrical Engineering Design Criteria and the Control System Design Criteria are detailed in Appendix P and Appendix Q respectively.

Detailed pre and post project one-line diagrams of the existing SCE Pisgah 230/500kV substation are included in Exhibit 3, Response 42.

Q.6 How long has the SunCatcher technology been in operation?

A.6 The SunCatcher was developed over a number of years by a number of parties including Philips Electronics, Ford Motor Company and the Ford Aerospace & Defense Division, Boeing Aerospace & Defense, and McDonnell Douglas, who deployed field prototypes in 1984. The technology was installed in the Sandia National Laboratory beginning in 2004. Aggregate on-sun hours at Sandia National Laboratory were 30,080 hours through August 2009. They have been tested under all types of conditions and repeatedly modified to improve the efficiency, reliability, and commercial applicability of the technology.

More recently the SunCatcher technology has been deployed as a commercial generating facility outside of Phoenix, Arizona at the Maricopa Solar plant.

Q.7 What is the purpose of Maricopa Solar?

A.7 Maricopa Solar is the first commercial facility utilizing SunCatcher technology and provides invaluable insights as core capabilities (e.g., maintenance management, predictive analytics, power scheduling, etc.) are finalized for the management of larger facilities. Additionally, Maricopa Solar was constructed to: 1) help demonstrate to financial institutions and others the ability to scale up the SunCatcher technology for use in a utility-scale application, 2) help Stirling Energy Systems (SES) gain more knowledge and have a better understanding of the field assembly process in preparation for constructing large commercial-size facilities, and 3) provide

additional operations and maintenance (O&M) information. SES and Tessera Solar are using the lessons learned from the construction, commissioning, and operation of Maricopa Solar to enhance the development and implementation of larger size generating facilities.

Q.8 Will you describe the site and configuration of Maricopa Solar?

A.8 Maricopa Solar is a fully operational, commercial power plant using the SunCatcher technology developed and refined at Sandia National Laboratory. Maricopa Solar consists of 60 SunCatchers with a nameplate capacity of 1.5 megawatts of power. It represents the basic "building block" of the larger power plants being built by Tessera Solar. Maricopa Solar is constructed on a parcel of land Tessera Solar is leasing for 10-years from Salt River Project (SRP). The Maricopa Solar site is interconnected with the SRP distribution system. Electricity generated from Maricopa Solar is sold to SRP.

At Maricopa Solar, the 60 SunCatchers are arranged in 7 rows that are in a north-south configuration (4 rows have 9 SunCatchers each and 3 rows have 8 SunCatchers each due to site restrictions). All 60 SunCatchers use a common hydrogen system which connects all the units, via a header system, to a hydrogen compressor and storage tank system. The electrical output from the SunCatcher generators is collected in groups of 12 SunCatchers, each of which are connected to a common circuit breaker (5 total) that connects to a common 600V bus. The common bus is connected, via a circuit breaker, to a 575 V/15 kV step-up transformer for connection with the SRP distribution system. An auxiliary transformer is supplied to step down voltage from 15 kV to 208 V to provide power for start-up purposes and when the Maricopa Solar Plant is not in operation.

Q.9 Will you describe the construction of the Maricopa Solar power plant?

A.9 Construction of the Maricopa Solar Plant was provided for under two main contracts, one for the erection of the SunCatchers and the other associated with the balance of plant. SES was responsible for the design, procurement, assembly, and start-up of the SunCatchers (with the exception of driving the pedestals into the ground). Mortenson Construction was the balance of plant contractor and responsible for clearing and grubbing the Maricopa plant site, driving the 60 SunCatcher pedestals into the ground, installing the electrical and hydrogen systems to the SunCatchers, building erection, and utility interconnections (water /waste water /phone /power).

This two-contract approach is how Tessera Solar is expecting to have future commercial facilities designed and constructed. As such, construction of Maricopa Solar has provided Tessera Solar (and SES) details regarding the approach, the level of coordination necessary between the parties involved, scope of work requirements, and identification of potential construction bottlenecks that could affect the construction of the commercial size facilities, including the Calico Solar Project.

Construction of Maricopa Solar took place from September 8, 2009 to December 23, 2010, and the plant entered into full commercial operation on March 15, 2010.

Q.10 Would you describe the reliability of the Maricopa Solar project?

A.10 Maricopa Solar has generated 833,738 kWh, representing a capacity factor of 26.7 percent, from March 16, 2010 through June 5, 2010 at an overall plant availability of 95.1 percent ("Maricopa Performance Data" or "MPD"). The availability of the SunCatcher, the primary technical component of the technology, has operated with a cumulative availability of 97.0 percent over that time period. Over the last 30 days, the overall project has operated on a steady state basis at an availability of 97.8 percent, so the availability is trending up as operations continue.

Overall, for being a new technology in its first commercial application, Maricopa Solar has been operating very well, as shown by the achieved plant availability of 95.1 percent. Maricopa Solar has experienced some issues that have contributed to the project's lost availability. Specifically, minor design changes were required in the centralized hydrogen system and quality control improvements were required in the manufacturing of the SunCatcher dish drive. Because Tessera Solar is tracking the facility's performance on an hourly basis, these issues were noticed within the first 10 days of operations and resolved.

We expect the performance of Maricopa Solar to continue to improve.

Q.11 What would you expect in terms of the reliability of the Calico Solar project?

A.11 I would expect the Calico Solar project to have a similar or better reliability performance than Maricopa Solar. First of all, the lessons we have learned at Maricopa Solar will be applied to Calico Solar. Because Maricopa Solar represents the basic building blocks of a larger facility such as Calico, the lessons learned and solutions applied to Maricopa are directly applicable to the construction, operations, and maintenance of Calico.

Performance at Calico is also expected to be better than at Maricopa because Calico will have a larger inventory of spare power conversion units and other parts, and the SunCatcher components will be produced utilizing high volume manufacturing techniques resulting in increased equipment quality.

Q.12 Please explain how hazardous materials will be handled on-site.

A.12 All hazardous materials will be handled using all applicable Laws, Ordinances, Regulations and Standards (LORS) and as further described in Exhibit 1, Appendix L Hazardous Materials.

Q.13 Please detail the water usage during construction and operation.

A.13 The SunCatcher technology does not employ steam in its generation process and does not use water for cooling as is common in most fossil-fired power plants and other solar thermal generating facilities. Projects utilizing the SunCatcher technology require water only for the following usages:

- equipment washing,
- on-site hydrogen production,
- potable water uses,
- dust control, and
- fire protection.

On the Calico Solar Project, water will be initially used in the areas disturbed by construction during the construction activity for the primary access routes, the construction lay down areas, the grading of the sites for the Main Services Complex and the substation sites, as well as the clearing areas disturbed by the construction of each 9MW solar group. Water trucks will be used throughout the construction phase for the Project as needed. Based on the construction schedule, the annual average water flow rate during construction is approximately 136 acre feet per year for construction water and for dust control. However, the water flow rate should remain relatively constant during the hours of construction operation. Since a polymeric sealant will be used to seal unpaved and paved roads, the requirement for water as a dust suppressant will be greatly reduced.

When completed, the Calico Solar Project will require a total of approximately 20 acre-feet of raw water per year. SunCatcher mirror washing and operations dust control under regular maintenance routines will require an average of approximately 17 gallons of raw water per

minute, with a daily maximum requirement of approximately 70 gallons of raw water per minute during the summer peak months each year, when each SunCatcher receives an annual mechanical wash.

Q.14 Does this complete your direct testimony?

A.14 Yes

I swear under penalty of perjury that this testimony is true and correct to the best of my knowledge.

6/29/10
Date

Waymon Votaw

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Exhibit 81

PREPARED DIRECT TESTIMONY

OF

Tricia Winterbauer

Waste Management/Hazardous Waste/Worker Safety

Q.1 Will you please state your name and occupation?

A.1 My name is Tricia Winterbauer and I am an Environmental Specialist for URS Corporation. My resume has also been included with this testimony.

Q.2 Are you sponsoring exhibits in this proceeding?

A.2 Yes, I am sponsoring multiple exhibits:

a. Exhibit 1 AFC, Section 5.14 - Waste Management, Section 5.15 - Hazardous Materials Handling, Section 5.17 – Worker Safety, and Appendix T, Phase I Environmental Site Assessment

b. Exhibit 3 Data adequacy supplement, 4/6/09, Response 47

c. Exhibit 5 Responses to CEC/BLM data requests, 7/17/09, responses 86-91, 7/17/09

d. Exhibit 15 Responses to CURE data requests, 11/12/09, responses 286-287

e. Exhibit 32 Supplemental Information, 2/3/10, Section 2.14 – Waste Management, Section 2.15 – Hazardous Materials, and Section 2.17 - Worker Safety

f. Exhibit 47 Additional information from April workshop, 4/21/10 regarding Worker Safety

g. Exhibit 56 Supplement to AFC, Section 2.14 – Waste Management, Section 2.15 – Hazardous Materials Handling, and Section 2.17 – Worker Safety

Q.3 What is the purpose of your testimony in this proceeding?

A.3 There are several objectives in submitting this testimony.

a. Foremost, I would like to discuss the hazardous evaluation of the new hydrogen configuration.

b. I will also summarize impacts of waste management, hazardous waste and worker safety and subsequent conclusions

Q.4 Would you please explain the hydrogen configuration and how this is handled in terms of a hazardous evaluation.

A.4 The Applicant is evaluating the relative advantages between the centralized hydrogen distribution system and a distributed system that utilizes k-bottles on the PCUs of all SunCatchers.

The Project consists of up to 34,000 SunCatchers and will use hydrogen gas as the working fluid in the PCU. Because of the hazardous nature of hydrogen there is a risk that it may cause an offsite consequence upon uncontrolled release. The Project conducted an offsite consequence analysis (OCA) for a worst case scenario release to evaluate the potential hazard posed by the hydrogen at the Project Site. It is important to note that the OCAs for the Project provide conservative evaluations for accidental

hydrogen releases. The OCAs were performed following the methodology provided in the RMP guidance (U.S. EPA 1999).).

OCAs were performed using the EPA approved RMP*Comp modeling program and confirmed through RMP OCA Guidance calculations. The purpose of conducting these OCAs was to evaluate any potential offsite hazards that may occur from the storage and use of hydrogen at the Project Site. The maximum potential extent of impact in the event of a worst-case release from the largest vessel (hydrogen storage tank), as defined by the RMP OCA Guidance, would be equivalent to 0.07 mile. However, in the event of the worst case scenario induced from cumulative releases at the site, the maximum impacted distance is 0.54 mile. These distances are derived from an unrealistic hypothetical situation where all potential hydrogen present at the Project Site participates in a vapor cloud explosion. Results from the OCA modeling demonstrated that an accidental release of hydrogen, under conservative worst-case scenario conditions, will not impact the public or environmental receptors in the vicinity of the site.

Q.5 Do you have any comments on the CEC staff's proposed condition of certification HAZ-5 that requires background checks on personnel

A.5 As stated in the Applicant's comments on the SA/DEIS (Exhibit 45), we recommend the staff's proposed condition of certification be modified to require background investigations should be conducted on any Project personnel who comes into contact with hydrogen or hazardous materials and planned operations personnel. This will be adequate to ensure that the necessary safety measures are in place.

Q.6 Do you believe the Calico Solar power plant, as described in the AFC and responses to data requests, will comply with all applicable LORS?

A.6 Yes

Q.7 Do you believe the project will have any significant adverse impacts regarding waste management, hazardous waste, or worker safety?

A.7 No

Q.8 Does this complete your direct testimony?

A.8 Yes

I swear under penalty of perjury that this testimony is true and correct to the best of my knowledge.

June 29, 2010 Tricia Winterbauer

Date Tricia Winterbauer

APPENDIX A

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FELICIA L. BELLOWS

Tel: 202-615-0551
felicia@feliciabellows.com

PROFILE

Multi-lingual senior business development and private equity executive with extensive experience identifying and capitalizing on new opportunities for global energy companies in both regulated and unregulated markets. Adept at negotiating, financing and managing complex acquisitions, project developments and divestitures for a variety of renewable energy projects, including hydroelectric and wind, as well as non-renewable energy and carbon credit-based projects. Expertise in managing the entire business development cycle, including strategic planning, financing, pipeline development, due diligence, marketing communications, joint ventures and partnerships. Dedicated to building relationships with government and business executives and motivating diverse, high-performing teams to consistently improve performance in investment portfolios.

EXPERIENCE

TESSERA SOLAR, Phoenix, AZ **March, 2009 -- today**

A firm that develops, builds, owns and operates solar power plants using Sterling Energy Systems' SunCatcher technology

Vice President of Development

Responsible for developing new projects and investments from development to construction

- Working on Tessera Solar's existing project in the Mojave Desert, the Calico Project (Solar I)
- Submitting various proposals in response to RFP's in various states
- Managing a team of senior developers and experienced permitting people to move Tessera Solar's projects to completion

ECONERGY INTERNATIONAL CORPORATION, Washington, DC **2006 – February, 2009**

A firm that develops, builds, owns and operates renewable power plants in the Americas

Executive Vice President, Development

Responsible for investing the proceeds of the IPO in projects and companies throughout the Americas and managing investments from acquisition until operational

- Completed a $23.6 million investment in two hydroelectric projects in Brazil within three months of joining the firm
- Invested $24 million in a hydroelectric project in Chile and a wind project in Brazil within six months with the company
- Closed a $20 million investment in a wind project after less than a year with the company
- Ramped up investment significantly within a year, closing five projects, beginning construction on four of them and generating a steady pipeline of future opportunities
- Established business development strategies for investments to meet the IPO's target returns
- Negotiated with private equity, government and commercial lenders to obtain international financing for renewable energy and carbon credit-based projects
- Promoted rapidly from Senior Vice President to an Executive Vice President role

ALLIANT ENERGY CORPORATION, Cedar Rapids, IA & Rio de Janiero, Brazil **1999 – 2006**

Various subsidiaries of a public utility holding company

President, Alliant Energy Holdings do Brasil

Managing Director, Latin America, Alliant Energy International

Responsible for establishing the firm's activities in Latin America through targeted investments, acquisitions and divestitures

- Negotiated and closed the $347 million acquisition of Cataguazes/Energisa and the $110 million acquisition of Saelpa, Brazilian electric power distribution companies
- Developed and operated a non-utility-owned $40 million gas-fired electric power generation facility in Juiz de Fora, Brazil and several sustainable energy investments in small hydro facilities

- Divested Brazilian investments after a contentious shareholder battle with the firm's local partner before Brazilian courts, securities and energy regulators, and the International Chamber of Commerce Court of Arbitration
- Managed the $1 billion tender offer for Escelsa, a Brazilian electric power distribution company, during the two months after joining the firm
- Represented the firm on the board of directors for nine Brazilian operating and holding companies

SOUTHERN COMPANY, Brazil, Argentina & Atlanta, GA **1990 – 1999**
Various subsidiaries of one of the largest energy companies in the U.S., with $37 billion in assets
***President,* Southern Energy do Brasil**, *Rio de Janiero, Brazil* (1997 – 1999)
***Director, Project Development, South America*, Southern Energy**, *Buenos Aires, Argentina* (1996 – 1997)
***Director of Finance & Project Manager,* Southern Energy**, *Buenos Aires, Argentina* (1993 – 1996)
***Project Finance Specialist, Corporate Finance,* Southern Energy**, *Atlanta, GA (1990 – 1993)*
Responsible for identifying and capitalizing on business development and investment opportunities in emerging markets, including Brazil, Poland, Czechoslovakia, India and Mexico

- Spearheaded a successful $1 billion bid to acquire a 33% stake in CEMIG, one of the largest successful integrated electric companies in Brazil, in collaboration with two other industry partners, in a series of complex equity and debt transactions.
- Collaborated with AES, the U.S.-based partner, to devise and implement a restructuring program at CEMIG to improve revenues and profit margins
- Led the greenfield development of a $250 million gas-fired electric generation facility in Brazil
- Conducted due diligence and negotiated with a Belgian energy company for a proposed joint bid for the privatization of 3,688 MW of electric power capacity in southern Brazil
- Managed the Argentinean subsidiary's corporate management team as CFO and lead executive and drove business development initiatives, including a unique proposal to export energy to Brazil
- Monitored the financial performance of subsidiaries in Argentina, Chile, Trinidad and the Bahamas

NATIONSBANK, Tampa, FL **1988 – 1990**
One of the largest banking corporations in the U.S., now operating as Bank of America
Profit Center Reporting Manager

- Led a team of analysts in completing reports on the bank's profitability in numerous areas
- Conducted financial and acquisition studies using corporate finance expertise

SOUTHERN COMPANY, Atlanta, GA **1984 – 1987**
One of the largest energy companies in the U.S., with $37 billion in assets
Financial Analyst

- Analyzed bond re-financing and the financial aspects of regulatory issues that impacted the company to provide executive management with data for business decision-making

EDUCATION

Bachelor of Science, Industrial Management, 1984
Georgia Institute of Technology, Atlanta, GA

PROFESSIONAL

Advisor, IMTrust (1/2010 – present)

Senior Advisor, Claren Power (2007 – present)

Treasurer, Argentine Association of Power Generation (1996 – 1997)

President, Foundation for Security of Dams (1994 – 1997)

Fluent in English, Portuguese, Spanish and Greek

Sean Gallagher

805 Contra Costa Avenue
Berkeley, CA 94707
510 525 5493
sean.gallagher@tesserasolar.com

Education

University of California, Berkeley (Boalt Hall), J.D.
University of California, Berkeley (Boalt Hall), M.A. Jurisprudence & Social Policy

University of Virginia, B.A. (High Honors), Philosophy; B.A. (High Honors), Psychology

Experience

2008 – present **Tessera Solar North America & Stirling Energy Systems,** Berkeley, CA
Vice-President, Market Strategy & Regulatory Affairs

- Responsible for creating an effective representation of TSNA & SES in particular and the CSP industry in general in the appropriate governmental, regulatory and public affairs forums
- Set and execute on legislative, regulatory and public affairs objectives
- Oversee public and media relations and marketing

1998 – 2008 **California Public Utilities Commission,** San Francisco, CA

2005 – 2008 *Director, Energy Division*

- Advised Commissioners, the Legislature, the Administration, and other public and private officials on high-level policy development and strategic issues
- Implemented California's Energy Action Plan, developed energy policy and rates, and planned infrastructure
- Directed the strategic response to Commission-sponsored initiatives on Energy Efficiency, Demand Response, Solar, and Renewable Energy
- Lead a staff of over 100 analysts, auditors, accountants, and engineers

1998 – 2004 *Senior Attorney*

- Prosecuted the California energy crisis refund cases at the Federal Energy Regulation Commission (FERC) and in the courts; negotiated energy crisis settlements worth billions of dollars to California ratepayers; and articulated California Public Utility Commission (CPUC) policy on California electricity market redesign
- Advised Commissioners, Administrative Law Judges, and staff on electricity policy and litigation
- Represented the CPUC in regulatory proceedings in the U.S. Courts of Appeals, and before the state Legislature, with a focus on market structure, resource adequacy, market redesign, and market power issues

1997 – 1998 **Arter & Hadden,** San Francisco, CA
Senior Associate

- Prepared for and tried civil actions

1991 – 1997 **Sedgwick, Detert, Moran & Arnold,** San Francisco, CA
Senior Litigation Associate

- Represented plaintiffs and defendants in employment, insurance, and environmental litigation matters, through jury trial

Mohamad (Mike) Alhalabi, P.E.

Professional Profile

Sr. Engineer with more than 29 years of professional mechanical engineering design and construction experience. Work covered more than 18 years with the Utilities industry and more than 9 years with the State of Missouri's Department of Natural Resources and other industries, such as ConAgra Foods, USA and others**.**

- Design, install & commission HVAC equipment.
- Design & install sewage treatment equipment.
- Design & install waste water treatment equip.
- Design & install demineralizers for steam plants.
- Design & install coal handling systems.
- Design & install steam equipment systems.
- Design & install pumps, compressors & piping systems
- Commissioning & De-commissioning - Power Plants.
- Design & install office buildings and equipment.
- Design & install fuel storage & dispensing facilities.
- Design & install fire protection & ventilation systems.
- Manage Tech. & Admin staff, as a Regional Director.

Professional Experience

Jacobs Engineering / ConAgra Foods, St. Louis, Missouri
Projects Manager

Achievements:

- Completed the refrigeration system upgrades, commissioning and equipment validation.
- Automated Robotics Palletizing System design, layout, construction and installation.
- Warehouse Racking System and Storage facilities design & construction.

Responsibilities

- Collect field measurements, data and details to facilitate equipment sizing, layout & installation.
- Coordinate with owner, equipment supplier and general contractor to complete work on time.
- Provide daily and weekly updates to all parties involved and document progress electronically.
- Manage all field work, general contractor and all subcontractors to insure proper installation.
- Review all invoices for proper billing and issue changes to scope of work where necessary.
- Conduct and manage telephone and web conferencing related to all active projects.

Ameren Corporation, St. Louis, Missouri
Power Plant Design Engineer

Achievements:

- Completed the design, construction and commissioning of all mechanical HVAC equipment.
- Completed the design, construction and commissioning of steam generating equipment.
- Completed the design, construction and design of water & waste water treatment systems.

Responsibilities:

- Investigate available options to design, construct, maintain and operate the needed equipment.
- Prepare trade studies and economic evaluation of various options and submit for approvals.
- Coordinate work with drafting, purchasing, construction, contractors, permitting and others.
- Prepare all bid documents, manage the bid process, construction, startup and commissioning.
- Prepare operating and maintenance manuals for the plant to use as their reference material.

Education

The University of Tulsa, Tulsa, Oklahoma
Bachelor Degree in Mechanical Engineering
Licensed Professional Engineer, Mechanical

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Robert G. Byall, P.E.

Professional Profile

Sr. Civil Engineer with more than 32 years of experience in heavy construction, government and private land development.

- Development of permits and improvement plans for thousands of acres of master planned communities
- Overseeing the maintenance and improvements for thousands of miles of county roads
- Development of permits and improvement plans for regional shopping centers

Professional Experience

Stirling Energy Systems, Inc., Phoenix, Arizona
Sr. Civil Engineer - EPC

Achievements:

- Development of civil plans for a 10,500 acre solar plant
- Development of civil plans for a 6,500 acre solar plant
- Development of civil plans for a 13 acre solar demonstration plant

Responsibilities

- Responsible for overseeing the development of Civil Engineering Development Plans
- Responsible for the development of legal descriptions for the various projects
- Coordination with Public Agencies for permitting of the various solar sites

David Evans and Associates, Inc., Phoenix, AZ
Client Manager

Achievements:

- Development of a 25,000 acre master planned community
- Development of a 10,000 acre master planned community
- Reconstruction of a 480 acre regional shopping mall

Responsibilities:

- Responsible for the development of budgets for commercial and Residential land development projects
- Responsible for the preparation of development plans for the permitting and construction of commercial and residential subdivisions
- Responsible for the preparation of hydrological and hydraulic investigations for land development projects

Education

Northern Arizona University, Flagstaff, AZ
Bachelor of Science, Civil Engineering

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Noel Casil, PE, TE, PTOE

Senior Traffic Engineer

Areas of Expertise

Traffic Engineering,
Transportation Planning,
ITS Planning

Years of Experience

With URS: 9 Years
With Other Firms: 18 Years

Education

BS/1982/Civil Engineering

Registration/Certification

Registered Professional Civil Engineer/CA/65179
Registered Professional Traffic Engineer/CA/2391
Certified Professional Traffic Operations Engineer/ITE/2143

Professional Affiliations

Institute of Transportation Engineers (Fellow)
Society of American Military Engineers (Member)
Transportation Research Board (TRB) AHB40 - Highway Capacity and Quality of Service Committee, User Liaison Group (Member), Research Subcommittee (Member), Active Traffic Management Task Force (Member)

Publications

Casil, N.V. and Chapman, J., "The Bakersfield Systems Study - A Long Awaited Solution Rises to the Forefront". Institute of Transportation Engineers District 6 Annual Meeting, July 16, 2002, Palm Desert, CA

Overview

Mr. Casil has over twenty years of civil and transportation engineering experience in California and overseas. He is actively involved in the field of traffic engineering, highway engineering and transportation planning. He has performed responsible office and field engineering work including surveys, data collection, traffic signal timing utilizing PASSER II and TRANSYT 7-F, signal timing, fine tuning of 170 controllers, traffic signal/detection system installation, cost estimates, ramp metering installation inspection, and design of freeway surveillance. In addition, Mr. Casil has extensive experience in transportation planning projects including impact studies utilizing TRAFFIX, Synchro and HCM software. He has also served as traffic study task leader for projects ranging from stand-alone traffic studies to multi-discipline project study, design, planning and environmental documentations.

Project Specific Experience

Transportation Planning Projects

- Pasadena Soccer Academy TIA (City of Pasadena)
- Vault Self Storage (3 Sites) Facilities TIA (City of Pasadena)
- Pasadena AMF 300 Parking Study (City of Pasadena)
- Empire Center Burbank Traffic Analysis (City of Burbank)
- Palmdale Airport Master Plan (LAWA)
- LAX/South (Orange County) High-Speed Ground Access Study (SCAG)
- City of Fullerton General Plan Update (City of Fullerton)
- Ontario Agricultural Preserve Sphere of Influence Study (City of Ontario)
- City of El Segundo Circulation Element Update (City of El Segundo)
- City of Santa Monica Master Environmental Assessment (City of Santa Monica)
- West Haven Specific Plan EIR (City of Ontario)
- City of Chico Growth Feasibility Study (City of Chico)
- Moonridge Corridor Specific Plan EIR (City of Big Bear Lake)

- Bakersfield Systems Study (Kern Council of Governments)
- Los Angeles County Park and Ride Master Plan (LACMTA)
- UCLA-Santa Monica Hospital EIR (UCLA Capital Improvements)
- Santa Monica Zoning EIR (City of Santa Monica)
- Arboretum EIR Analysis (Arboretum Development Partners)
- Metro Red Line Eastside Extension FEIS/FEIR (LACMTA)
- Santa Monica Bayside District EIR (City of Santa Monica)
- Los Angeles Zoo Master Plan EIR Traffic Study (City of Los Angeles)
- Griffith Observatory EIR (City of Los Angeles)
- Fullerton Impact Fee Study (City of Fullerton)
- House of Blues Traffic Study (City of West Hollywood)
- Los Amigos School EIR (Santa Monica-Malibu Unified School District)
- Ritter Ranch Specific Plan (Ritter Ranch Associates)
- Santa Monica/Doheny/Melrose Improvement Study (City of West Hollywood)
- MCB Camp Pendleton New Hospital Project EA (NAVFAC)
- MCB Camp Pendleton Main Exhange Project EA (NAVFAC)
- Seal Beach Naval Station BEAP (NAVFAC)
- Long Beach Naval Shipyard Reuse EIR (Port of Long Beach)
- MCAGCC Twentynine Palms Master Plan (EDAW)
- TRAFFIX Modeling Training (various city staff)

Traffic Operations and Signal Systems

- Hollister Corridor Signal Coordination Project (County of Santa Barbara)
- Sacramento FETSIM Project (City of Sacramento)
- South Bay Traffic Signal Improvements and Communication Design (LACMTA)
- City of Mission Viejo Interconnect PS&E (City of Mission Viejo)
- Palmdale “On-Call” Signals (City of Palmdale)

- Fuel Efficient Traffic Signal Management (FETSIM) (City of Anaheim)
- "On-Call" Traffic Engineering, Ramp Metering/Surveillance (Caltrans, District 7)
- 15th Street Signals Progression (City of Lancaster)
- Olympic Boulevard Traffic Signals (City of Beverly Hills)

Traffic Engineering Projects

- I-5 Far North Widening (OCTA)
- SR-22 Design Build HOV Project (OCTA)
- Central County Corridor Study (OCTA)
- I-5/SR-134 Congestion Management Study (Cities of Burbank, Glendale, Los Angeles and Caltrans District 7)
- I-15/I-40 Interchange Reconstruction Project Report/PS&E (DMJM)
- Atlantic/Bandini/I-710 Interchange PSR (City of Vernon, Caltrans Dist. 7)
- Katella Avenue Superstreet Project Study (OCTC)
- SR-73/Moulton-La Paz Interchange Design (Transportation Corridor Agencies)

Energy Sector Studies, Licensing and Support Services

- Tehachapi Renewables Transmission Project (SCE)
- Antelope Valley Solar Ranch 1 Traffic Study (NextLight)
- Watson Cogen Expansion AFC (BP Alternative Energy)
- Niland Energy Center AFC (Imperial Irrigation District)
- El Centro Generating Center Expansion (IID)
- Salton Sea Unit 6 Power Project AFC (CalEnergy)
- SES Solar One AFC (Sterling Energy Systems Inc)
- SES Solar Two AFC (Sterling Energy Systems Inc)
- Larkspur Energy Center AFC Amendment
- Otay Mesa Energy Center AFC (Calpine)
- Carizo Energy Solar Farm (Ausra Inc.)
- Canyon Power Station AFC (SCPPA – City of Anaheim)
- Starwood Energy Center AFC (Starwood Energy Group)

- CPV Sentinel Energy Project AFC (CPV Sentinel, LLC)
- San Gabriel Generating Station AFC (SGPG LLC)
- Granite Wind Farm Project (Granite Wind LLC)
- Rancho Santa Margarita Peaker (Wellhead)
- Los Angeles Department of Water & Power (LADWP)
- Colton Energy Facility (City of Colton)
- Magnolia Power Project (SCPPA- City of Burbank)
- Roseville Energy Facility AFC (Enron)
- Bighorn Generating Project – Primm Nevada (Reliant)
- Tracy Peaker Plant AFC (GWF Energy LLC)
- Bullard Energy Center AFC
- Panoche Energy Center AFC (Panoche Energy Center, LLC)
- Kinder Morgan Carson Facility Expansion (Kinder Morgan)
- Bigwest Refinery Clean Fuels EIR (Flying J Corporation)
- Colton Phase II Expansion Project (Kinder Morgan)
- 7-11 Store and Gas Station Traffic Study (City of Vista)
- Luvs - Lost Hills Project Traffic Study (Pilot Corporation)
- Speedy Fuel Diesel Station Project Peer Review (BNSF)

EXPERIENCE SUMMARY

Mr. Dadswell has 17 years experience managing and conducting social and economic studies and impact analysis. Specific project experience includes transmission lines, power plants, and pipelines; hydroelectric facilities; timber sales; land exchanges; military base closures; and port development. Mr. Dadswell has served as Social Science lead on projects located in California, Wyoming, Washington, Alaska, Oregon, Idaho, Montana, and Colorado, and elsewhere in the United States.

EDUCATION

PhD Candidate, Economic Geography, 1995 to 1997, University of Washington
MA, Economic Geography, 1990, University of Cincinnati
BA, Economics and Geography, 1988, Portsmouth Polytechnic, England

TRAINING

BLM Training Course No. 1610-12: Social and Economic Aspects of Planning. Denver, CO. 2005
Introduction to ArcView GIS. Seattle, WA. 2002
NEPA Economic Analysis Tool (NEAT) Training, USDA Forest Service. Juneau, AK. 2002
How to Manage the NEPA Process, The Shipley Group. Seattle, WA. 2001
NEPA: EA/EIS Preparation and Documentation Workshop. Albuquerque, NM. 1993

PROJECT EXPERIENCE

Senior Social Scientist, 2010
Southeast Conference and USDA Forest Service, Kake-Petersburg Intertie Transmission Line Project EIS, AK. Deputy project manager and Interdisciplinary Team Leader for a NEPA EIS to evaluate a proposed 40-mile-long 500-kV transmission line project in Southeast Alaska. Technical responsibilities include socioeconomics, subsistence, recreation, and visual resources.

Senior Social Scientist, 2009 to Present
Bonneville Power Administration, Central Ferry-Lower Monumental 500-kV Transmission Line Project EIS, WA. Project manager for a NEPA EIS to evaluate a proposed 40-mile-long 500-kV transmission line project in Columbia, Garfield, and Walla Walla counties, Washington. Prepared the socioeconomic analysis for the project, and evaluated potential environmental justice impacts in accordance with Executive Order 12898.

Senior Social Scientist, 2009-2010
National Park Service, Wrangell-St. Elias National Park and Preserve, Nabesna Off-Road Vehicle EIS, AK. Worked with the National Park Service on the EIS to assess the impact of off-road vehicles (ORV) within the Nabesna district of the Wrangell-St. Elias National Park and Preserve. Responsibilities include assessing the potential socioeconomic and subsistence impacts of Off-Road Vehicle use on nine trails in the Nabesna District of Wrangell-St. Elias National Park and Preserve.

Senior Social Scientist, 2009
Genesis Solar LLC, Genesis Solar Energy Project, Riverside County, CA
Prepared the socioeconomic analysis for a proposed 250 MW solar generating facility in the Sonoran desert, west of the city of Blythe, California. This analysis addressed the availability of labor for the construction and operation phases of the proposed facility, the potential for workers to temporarily or permanently relocate to the project area, and the impacts this would have on housing and other local and regional socioeconomic resources. Assessed the regional economic impacts of the project using an input-output model developed using IMPLAN modeling software and data. Developed estimates of the property and sales and use taxes associated with construction and operation of the proposed facility. Assessed potential environmental justice impacts.

Senior Social Scientist, 2009
Ketchikan Public Utilities, USDA Forest Service, and U.S. Coast Guard, Proposed Line Extension to the U.S. Coast Guard LORAN Station Shoal Cove EA, Revilla Island, Tongass National Forest, AK. Conducted public scoping for a proposed 10.5 mile extension of an existing 115-kV electric transmission line to the U.S. Coast Guard Long Range Navigation (LORAN) Station Shoal Cove.

Senior Social Scientist, 2009-2010
USDA Forest Service and Western Pacific Timber, Upper Lochsa Land Exchange EIS, ID
Senior Social Scientist responsible for evaluating the impacts of a proposed public/private land exchange between the Forest Service and Western Pacific Timber on social and economic resources and recreation. This exchange involves approximately 68,000 acres spread over three national forests and seven Idaho counties. The social and economic analysis evaluated the impacts of the proposed exchange alternatives on employment and the economy, traditional uses and lifestyles, government taxes and revenues, and land management administrative costs. Potential impacts to employment and the economy included potential effects to the lumber and wood products, recreation and tourism, and agricultural sectors. The tax analysis addressed potential impacts to Federal 25 Percent Fund payments, Payment in Lieu of Taxes (PILT) payments, and Idaho property tax revenues. Estimated changes in administration costs included changes associated with property boundary surveys, resolution of boundary disputes, road maintenance, easement acquisition, and Forest Service Special Use Permit administration. Assessed potential environmental justice impacts in accordance with Executive Order 12898.

Senior Social Scientist, 2008-2009
USDA Forest Service, White Chuck Road Repair EA, Mt. Baker-Snoqualmie National Forest, WA.
Prepared the recreation, social and economic, and environmental justice assessments for this project, which evaluated road repair alternatives for White Chuck Road. White Chuck Road was damaged by severe flood events in 2003 and 2006.

Senior Social Scientist, 2008
Stirling Energy Services (SES), Solar One, San Bernardino County, CA
Prepared the socioeconomic analysis for a proposed 850 MW solar generating facility in the Mojave desert, east of Barstow, California. This analysis addressed the availability of labor for the construction and operation phases of the proposed facility, the potential for workers to temporarily or permanently relocate to the project area, and the impacts this would have on housing and other local and regional socioeconomic resources. Assessed the regional economic impacts of the project using an input-output model developed using IMPLAN modeling software and data. Developed estimates of the property and sales and use taxes associated with construction and operation of the proposed facility. Assessed potential environmental justice impacts.

Senior Social Scientist, February 2008 to Present
USDI Bureau of Land Management, USDA Forest Service, Wyoming Industrial Siting Council, Idaho Power, and Rocky Mountain Power, Gateway West Transmission Line Project, WY and ID
Evaluated the social and economic impacts of a 1,000 mile, 500-kV electric transmission line extending from close to Casper, Wyoming to south of Boise, Idaho. Compiled and analyzed data for Albany, Carbon, Converse, Lincoln, Natrona, and Sweetwater counties in Wyoming. Worked with federal, state, and local agencies with jurisdiction over the project area. Assessed the availability of labor for the construction and operation phases of the proposed facility, the potential for workers to temporarily or permanently relocate to the project area, and the impacts this would have on housing and other local and regional socioeconomic resources. Assessed the regional economic impacts of the project using an input-output model developed using IMPLAN modeling software and data. Developed estimates of the property and sales and use taxes associated with construction and operation of the proposed facility. Assessed the potential for environmental justice impacts in accordance with Executive Order 12898.

Senior Social Scientist, 2007 to 2009
Public Utility District No. 1 of Chelan County and USDA Forest Service, Entiat 115 kV Transmission Line Program NEPA/SEPA EA, Chelan County, WA
Project manager for a NEPA EA to evaluate a proposed 115 kV transmission line project in Chelan County, Washington. This project was designed to meet the requirements of the USDA Forest Service and BLM, as well as the analysis required under SEPA and the requirements of the Washington DFW and Washington DNR. Managed public scoping, preparation of the EA, response to public comments, and wrote the Finding of No Significant Impact for the USDA Forest Service. Prepared the socioeconomic, land use, and visual resources analyses for the project, and evaluated potential environmental justice impacts in accordance with Executive Order 12898.

Senior Social Scientist, October 2006 to 2009
Jordan Cove Energy LNG Terminal and Williams Pacific Gas Connector Pipeline Project, Third Party FERC Services, Coos, Douglas, Jackson, and Klamath counties, OR
Provided third party review of draft socioeconomic and transportation resource reports prepared on behalf of the project proponents for the proposed Jordan Cove Liquefied Natural Gas (LNG) Terminal and Pacific Connector Gas Pipeline Projects in Oregon, on behalf of the Federal Energy Regulatory Commission (FERC). Prepared the social and economic and transportation sections for the EIS based on the draft resource reports. Evaluated potential environmental justice impacts.

Senior Social Scientist, April 2008 to Present
Palomar Gas Transmission Project, Third Party FERC Services, Wasco, Clackamas, Marion, Yamhill, Washington, Columbia, and Clatsop counties, OR
Provided third party review of draft socioeconomic, recreation, land use, and aesthetics resource reports prepared on behalf of the project proponents for the proposed Palomar Gas Transmission Project in Oregon, on behalf of the Federal Energy Regulatory Commission (FERC). Prepared the social and economic, transportation, land use, recreation, and visual resource sections for the Draft EIS based on the draft resource reports. Evaluated potential environmental justice impacts.

Senior Social Scientist, 2008
Suncadia LLC, No. 4 Mine Site, Master Planned Development EIS, Kittitas County, WA
Assessed the potential impacts of a 31 acre master planned development in the city of Roslyn on aesthetics and parks and recreation.

Senior Social Scientist, 2008
USDA Forest Service, Review and Evaluation Report on the 2003 to 2007 Helicopter Landing Tours on the Juneau Icefield Final EIS and ROD, Tongass National Forest Service, AK
Prepared the recreation and social and economic components of this analysis, which assessed whether conditions have changed sufficiently to warrant revisions to the 2002 Final EIS and ROD for helicopter landing tours on the Juneau Icefield.

Senior Social Scientist, June 2006 to January 2008
USDA Forest Service, Tongass National Forest Land and Resource Management Plan Amendment, Tongass National Forest Service, AK
Prepared the economic and social, recreation, subsistence, roadless area, and wilderness analyses for a NEPA Draft EIS that evaluated seven alternatives for managing the Tongass National Forest. This project was generated by a Ninth-Circuit Court decision mandating that the Forest redo their Forest Plan. The Court directed the Forest Service to consider a wider range of harvest alternatives and to consider the cumulative effects to wildlife habitat from harvest on private lands as well as on federal land. The Economic and Social analysis addresses the effects of the proposed plan alternatives on the regional economy and local communities, in terms of effects on the timber, recreation and tourism, and other

industries, as well as local land uses, subsistence, and resident recreation. Total (direct, indirect, and induced) impacts were estimated using IMPLAN. The analysis also addressed non-market values and ecosystem services, natural amenities, and quality of life. The economic analysis also assessed the economic efficiency of the proposed alternatives. The Recreation analysis assesses the effects of the proposed alternatives on future recreation supply and demand, in terms of the effects on the supply of types of recreation, recreation places, and developments and demand by residents, tourists, and outfitter/guide businesses. The Subsistence analysis evaluates the potential for the alternatives to affect subsistence resources and focuses on three key factors identified in Title VIII of the 1980 Alaska National Interest Lands Conservation Act (ANILCA): 1) resource distribution and abundance, 2) access to resources, and 3) competition for the use of resources. The Roadless Area analysis assesses the alternatives in terms of Land Use Designations and the portions of roadless areas that would be available for harvest under each alternative. None of the alternatives propose new wilderness, but there would be some variation in wilderness management under the alternatives. These variations are evaluated in the Wilderness analysis.

Senior Economic Analyst, August 2005 to January 2007
Washington State Department of Archaeology and Historic Preservation, Historic Preservation Economic Impact Study, WA
This study, co-authored with Dr. William Beyers of the University of Washington, measured the economic impacts of historic rehabilitation and heritage tourism on Washington State and provided separate assessments of these effects for King, Pierce, and Spokane counties. This analysis also estimated the economic impacts of investments in the nine Main Street communities in Washington State. These impacts were measured using the Washington State input-output model, with separate county-specific models developed to assess the impacts for each of the three counties. Impacts were assessed in terms of total output (sales), employment, labor income, and tax revenues. The analysis also assessed the effects of historic designation on property values for four single-family, residential Historic Districts in four cities: Bellingham, Ellensburg, Spokane, and Tacoma. These effects were assessed using a paired comparison approach that compared the values of properties within the subject Historic District with similar properties in other comparable neighborhoods that have not received historic district designation.

Senior Social Scientist, October 2005 to April 2008
Bonneville Power Administration, Rebuild of Libby (FEC) – Troy Section of Libby-Bonners Ferry 115-kV Transmission Line, NEPA EIS, Lincoln County, MT
Managed Tetra Tech's contract with BPA for various technical services related to the rebuild of 17 miles of existing 115 kV transmission line. Tasks included evaluating the social and economic, land use, and transportation impacts of the proposed alternatives, as well as conducting GIS analyses and wetland surveys along the existing and proposed transmission line corridors. The social and economic impact analysis addressed the concerns identified during public scoping for the project, including potential impacts to local employment and income, local businesses, housing, public facilities, and community values and concerns, such as property values and tax revenues. This analysis also assessed potential environmental justice impacts in accordance with Executive Order 12898.

Senior Social Scientist, August 2003-February 2007
Public Utility District No. 1 of Okanogan County and USDA Forest Service, Methow Transmission Project NEPA/SEPA EIS, Okanogan County, WA
Assistant project manager for a joint SEPA/NEPA EIS to evaluate a proposed 27.5-mile 115-kV electric transmission line and other reasonable alternatives, including the "hot" rebuild of an existing transmission line that crosses National Forest System lands. Managed public scoping, overall preparation of the EIS, and detailed response to public comments on the Draft EIS. The Final EIS was challenged in the Superior Court of the State of Washington by project opponents and the challenge was dismissed by the Judge on

all counts. Also responsible for preparing the social and economic, land use, and recreation impact analyses. The social and economic analysis addressed all social and economic concerns raised during public scoping for the project, including the economic impacts associated with construction and operation activities, improved electrical service reliability, and changes in tourism and regional visitation. The analysis also assessed the potential impacts of the alternatives on residential development and growth, property values, and electricity rates. The section also evaluated potential environmental justice impacts in accordance with Executive Order 12898.

Senior Social Scientist, January 2004-October 2006
USDA Forest Service and Clearwater Land Exchange - Oregon, Blue Mountain Land Exchange EIS, Malheur, Umatilla, and Wallowa-Whitman National Forests, OR
Senior Social Scientist responsible for developing the social and economic resource analysis and report for a 50,000-acre public/private, land exchange between the Forest Service and Clearwater Land Exchange-Oregon, a third party contractor representing more than 40 private landowners. This analysis evaluated the impacts of the proposed exchange alternatives on employment and the economy, traditional uses and lifestyles, government taxes and revenues, and land management administrative costs. Potential impacts to employment and the economy included potential effects to the lumber and wood products, recreation and tourism, and agricultural sectors. The tax analysis addressed potential impacts to Federal 25 Percent Fund payments, Payment in Lieu of Taxes (PILT) payments, State of Oregon property tax revenues, and Oregon Forest Products Harvest Tax revenues. Estimated changes in administration costs included changes associated with property boundary surveys, resolution of boundary disputes, road maintenance, easement acquisition, and Forest Service Special Use Permit administration. Assessed potential environmental justice impacts in accordance with Executive Order 12898.

Senior Social Scientist, September 2003-June 2006
USDI Bureau of Land Management, Butte Resource Management Plan and NEPA EIS, Butte Field Office, MT
Senior Social Scientist responsible for developing the social and economic resource analysis of proposed revisions to the Butte Field Office's Resource Management Plan, which involves more than 300,000 acres distributed over eight counties. The affected environment portion of the analysis incorporated data compiled for the BLM by the Sonoran Institute. The economic effects analysis used IMPLAN and the USDA Forest Service's recently-developed, IMPLAN-based Forest Economic Analysis Spreadsheet Tool (FEAST). Potential impacts include changes in employment and income, associated with potential effects to the agriculture, recreation, timber, mining, and government sectors. The analysis also evaluated the potential effects of the alternatives in terms of natural amenities, quality of life, non-use values, and ecosystem services. The social analysis assessed potential effects to specific geographic communities and potentially affected social/occupational groups. Potential effects on social/occupational groups—including ranchers, mill workers and loggers, and outfitter/guides—were assessed based on concerns and issues raised during public scoping for the project. This analysis also assessed potential environmental justice impacts in accordance with Executive Order 12898.

Senior Social Scientist, 2005
USDI Bureau of Land Management, Yuma Resource Management Plan and NEPA EIS, Yuma Field Office, AZ
Prepared the socioeconomic affected environment study for the NEPA EIS being prepared for proposed revisions to the Yuma Resource Management Plan. The BLM's YUMA Field Office manages more than 1.3 million acres spread over five counties. The affected environment analysis focused on potentially affected economic sectors and activities, including recreation, winter visitation, mining, agriculture, and timber. This analysis is based on data compiled from a variety of sources, including data compiled for the BLM by the Sonoran Institute.

Senior Social Scientist, 2003-2005
Washington Department of Natural Resources, NOAA-Fisheries, and US Fish and Wildlife Service, Federal Assurances NEPA EIS, WA
Assessed the social and economic, recreation, visual, and land use impacts associated with the current Washington Forest Practices Program and three alternatives. The purpose of the project was to provide Federal Assurances under the Endangered Species Act for the current Washington Forest Practices Program. Assessed potential environmental justice impacts in accordance with Executive Order 12898.

Senior Social Scientist, 2003-2005
Washington Department of Natural Resources (DNR), Sustainable Harvest SEPA EIS, Westside Counties, WA
Assessed the impacts of six sustainable timber harvest alternatives upon public utilities, including transportation impacts and payments to trust beneficiaries, recreation, and visual resources. The project assessed the impacts of management decisions for all DNR-managed lands in western Washington, approximately 1.5 million acres.

Senior Planner, 2003-2004
Columbia River Fish Mitigation System Flood Control Review Section 905(b) Analysis, Walla Walla District, WA, OR, ID, MT, BC
Participating in a 905(b) reconnaissance-level analysis that is being conducted to determine if there is a Federal interest in pursuing a more detailed feasibility analysis of modifying current system flood control operations to benefit endangered species, particularly salmon.

Senior Social Scientist/Economist, 2002-2004
USDA Forest Service, Couverden Timber Sale NEPA EIS, Tongass National Forest, AK
Analyzed the potential social and economic impacts of various timber sale alternatives. Examined current market demand for timber and southeast Alaskan forest products employment. Estimated changes in local employment and payments to the state associated with each alternative. Estimated the economic efficiency of the proposed alternatives using the Forest Service's NEPA Economic Analysis Tool (NEAT).

Senior Social Scientist/Economist, May 2002-September 2003
USDA Forest Service, Madan Timber Sale NEPA EIS, Tongass National Forest, AK
Updated the analysis of the potential social and economic impacts of various timber sale alternatives. Examined current market demand for timber and southeast Alaskan forest products employment. Estimated changes in local employment and payments to the state associated with each alternative. Estimated the economic efficiency of the proposed alternatives using the Forest Service's NEPA Economic Analysis Tool (NEAT).

Asst. Project Manager and Senior Social Scientist/Economist, August 2001-April 2003
USDA Forest Service, Tongass Land Management Plan Supplemental NEPA Environmental Impact Statement, Tongass National Forest, AK
Assistant Project Manager and lead Social Scientist for the Tongass Land Management Plan SEIS to evaluate roadless areas within the Tongass for recommendation as potential wilderness areas. Assisted in coordinating the evaluation of over 115 roadless areas (9.7 million acres) in the Tongass against the criteria for determining the potential for each roadless areas to be designated as wilderness. Responsible for the Economic, Social, and Recreation analysis of eight proposed alternatives including different proposals for areas of the Forest to be designated Wilderness. The Economic and Social analysis addressed the effects of wilderness designation upon the regional economy and local communities, in terms of effects on the timber, recreation and tourism, and other industries, as well as local land uses, subsistence, and resident recreation. Total (direct, indirect, and induced) impacts were estimated using

IMPLAN. The Recreation analysis addressed the effects of the proposed alternatives on future recreation supply and demand, in terms of the effects on the supply of types of recreation, recreation places, and developments and demand by residents, tourists, and outfitter/guide businesses. Duties included assisting with the coordination of the public participation process and oversight of the production and update of the public information web site.

Senior Social Scientist, March 2002-September 2002
USDA Forest Service, Tongass Roads Analysis, Tongass National Forest, AK
Assessed the social and economic effects of the existing road system on the Tongass National Forest, as well as the impacts of the roads on unroaded and road-related recreation.

Senior Social Scientist/Economist, July 2001-June 2002
Sierra Pacific Industries and USDA Forest Service, Silver Pearl Land Exchange NEPA EIS, El Dorado National Forest, Placer and El Dorado counties, CA
Senior Social Scientist responsible for developing the social and economic sections of the EIS to evaluate the impacts on the regional economy, government taxes and revenues, and land management administrative costs of a 6,100-acre land exchange between the Forest Service and Sierra Pacific Industries.

Lead Social Scientist, April 2001-August 2001
Calpine Corporation, Gilroy Power Plant Application for Certification, Gilroy, CA
Prepared the social and economic analysis for an Application for Certification for a proposed natural gas turbine power plant in Santa Clara County, California. Assessed the potential effects of construction and operation of the proposed facility on the local and regional economy, as well as potential impacts to fiscal resources and local services.

Lead Social Scientist, August 2001-September 2001
NASA, Marshall Space Flight Center, Propulsion Research Laboratory, NEPA Environmental Assessment, Huntsville, AL
Prepared the social, economic, and visual resources analysis for a proposed Propulsion Research Laboratory at Marshall Space Flight Center. Assessed the potential effects of construction and operation of the proposed facility on the local and regional economy, as well as potential impacts to fiscal resources and local services. Regional economic effects were assessed using multipliers developed by RIMS II.

Lead Social Scientist, April 2001-September 2001
USDA Forest Service, Moira Timber Sale NEPA Environmental Impact Statement, Tongass National Forest, AK
Analyzed the social and economic effects of a proposed timber sale on the Tongass National Forest. Addressed local and regional population and employment, timber supply, market demand, economic efficiency, payments to the state, and costs and benefits to the public.

Lead Social Scientist, January 1998-October 2001
U.S. Army Corps of Engineers, Walla Walla District, Lower Snake River Juvenile Salmon Migration Feasibility Study Report/NEPA Environmental Impact Statement, WA and ID
Served on the regional workgroup that oversaw and developed detailed technical analyses of the social and economic effects of four salmon recovery alternatives that included breaching four large federal dams on the lower Snake River. Coordinated and developed the detailed economics appendix from technical studies conducted by specialist workgroups. Total (direct, indirect, and induced) regional economic impacts were estimated using IMPLAN. Prepared the social resources, transportation, hydropower, water supply, recreation, cultural resources, Native American values, and environmental justice sections of the EIS.

Lead Social Scientist, September 2000-April 2001
U.S. Army Corps of Engineers, Lower Snake River Juvenile Salmon Migration Feasibility Study, Assessment and Evaluation of the Drawdown Regional Economic Workgroup Recreation Analysis Findings, WA and ID
Evaluated the findings of the recreation analysis developed by the Drawdown Regional Economic Workgroup for the Lower Snake River Juvenile Salmon Migration Feasibility Study. The original study projected visitation to the lower Snake River if the dams were removed and the associated economic costs and benefits to the region and the nation. This analysis conducted with Dr. Charles C. Harris of the University of Idaho assessed these findings by reviewing the methodology employed in the original analysis and comparing the findings with data for other free-flowing river stretches in the Pacific Northwest.

Social Scientist, April 2000-April 2001
USDA Forest Service and Weyerhaeuser Company, Huckleberry Land Exchange Supplemental NEPA Environmental Impact Statement, WA
Prepared the social and economic analysis of seven land exchange alternatives. The analysis addressed effects on local communities, the regional economy, government taxes and revenues, and land management administrative costs associated with a land exchange between the Forest Service and Weyerhaeuser involving 35,000 acres.

Social Scientist, May 2000-January 2001
USDA Forest Service, Upper South Platte Watershed Restoration NEPA Environmental Assessment, Pike National Forest, CO
Prepared the land use, transportation, and socioeconomic analysis for three alternatives designed to reduce fire risk and stream sedimentation. Potential impacts included those associated with logging and associated truck traffic.

Social Scientist, August 2000-March 2001
USDA Forest Service, Boundary Waters Canoe Area Wilderness Fuel Treatment Plan and NEPA Environmental Impact Statement, MN
Analyzed the social and economic effects associated with five fuel treatment alternatives designed to reduce fire risk in the Boundary Waters Canoe Wilderness Area. Impacts addressed included those associated with reductions in recreation use, fuel treatment costs, and an influx of temporary firefighters. Total (direct, indirect, and induced) regional economic impacts were estimated using IMPLAN-derived multipliers and coefficients.

Social Scientist, May 1999-October 1999
Confidential Client Report, Prudhoe Bay and other locations, AK
Developed detailed socioeconomic profiles for the state of Alaska, Anchorage, the North Slope, Kenai Peninsula, Fairbanks North Star, and Matanuska-Susitna boroughs, and the Valdez-Cordova Census Area. Assisted in estimating project impacts in terms of resident vs. nonresident employment, population change, distribution of new population, payroll and earnings, nonresident earnings spent in Alaska, and government employment and expenditures. Analyzed project impacts at the borough and community level. Prepared the associated confidential report.

Social Scientist, July 1998-March 1999
U.S. Army Corps of Engineers, Oakland Army Base Disposal and Reuse NEPA EIS, Oakland, CA
Assessed the potential regional economic impacts of various redevelopment scenarios using the U.S. Army Corps of Engineers Economic Impact Forecast System (EIFS). Modeled potential direct, indirect, and induced employment, population, income, and sales volume impacts for the construction and operation phases of each alternative.

Social Scientist, June 1998-June 1999
USDA Forest Service, Skipping Cow Timber Sale NEPA Environmental Impact Statement, Wrangell, AK
Developed economic and social resource reports to address the potential economic impacts of various timber sale alternatives. Examined current market demand for timber and southeast Alaskan forest products employment. Estimated changes in local employment and payments to the state associated with each alternative. Prepared the economics section for the Environmental Impact Statement.

Lead Social Scientist, August 1999-October 1999
National Park Service, NEPA Environmental Assessment for the Interim Management Plan, Elwha River Ecosystem Restoration, Clallam County, WA
Evaluated existing conditions and assessed the socioeconomic, recreation, and visual resource impacts associated with three management alternatives for 1,060 acres of land acquired to facilitate removal of the Elwha Dam.

Social Scientist, June 1998-July 1998
U.S. Army Corps of Engineers, Jackson Port Environmental Impact Statement, Jackson, AL
Evaluated the sociological and economic development effects of a proposed port facility in south-central Alabama. Assessed the economic, transportation, land use, aesthetic, and environmental justice impacts associated with construction and operation of the proposed project. Prepared the sociological and economic development sections for the Environmental Impact Statement.

Social Scientist, October 1998-October 1998
Calpine Corporation, Sutter Power Plant Application for Certification, Sutter County, CA
Reviewed socioeconomic, land use, and traffic and transportation sections, helped respond to agency comments, and developed written testimony for public hearings.

PREVIOUS EXPERIENCE

Dames & Moore, Cincinnati, OH, 1990-1995
Assistant Project Manager/Social Scientist, 1993-1994
Four Rivers Energy Partners, L.P, Pressurized Circulating Fluidized Bed Cogeneration Facility Environmental Information Volume, Calvert City, KY
Four Rivers Energy Partners proposed to build a Pressurized Circulating Fluidized Bed cogeneration facility jointly funded by the U.S. Department of Energy (DOE) as part of a federal Clean Coal Technology demonstration program. Assistant Project Manager responsible for production of an Environmental Information Volume for submission to the DOE. Conducted socioeconomic, land use, traffic and transportation, and visual resource analysis of potential project effects.

Assistant Project Manager/Social Scientist, 1991-1992
Dayton Power and Light Company, Natural Gas/Oil-Fired Generating Station, Dayton, OH
Assistant Project Manager responsible for production of an application to the Ohio Power Siting Board for a Certificate of Environmental Compatibility and Public Need. Participated in the detailed site selection process. Conducted socioeconomic, land use, and visual resource analysis for the selected preferred and alternate sites.

Assistant Project Manager/Social Scientist, 1991-1995
Cincinnati Gas & Electric Company; Dayton Power and Light Company, Ohio Edison Company, Toledo Electric Company and Cleveland Electric Illuminating Company. Electric Transmission Line Projects, North, Central, and Southwest OH
Assistant Project Manager for eight electric transmission line projects and one natural gas underground pipeline project located throughout Ohio and ranging in length from 9 to 30 miles. Proposed and evaluated alternate routings and evaluated potential economic, social, land use, and visual effects.

Project Manager and Principal Investigator, 1990-1995
Various Clients, Phase I Environmental Site Assessments
Project Manager and Principal Investigator for numerous Phase I Environmental Site Assessments, including a number of multiple, fast-track sites. Project sites were located throughout the United States and ranged from vacant land to industrial facilities. Site activities included limited asbestos surveys, radon testing, and lead paint testing.

Michael E. Hatch, RG, CEG

Principal Engineering Geologist

Areas of Expertise

Engineering Geology and Geotechnical Investigations
Siting and Permitting
Geologic and Fault Hazard Studies

Years of Experience

With URS: 26 Years
With Other Firms: 1 Year

Education

MS/1987/Geology/San Diego State University

BA/1976/Biology/University of California, San Diego

Registration/Certification

1995/Certified Engineering Geologist/California, No. 1925

1994/Registered Geologist/California, No. 5953

Overview

Mr. Hatch has 27 years of experience in engineering geology and geologic hazard studies relative to siting and permitting major municipal facilities, including outfalls, aqueducts, gas transmission pipelines, dams, power plants, substations, and electrical transmission lines. His experience includes project management, geologic hazard assessment, and general site evaluation and ranking for major power plant, pipeline, dam, and reservoir projects. Mr. Hatch is an expert in Quaternary and geomorphology studies relative to evaluating fault activity in diverse geologic settings. He is well versed in resource reporting for geology and soils in support of permitting power plants, electrical transmission lines, and pipelines.

Project Specific Experience

San Joaquin 1 & 2, Fresno County, CA:
Performed a geotechnical evaluation and prepared the geology and soils sections for the Application for Certification for a hybrid design solar thermal electric generating plant. The plant will comprise a solar field and biomass facility producing up to a nominal 53.4 MW net of renewable energy.

Solar Reserve, Imperial County, CA:
Performed fatal flaw analyses for multiple sites in Imperial County, elsewhere in California and in New Mexico under consideration for development of solar power plants. Researched the geotechnical, geologic and minerals settings that could impact site selection. Prepared written recommendations for site development and further study.

LightSource Renewables, CA and AZ:
Researched and summarized geotechnical and geologic related fatal flaws for 3 sites in California and 2 in Arizona for development of solar power plants.

Solar Two Energy Facility, Imperial County, CA:
Managed geological services for the design of up to 36,000 proprietary solar dish structure foundations. Coordinated the geotechnical investigation and seismic hazard evaluation, and prepared the geology and soils sections of the joint AFC/EIS (Environmental Impact Statement) document to comply with both NEPA and CEQA requirements.

Solar One Energy Facility, San Bernardino County, CA:
Coordinated the geotechnical and geologic hazards evaluation in support of the California Energy Commission and Bureau of Land Management NEPA compliance and permitting. Performed groundwater evaluation for project water needs. Proposed project encompasses approximately 27,000 acres of solar power facilities for up to approximately 2,700 MW of power electric generation.

Geology and Soils Resource Reports – SCE Tehachapi Renewables Transmission Project, San Bernardino, Riverside, and Los Angeles Counties, CA:
Managed geology and soils resource reports for AFC documents prepared for the extensive improvements to the SCE electrical transmission line system.

Geology and Soils Resource Reports for Starwood Power Plant, Fresno County, CA:
Managed geology and soils resource reports for AFC documents prepared for the proposed Starwood power plant.

Geology and Soils Resource Reports for Ausra Carrizo Solar Farm, San Luis Obispo County, CA:
Managed geology and soils resource reports for AFC documents prepared for proposed Solar project. Also provided senior management oversight and geologic hazards evaluations for the geotechnical investigations.

Notice of Intent (NOI) Preparation, SDG&E Combined Cycle Power Plant, San Diego and Imperial Counties, CA :
Managed the geosciences elements of an NOI document prepared for the CEC outlining five possible power plant sites. Sites were characterized relative to impacts and suggested mitigations for geologic resources, including minerals, paleontology, groundwater, soils, and geologic hazards.

SDG&E South Bay Repowering Project, San Diego, CA:
Managed the geologic and geotechnical tasks for SDG&E's licensing application to the CEC for a new electrical generator unit. The project included various alternative electrical transmission routes and their characterization relative to the impacts and suggested mitigations for geologic resources including minerals, paleontology, geologic hazards, groundwater and soils.

Teayawa Power Plant, Geotechnical Investigation and Geologic and Soil Resource Reports, Coachella Valley, CA:
Completed geotechnical investigations and prepared soil and geologic resource reports to support permitting for a proposed 40 acre power plant site and ancillary pipelines and transmission lines. Proposed ancillary structures cross the active San Andreas fault. Evaluated potential impacts from geologic hazards and discussed general mitigation measures.

Geology and Soils Resource Reports – Niland _IID Peaker Plant, Imperial County, CA:
Managed geology and soils resource reports for AFC documents prepared for proposed gas-fired peaker plant.

Otay Mesa Generating Project, San Diego, CA:
Managed the geologic and paleontological resource reports for this proposed power generating project. Also provided technical support for the environmental characterization of the plant site and the ancillary easements. Assisted the biological field surveys with characterization of sensitive habitat relative to geomorphology and soils.

El Secundo Power Redevelopment Project, El Secundo, CA:
Managed the geologic hazards and resource reports for the permitting of this redevelopment project. This existing power plant site is located in the coastal Los Angeles area and subject to coastal, seismic and slope related hazards.

Geologic Hazards Study and Geotechnical Investigations of SDG&E Talega Trabuco Transmission Line, San Diego and Orange Counties, CA:
Managed geologic hazard and the geotechnical investigations for this transmission line extending from Camp Pendleton to Mission Viejo through landslide prone terrain.

Geotechnical Investigation of Rosarito Natural Gas Pipeline, Baja California, Mexico:
Managed the field and geologic portions of this investigation of natural gas pipeline from U.S.-Mexico border to power plant. Pipeline route crossed major roadways, railways, rivers, and landslides. Pipelines were analyzed for temporary and permanent slopes, and geotechnical engineering recommendations were made for pipeline design and construction.

Geology and Soils Technical Report and Geotechnical Investigations, BNSF Third Main Track, San Bernardino, CA:
Task manager and project geologist for technical report and geotechnical investigations to support this project that includes a 15 mile section of new commercial rail line through the Cajon Pass area. Steep terrain, complex geology and large cuts are evaluated as part of the permitting and design evaluations for the project.

Mojave Pipeline, Northward Expansion, FERC Application and Geologic Hazards Evaluations, Central and Northern CA:
Managed the geologic resources report task for the FERC Application for this natural gas transmission line planned from Blithe to the San Francisco Bay area. Subsequent geologic hazards and geotechnical investigations were performed for the 600-mile long alignment. Project challenges included considerable landslide prone terrain and multiple active fault crossings.

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SHAWN C. JOHNSTON

Staff Botanist

Areas of Expertise	Rare plant and general botanical surveys Vegetation/habitat mapping Ecological habitat restoration Federal and state waters and wetland determinations and delineations Section 404 Permitting and Section 1600 Streambed Alteration Agreements
Total Years of Experience	
URS	< 1 year
Other Firms	10 years
Education	B.S., Biology; Emphasis in Evolution and Systematics, San Diego State University
Overview	Shawn Johnston has over 10 years of experience conducting rare plant and botanical surveys throughout the southwest region of the U.S. in such diverse habitats as Sonoran and Mojave desert scrubs, Joshua tree woodlands, Juniper and pinyon woodlands, chaparrals, coastal sages, and vernal pools. He is also accomplished restoration biologist who has lead or assisted in numerous successful arid lands and wetland restoration projects.
Project Experience	**Energy Projects** **Calico Solar Project** Lead botanist for a proposed solar energy project located near Calico, California. Duties include field and technical lead for the 2010 rare plant surveys of a 8,600 ac. site within Mojave desert scrub, and chenopod scrub. February 2010 – Present Tessera Solar **Rare Plant Survey and Wetland Assessment for Centinela Transmission Corridors** Conducted vegetation mapping, rare plant surveys, and wetland/waters assessment of 500 acres for potential transmission corridors in Sonoran Desert habitats in Imperial County. May, 2009. LS Power **Rare Plant Survey for SDG&E Sunrise Powerlink Proposed and Alternative Alignments** Lead Botanist for the rare plant surveys and reporting for the SDG&E Sunrise Powerlink project. A 300 mi. transmission alignment through diverse habitats e.g. desert scrubs and dunes, coastal sage, vernal pools, chaparrals. January 2007 – October 2008. San Diego Gas & Electric (SDG&E) **SDG&E Sunrise Powerlink Northern Proposed Alignment Wetland and Waters Delineation** Wetland scientist for wetland/water determination and delineation for the proposed SDG&E Sunrise Powerlink transmission line, and associated access roads. 2007 San Diego Gas and Electric **Biological Survey of the Homestead Wind Energy Project**

Lead Botanist and wetland scientist for botanical and wetland assessment for a proposed 1200 ac. wind energy site within Mojave Desert Scrub Habitat near Mojave, California. March 2006 through October 2006
Horizon Wind Energy

Pine Tree Wind Development Biological Studies
Conducted rare plant surveys and vegetation mapping for diverse desert Habitat, e.g. Mojave desert scrub, Joshua tree woodlands, and Juniper and Pinyon woodlands for a 8,000 ac. wind energy project located in Tehachapi, California. March 2004 – May 2005.
Los Angeles Department of Water and Power

Transportation Projects

SR 76 Middle Segment Wetland Determinations and Delineation (2006).
Client:
Assisted with wetland delineation and reporting of the SR 76 middle segment expansion. May, 2006 – September 2007
Caltrans, District 11/Dokken Engineering

Biological Impact Assessment for Proposed Reconstruction and Extension of Runway 14/32 and Associated Taxiway "E" at Reno Stead Airport (2006).
Conducted rare plant surveys and biological impact assessments for airport expansion.
Reno Stead Airport/FAA

SR 125 Quino Checkerspot Butterfly/ Vernal Pool Creation/Restoration
Position/tasks: lead Restoration Ecologist and Botanist for the implementation of a 126 ac. vernal pool creation and restoration project in Otay Mesa, California. March 2004 through October 2006.
Caltrans District, 11

Land Management Projects

Land Management Plan Hollenback Canyon Wildlife Area (2007).
Assisted with vegetation mapping, invasive plant assessment and rare plant surveys for a regional state park near Jamal, California.
California Department of Fish Game

Amargosa Valley Plant and Water Study
Lead botanist for a BLM supposed study on the Demographics and Ecology of the Amargosa Niterwort (*Nitrophila mohavensis*) and Ash Meadows Gumplant (*Grendelia fraxino-pratensis*) and the effects of ground and surface water on the plant populations. 2002.
Bureau of Land Management

Angela Leiba, GISP, Vice President

Senior Project Manager / GIS Manager/Visual Specialist

Areas of Expertise

Environmental Permitting and Analysis
Energy Projects
Project Permitting/Agency Coordination
Emergency Response/Emergency Planning
GIS Modeling/Analysis, Database Application Design, Website Design
Visual Resource Studies/Aesthetics/Simulations
Military Planning Projects
Flood Modeling Projects

Years of Experience

16 Years

Education

MS Program/1994/Computer Graphics/University of California, Los Angeles
BA/1992/Computer Graphics/San Diego State University
ESRI ArcGIS 9.0, 2005
ESRI Spatial Analysis, 3-D Analysis, Palomar College, 1999
ESRI ArcView Avenue Programming, SD Data Processing Center 1999, 1997

Registration/Certifications

Certified GIS Professional (GISP), GIS Certification Institute, 2006
Certified County of San Diego Visual Resource Specialist

Overview

Ms. Angela Leiba is a Vice President and Senior Project Manager with more than 16 years of experience. Ms. Leiba oversees the Environmental Management Group (consisting of approximately 70 specialists). Her project management expertise focuses on environmental projects, energy/power projects, emergency response/planning studies, visual resource assessments, and GIS projects/programs. She has helped prepare over 30 major environmental impact reports (EIRs), more than 100 environmental assessments (EAs) or technical studies, over a dozen Application for Certifications (AFCs), and dozens of environmental impact statements (EISs). She has also Project or Task managed environmental, traffic, water resource, biological, cultural, social impact, noise, air, environmental compliance, military, and planning efforts for numerous public and private agencies. She has served as Project Manager and/or Task Manager on hundreds of projects for local, state, federal, and private agencies.

Project Experience

Energy Projects

Ausra, Inc. 180MW Concentrated Solar Power (CSP) Solar Power Plant AFC, San Luis Obispo County, CA. Project Manager for the Application for Certification for an 180MW solar thermal generating facility located within San Luis Obispo County. Ausra uses a proprietary type of solar trough called a Compact Linear Fresnel Reflector. Once licensed, this project will likely be the first utility-scale solar power project under the CEC in California. The project covers two sections of land within the Carrizo Plain area in San Luis Obispo County. Project will include agency consultation and coordination including with the California Energy Commission (as lead CEQA agency) and ACOE, USFWS, CDFG, to name a few. **($1.5M) 2006-2009**

Stirling Energy Systems Concentrated Solar Power (CSP) Solar Two Solar Power Plant AFC/EIS, Imperial County, CA. Project Manager for the 750MW solar thermal generating facility located within Imperial County. The project will cover approximately 6,500 acres and will include 12,000–36,000 solar dishes. Managed joint CEQA/NEPA documentation preparation under joint thresholds of the California Energy Commission (CEC) and Bureau of Land Management (BLM). Facilitated project-level MOU between the CEC and BLM to help expedite joint process. MOU later became a State and Federal mandate. Managing all aspects of project permitting including technical resource analysis, agency review and consultation, public involvement and scoping and post-construction monitoring, once constructed. This project will be one of the largest solar power plant projects in the world, once built. **($3.5M) 2006-2009**

Spinnaker Energy (Martifer/Bethel Energy) 106MW San Joaquin 1 & 2 Solar/Bio-Fuel Power Plant AFC, Imperial County, CA. Principal-in-Charge and permitting support for the Application for Certification for hybrid design solar thermal electric generating plants, comprising a solar field and biomass facility for each plant. The two plants will each produce up to a nominal 53.4 MW net of renewable energy. The California Energy Commission will act as lead CEQA agency for the project. **($350K) 2006-2007**

Caithness (Solenergis) PhotoVoltaic (PV) Solar Permitting, San Bernardino, CA. Provided peer review and other support for solar energy project lead by Caithness Soda Mountain, LLC (Caithness). Caithness has requested a right-of-way grant to construct and operate a 350 megawatt (MW) solar electric power generating facility on federal lands managed by the U.S. Department of the Interior, Bureau of Land Management (BLM) located in San Bernardino County, California. Assisted URS team in providing comprehensive environmental and technical support services to assist Caithness in the permitting process with the BLM and other Federal and State agencies and assisting in the land use planning for the project. **($150K) 2008-2009.**

Solar Power Plant Siting/Fatal Flaw Studies, Nautilus Energy/Starwood Power, Western US. Task Manager for GIS analysis and mapping relating to helping Nautilus Energy locate a solar power plant location in the western US. GIS siting criteria and weighed modeling were used to identify key sites based upon siting criteria that included, but were not limited to, the following: solar intensity, slope, acreage, land ownership, distance to transmission, distance to gas, and distance to reclaimed water. Fatal Flaw studies were also performed for a variety of sites that were narrowed down from the GIS siting studies performed above. **($35K) 2007-2009**

Granite Wind, LLC - Granite Mountain Wind Energy Project, San Bernardino, CA. Ms. Leiba was the visual resources task leader for this Project. Granite Wind, LLC is proposing to construct the approximate 84-MW Granite Mountain Wind Energy Project, which will be located approximately 6 miles east of Apple Valley in San Bernardino County, California, comprised of 28 turbines. The proposed project will be located on private lands and on lands administered by the BLM. Ms. Leiba authored a Visual Impact Assessment (VIA) including an interim Visual Resources Management Classification and impact analysis combining methodologies and guidelines from the BLM, US Forest Service, Federal Highway Administration, CEQA, San Bernardino County and other local agencies. This visual resource methodology and the VIA is now being used by the BLM as an agency "template" for other wind projects in the Southwest. Additionally, Ms. Leiba oversaw the preparation of the visual resources section of the Project's EIS/EIR. **($52K) 2008-2009**

AES Somerset Coal Power Plant Unloading Project, AES, Niagra County, New York. Task Manager for Visual Resource Analysis and Visual Impact Assessment (VIA) review and updates. Provided peer review and updates to the Visual Impact Assessment performed for the New York Somerset Lake Unloading Project. The AES Somerset Power Plant (Plant), in operation since 1984, is a single 675 megawatt (MW) coal-fired electrical generating unit located on the south shore of Lake Ontario in the Town of Somerset, Niagara County, New York. The project added a loading and unloading dock to the existing power plant facility. The project looked at potential visual impacts to neighboring historic landmarks. **($25K) 2008**

Visual Resource Assessment for the Lower Deschutes Wild and Scenic River, Maupin, Oregon. Visual Resource Task Reviewer for the Lower Deschutes River upgrade project. The project was on Bureau of Land Management (BLM) lands and included a proposed pipeline crossing over the river. The Deschutes River is a federal and state designated Wild and Scenic River. Visual Resource management (VRM) BLM guidelines had to be adhered to while conducting the analysis. In addition a Visual Resource Inventory and Interim Resources Management Classification had to be conducted according to federal BLM VRM policy for the project. **($25K) 2008**

Otay Mesa Generating Station Power Plant Construction Monitoring, Calpine, San Diego County, CA. Project Manager for the Construction monitoring for a 510-MW gas-fired power facility located within San Diego County. Managing all oversight for multi-year construction phasing for project including agency consultation, managing and scheduling for compliance with conditions of certification, managing sub-consultants and monitoring field efforts – and being available for on-call services whenever the Project Compliance Manager needs assistance. **($800K) 2006-2009**

Solar Power Plant Siting Study, Edison Mission Energy, Western US. Task Manager for the GIS analysis and mapping relating to helping Edison Mission Energy locate a solar power plant in the western US. GIS siting criteria and weighed modeling were used to identify key sites based upon siting criteria that included, but were not limited to, the following: solar intensity, slope, acreage, land ownership, distance to transmission, distance to gas, and distance to reclaimed water. **($35K) 2007-2008**

Bethel Energy 100MW Solar/Bio-Fuel Power Plant CEQA Documentation, Imperial County, CA. Assistant Project Manager for the Application for Certification. Small Power Plant Exemption or Environmental Impact Report (depending on project configuration). Advised client on schedules and budgets for each of these alternatives as they move forward to try and permit their facility. Project in early stages currently. The California Energy Commission or the County of Imperial will act as lead CEQA agency. **($35K) 2006-2007**

Larkspur Power Facility AFC Amendment, San Diego County, CA. Project Manager 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. Facilitated all technical resource area peer review, project facilitation with the California Energy Commission and oversaw regulatory oversight from various technical resource area agency involvements. **($350K) 2007**

Starwood Midway Power Facility AFC, Fresno County, CA. Project Manager for the Application for Certification for a simple-cycle electric generating facility located within Fresno County. The facility will include two FT8-3 Swift Pac Gas Turbine Generator (CTG) units installed in a simple cycle power plant arrangement. The normal power plant rating will be 120MW. Facilitated all technical resource area peer review, project facilitation with the California Energy Commission and oversaw regulatory oversight from various technical resource area agency involvements. **($350K) 2006-2007**

Stirling Energy Systems Concentrated Solar Power (CSP) Solar One Solar Power Plant AFC/EIS, San Bernardino County, CA. Project Management team and peer reviewer for the 800MW thermal generating facility located within San Bernardino County, CA. The project will cover approximately 15,000 acres and will include over 36,000 solar dishes. Facilitated all technical resource area peer reviews, project oversight and overall guidance on joint documentation preparation, technical resource evaluation and analysis, agency input and permitting requirements, and public involvement oversight. **($2.5M) 2007-2009**

Solar and Wind Power Plant Siting Study, BP Energy, Western US. Task Manager for the GIS analysis and mapping relating to helping BP Energy locate a power plant location in the western US. GIS siting criteria and weighed modeling were used to identify key sites based upon siting criteria that included, but were not limited to, the following: solar intensity/wind generation, slope, acreage, land ownership, distance to transmission, distance to gas, and distance to reclaimed water. **($35K) 2007-2008**

Panoche Energy Center AFC, Fresno County, CA. Task Manager for several components of the Application for Certification for the Permitting of the Panoche Energy Center in Fresno County, CA. Panoche Energy Center, LLC was the applicant to the California Energy Commission. Evaluating impacts of four LMS100 natural gas-fired combustion turbine generators was part of this simple-cycle power generation project. **($35K) 2007-2008**

Bullard Energy Center AFC, City of Fresno, CA. Task Manager for the visual resources components of the Application for Certification for the Permitting of the Bullard Energy Center in the City of Fresno, CA.

Bullard Energy Center is a proposed simple-cycle electrical generating facility occupying twelve acres. Bullard Energy Center, LLC is the project applicant to the California Energy Commission. **($35K) 2007-2008**

Solar Power Plant Fatal Flaw Studies, LightSource Renewables, California/Arizona. Task Manager and Client Manager for Fatal Flaw studies relative to five sites that were previously chosen (3 in CA, 2 in AZ). A complete GIS analysis and subsequent desktop review by a variety of specialists (including water, geotechnical engineering/geology, cultural resources, biological resources, and land use) were performed. A write-up of potential fatal flaws and conclusions by each resource area, in addition to the environmental constraints map generated by the GIS system were included in the deliverables. **($125K) 2008-2009**

Gaviotta Coast Wellhead Power Project, LMS100. Task Manager for the visual resources studies for the potential permitting of a Wellhead LMS100 power project along the Gaviotta coast. Scenic highway issues were of primary concern, since the energy project location was in viewshed of the local scenic highway. Viewshed analyses and visual simulations were completed as part of these initial environmental, specifically visual resource issues for the proposed project. **($25K) 2007-2008**

NextLight, AV Solar Ranch One Project, Los Angeles, CA. Ms. Leiba was the visual resources task leader for this Project. NextLight Renewable Power, LLC is proposing to construct the approximate 230-MW Photovoltaic Solar Ranch One Project, which will be located on a 2,100-acre site in Antelope Valley, in unincorporated Los Angeles County, approximately 20 miles northwest of the City of Lancaster. The proposed project will be located on private lands and on lands administered by the County of Los Angeles. Ms. Leiba oversaw the preparation of the visual resources section of the Project's EIR consistent with CEQA, Los Angeles County and other local agencies. **($25K) 2009**

Solar and Liquid Natural Gas (LNG) Power Plant Siting Study, Chevron/Texaco, West Coast, US. Task Manager for Geographic Information System, Visual Resource, Social Economic and other analyses relating to siting potential solar and LNG power plants within the western united states. Worked directly with the Program Director to help with early environmental constraint issues. **($35K) 2006**

Starwood Power Plant Construction Monitoring, Fresno County, CA. Project Manager for the Construction monitoring for a 120MW gas-fired power facility located within Fresno County. Program Manager for compliance with all Conditions of Certification proposed in the CEC's Final Commission Decision. Documentation of all certification was included in these efforts. Managing all oversight for multi-year construction phasing for project including scheduling, reporting of conditional compliance, additional permitting, agency consultation, managing sub-consultants and monitoring field efforts – and being

available for on-call services whenever the Project Compliance Manager needs assistance. **($800K) 2008-2009**

Carson Hydrogen Power Project, Long Beach, CA. Task Manager for Visual Resources permitting relating to the proposed project. This project in a major initiative by BP Alternative Energy (in partnership with Edison Mission Energy) to use gasification technology to gasify petroleum coke (a low value refinery waste product) to produce a hydrogen-rich gas that will then be combusted in next-generation turbines to be developed by GE in order to produce electric power. **($55K) 2007**

Niland Proposed Power Plant, Small Power Plant Exemption (SPPE), Imperial County, CA. Imperial Irrigation District Peaker Development Project. Visual Resources Task Manager for SPPE Visual Resource Section. Also developed visual simulations and public meeting materials for the proposed development of a 30-acre generating station, Imperial County. **($55K) 2007**

El Centro Generating Station, Small Power Plant Exemption (SPPE), El Centro, CA. Visual Resources Task Manager for SPPE Visual Resource Section for the Imperial Irrigation District Project. Also developed visual simulations and public meeting materials for the proposed project. Development included an 80-acre treatment pond (160 acre area) and the addition of an additional generator adjacent to an existing generating station in Imperial County. **($55K) 2007**

Chevron Liquid Natural Gas (LNG) Environmental Assessments, West Coast, U.S. Task Manager for Visual Resource, Social Economic and Geographic Information System analyses for this highly controversial proposed off-shore liquid natural gas platform. Worked directly with the Program Director to help with early environmental constraint issues. **($55K) 2006**

Wind Implementation Monitoring Program, County of Riverside, California. Project Manager for the County of Riverside to evaluate the ongoing and potential additional impacts of Wind Farm Development within the region. Managed visual assessment, noise assessment, air quality study, communication systems assessment, navigation element study, fire protection study, police service element, retrofit element and biological resources components. **($136K) 2006**

San Onofre Nuclear Generating Station (SONGS) Units 2 and 3 Steam Generator Replacement Project. Task Managed preparation of a Proponent's Environmental Assessment for the California Public Utilities Commission, and participated in other aspects of project permitting, including NEPA compliance on Marine Corps Base Camp Pendleton and permitting through the California Coastal Commission. **($350K) 2003**

Cal Energy Geothermal Power Plant, California Energy Commission, California. Served as Task Manager 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. A complete visual resource assessment, including several visual simulations of the plant and corresponding transmission lines, were included in this effort. Over 120 GIS exhibits analyzing over a dozen technical disciplines were also created. **($350K) 2006**

Oak Valley Substation & Transmission Line Project, Southern California Edison, Riverside County, California. Visual Resources Task Manager 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). Visual simulations showing potential transmission line alternatives and the substation were included as part of this effort. Visual assessment included reviewing potential visual impacts relating to highly populated areas where new transmission lines were to be installed, including a freeway over-crossing. **($55K) 2006**

Powerplant Siting Study, ENPEX Development, Marine Corps Air Station, Miramar, CA. Task manager for GIS components of powerplant siting study. Worked to develop model of environmental and man-made constraint information, compiled GIS model and mapping elements to show areas with potential for site development. Coordinated with Air Station, agency, ENPEX and sub-consultants to identify, gather and reconcile relevant GIS data for project. **($55K) 2006**

GIS Solar Power Plant Siting Study, US Renewables Group, Western US. Task Manager for the GIS analysis and mapping relating to helping US Renewables Group locate a solar power plant in the western US. GIS siting criteria and weighed modeling were used to identify key sites based upon siting criteria that included, but were not limited to, the following: solar intensity, slope, acreage, land ownership, distance to transmission, distance to gas, and distance to reclaimed water. **($35K) 2007-2008**

Kinder Morgan Concord-to-Sacramento Pipeline, **Northern California**. Task Manager for pipeline project from Concord, CA to Sacramento, CA. **($55K)**

Kinder Morgan California-to-Nevada Pipeline, **Northern California**. Task Manager for pipeline project from Colton, CA to Las Vegas, NV. I complete environmental and man-made constraint analysis was completed as part of this project. **($160K)**

Meadow Valley Generating Project EIS, **Southern Nevada**. Task Manager for 1,000 MW, gas-fired combined cycle power plant proposed in Southern Nevada. **($115K)**

Imperial County Gas Pipeline, Pacific Gas & Electric/Foster & Wheeler, Imperial County, California. Task Order Manager in support of archaeological services for the transmission line project. **($145K)**

South Bay Power Plant Land Use/Soil/Economic Studies, EDAW/Duke Engineering, San Diego County, California. Oversaw analysis of land use, soil, and economic issues related to relocation of a power plant. **($35K)**

InterGen Transmission Line, Imperial County, California. Analyst for constraints and possible impacts as related to the project corridor. Archaeological and biological impact maps were produced for the entire corridor. **($105K)**

All-American Conversion Line 1903, ENSR, San Bernardino County, California. Analyst for possible impacts as related to archaeological resources along the project corridor. **($75K)**

Bi-National Pipeline Study, Del Mar Land Management, San Diego County, California. Task Managed constraints analysis for possible impacts as related to archaeological resources along the project corridor. **($55K)**

Valley-Rainbow Transmission Line, Power Engineering, San Diego and Riverside Counties, California. Task Manager for several alternative routes for a 500-kilovolt transmission line corridor. Biological, environmental, archaeological, and social impacts were the focus. **($135K)**

AEP Constraints and Permitting, Energy Management and Services Co., Imperial County, California. Task Manager to help analyze and identify possible environmental, biological, archaeological, and social impacts related to transmission line corridor. **($55K)**

AT&T China, US Cable Network, California State Lands Commission, China to U.S. Task Manager overseeing GIS/CAD mapping, database development, and analysis of social impacts as related to fiber optic cable networking along seafloor. GIS seafloor modeling was conducted as part of the project. **($45K)**

Imperial Irrigation District L-Line, Imperial Irrigation District, Imperial County, California. Extensive analysis and mapping was conducted to help evaluate potential cultural impacts from a proposed transmission line. **($115K)**

Environmental Projects

Port of San Diego/Airport Authority Demolition EIR, San Diego, CA. Project Manager for the EIR for the proposed demolition of existing aviation manufacturing facilities located on North harbor Drive in San Diego, CA. The project includes removal of approximately 50 existing

structures; removal of asphalt and other paving materials; removal and disposal of all hazardous and contaminated construction materials; removal and disposal of chlorofluorocarbons; cutting, capping and removal of all underground piping and utility systems, and capping storm drain and sanitary sewer laterals. Multiple agency coordination, potential historic building demolition, least tern nesting mitigation, hazardous material coordination, and coastal zone permitting required. **($415K) 2008-2009**

County of San Diego On-Call Environmental Services, San Diego, CA. 2006-2007. Project Manager for on-call environmental contract. Task orders not to exceed $500K. Environmental projects include capital improvement projects, highway projects, and other miscellaneous county-improvement projects. Over a dozen projects managed focusing on road improvement projects. Majority of projects included either biological or cultural resource tasks. Projects were typically quick-burn – received notice within a day, had resources allocated within 2-3 days, work completed in a week or two, tops. All projects completed on-time/on or under budget. **($500K) 2006-2007**

County of San Diego On-Call Environmental Services, San Diego, CA. 2008-2009. Project Manager for on-call environmental contract. Task orders not to exceed $500K. Environmental projects include capital improvement projects, highway projects, and other miscellaneous county-improvement projects. Projects included: Viejas Bridge Replacement, Summit Drive Upgrades, Woodside Drive Upgrades, Fallbrook Airport Improvements, Moosa Creek Upgrades, Lone Star Road Improvements, Tavern Road Culvert Replacement, Pauma Road Bridge Replacement, SV Bonita Road Upgrades, to name a few. **($500K) 2008-2009**

Coastal Rail Trail EIR/CE, San Diego, California. Project 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 Map, and Genesee (Nobel Drive) to Gillman Drive. The project includes multiple agency review including Caltrans/FHWA, City of San Diego and others. A coastal zone permit will also be included. **($294K) 2006-2009**

El Cajon Redevelopment District GIS Webserver Project, El Cajon, San Diego County, CA. Project Manager for GIS project. Oversaw development of webserver developed in-house. Site was designed to manage real estate, environmental and other redevelopment district information in one cohesive public website. The project included meeting with the District to review needs of users and the public. Information was gathered, reviewed, updated and integrated into an on-line mapping viewer program that was linked to the District's existing website. Staff training and a step-by-step guide to usage was included in the project. **($75K) 2006-2007**

High Speed Rail EIR/EIS, Los Angeles, CA. Task Manager for preparation of visual impact assessment (VIA) and subsequent Visual Resources section for the EIR/EIS. The VA required Federal Highway Administration and Caltrans aesthetic guideline adherence. Responsible for analysis relating to the portion of the project covering Los Angeles Union Station (North end of the Station) to the Palmdale Transportation Center in Palmdale, CA. **($85K) 2006-2009**

Placer Parkway Tier I EIR/EIS, Counties of Placer, Sutter and Sacramento, CA. Task Manager for preparation of visual impact assessment (VIA) and subsequent Visual Resources section for the Tier 1 EIR/EIS. The VA required Federal Highway Administration and Caltrans aesthetic guideline adherence. Five current project alternatives were assessed as part of this proposed parkway connecting major State Highways in northern California. **($65K) 2006-2007**

SANDAG On-Call Environmental Services/I-805 Widening Project, San Diego County, CA. Ms. Leiba is serving as the Principal GIS Manager and Visual Resource Task Manager for all relevant studies under this on-call contract. All projects are transportation related within San Diego County. Presently working on study for expansion of I-805 from the Mexican Border to the 805/I-5 merge. **($85K) 2006-2009**

State Route 56/Interstate 5 Interconnections, City of San Diego, California. Deputy Project Manager and Visual Resources Task Manager for 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. Also managed the visual assessment relating to the project. **($300K)**

Nursery Products Composting Facility Initial Study (IS)/Mitigated Negative Declaration (MND)/Environmental Impact Assessment (EIR), San Bernardino, CA. Assistant Project Manager and Visual Resources Task Manager for the proposed development of a 160-acre biosolids/green waste composting facility, San Bernardino County. **($350K)**

San Simeon Bridge Widenings Visual Impact Assessment (VIA), San Luis Obispo, CA. Visual Resource Task Manager for preparation of visual impact assessment (VIA) for two bridge widenings in San Luis Obispo. Oak tree removal and mitigation was also a key component addressed in this assessment. The VA required Federal Highway Administration and Caltrans aesthetic guideline adherence. Visual simulations and coordination with project engineer were also included as parts of the assessment. **($35K)**

San Diego Unified School District GIS Webserver Project, San Diego County, CA. Project Manager for GIS project. Oversaw development of webserver refined in-house. Site was developed to manage school site information, environmental factors and other district information in one cohesive private/public website. The project included meeting with the District to review needs of users and the public. Information was gathered, reviewed, updated and integrated into an on-line mapping viewer program that was linked to the District's existing website. Staff training and a step-by-step guide to usage was included in the project. **($50K)**

Coastal Rail Trail Phase I Studies, City of San Diego, CA. Environmental Project Manager responsible for 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. Helped manage project oversight, budgeting, environmental overview, public meeting support, and sub-consultant oversight. An environmental assessment and 30% engineering were the products of Phase I of the project. Phase II will consist of Final engineering and Design, once funding becomes available. **($150K) 2002**

Soil Erosion Surveys, GIS/GPS Database Collection and Plan Development, Marine Corps Air Station, Miramar, San Diego, CA. Project Manager responsible for as aspects of the project including field surveys, GIS/GPS data collection, soil survey collection, soil erosion modeling, PH soil testing, Best Management Practices (BMP) restoration, and methodology oversight for both GIS-related and Soil Survey-related data. 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 covered 14,000ac. of soil. **($150K)**

Native Plant Restoration, Marine Corps Air Station, Miramar, San Diego, CA. Project Manager responsible for as aspects of the project including field surveys, data collection, native plant restoration oversight, and implementation oversight of Best Management Practices (BMP) for two highly eroded sites on 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. These two sites were the focus of restoration due to their proximity to highly used training areas. Managed all five years of project maintenance including oversight of subconsultant, Native Landscapes. **($100K) 2007-2011**

State Route 76 Improvements, San Diego County, CA. Task Manger for the State Route 76 improvements. Geographic Information Systems were utilized to calculate potential constraints and potential impacts for various resource areas affected by the improvements. **($50K)**

Carmel Valley Bike Feasibility Study, San Diego County, CA. Environmental Manger for the Carmel Valley Bikeway Feasibility Study.

Topics covered included traffic, noise, visual, biology and other potentially affected resource areas. **($100K)**

Southwest Division (SWDIV) Navy Facility Assessment, San Diego County, CA. Task Manger for Geographic Information System mapping and analyses for tracking progress of asset evaluation. Project included GIS conversions from AutoCAD of over 1200 facilities. Geodatabases were created including such things as, asset use, square footage, age of building and more. **($150K)**

On-call Consulting Services for Otay Land Company, Otay Land Co., LLC. Task Manager for on-call consulting services contract for 4,800-acre ownership within Otay Ranch planning area. Biological surveys and GIS analyses and mapping were major task orders for the client. **($85K)**

San Bernardino County General Plan Update, Environmental Impact Report (EIR), San Bernardino County, CA. Visual Resources Task Manger for Aesthetic/Visual Resource Issues associated with updating the county general plan. Complete EIR section and relevant write-ups were included as part of this project. **($50K)**

Unexploded Ordnance (UXO) Assessment for San Diego Unified School District, San Diego County, CA. Task Manger for Geographic Information System mapping and analyses for tracking progress of unexploded ordnance studies relating to the potential re-use of these areas for proposed school sites. **($40K)**

Miramar Landfill Raise EIS/EIR, City of San Diego, California. Task Manager for the Visual Assessment and supporting EIS/EIR. The Miramar Landfill is being evaluated for potential impacts relating to the eventual raise of twenty feet in order to accommodate additional landfill capacity. Miramar Landfill sits on land leased to the City of San Diego. Ms. Leiba also managed several efforts relating to public outreach/public meetings. Visual simulations with and without mitigation were important pieces of this evaluation. NEPA and CEQA determinations were also included as part of this effort. **($350K) 2006-2008**

State Route 46/Highway 101 West Interchange Project, Paso Robles, San Luis Obispo County, California. Visual Resources Task Manager for the VIA for interchange project. Managed oak tree mitigation and scenic highway elements as part of the project. Handled all coordination with agency leads and client to assure project was in compliance with the San Luis Obispo County Council of Governments and the Regional Transportation Plan. This was a precursor to the next phase of improvements in the region, the East interchange. **($50K) 2006-2007**

State Route 46/Highway 101 East Interchange Project, Paso Robles, San Luis Obispo County, California. Visual Resources Task Manager for the VIA for controversial interchange project. Dealt with oak tree

mitigation and scenic highway elements as part of the project. Handled all coordination with agency leads and client to assure project was in compliance with the San Luis Obispo County Council of Governments and the Regional Transportation Plan. **($45K) 2005**

Santa Barbara Ranch EIR, County of Santa Barbara, California. Visual Resources Task Manager for the EIR for the development of the Santa Barbara Ranch development. Undeveloped coastline along the scenic highway 101 was evaluated for potential impacts relating to development of a project consisting of several mansions, an equestrian farm and other ranch-style complex facilities. Undeveloped coastal bluffs, night lighting, scenic highway, and coastal zone issues were several factors that played into the visual resource/aesthetic impact determinations. Several visual simulations were also incorporated into the visual resource documentation showing various development alternatives. **($45K) 2005**

Newhall Ranch EIS/EIR, Los Angeles County, California. Visual Resource Task Manager for development project in Los Angeles County. Seven development alternatives were equally analyzed for potential visual impacts for this project. This tiered EIS/EIR document included assessing 21,000 residential units and accompanying components including several bridges. The project is highly controversial and includes Army Corps of Engineer issues relating to wetland impacts. **($65K) 2005**

North Spring Street Bridge Widening EA/EIR, County of Los Angels, California. Visual Resource Task Manager for the widening of a historic bridge within the urban core of Los Angeles County. With several potential sensitive resources in the area, the widening included several key visual resource issues including: historic structures, public art removal, oak tree removal, park area takes, train/light rail transit viewers and more. Since the widening affected several densely populated and highly unique community groups, ensuring development was handled in compliance with each community plan was also a key component of this project. **($55K) 2006-2009**

Interim Improvements for the Interstate 5-State Route 56 Interconnections, City of San Diego, California. Project Manager and Visual Resources Task Manager 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. Oversaw Noise, Traffic, Biology, Water Resource and Visual Resource Technical Write-ups. Managed coordination with FHWA, Caltrans and the City of San Diego. **($85K) 2002-2003**

Cathedral City Transfer Station EA, Waste Management, Riverside County, California. Visual Resource Task Manager for preparation of an EA evaluating the proposed waste management facility in Riverside County, California. New project components included construction of a

transfer building, recycling drop-off, office, weigh station, and parking area. Specific City visual guidelines, as well as County of Riverside aesthetic standards, were of concern for this new facility. **($35K)**

Price Canyon Road Widening Visual Impact Assessment/EA, County of San Luis Obispo, California. Visual Resource Task Manager for preparation of visual impact assessment (VA) and subsequent Visual Resources section for the EA. The VA required Federal Highway Administration and Caltrans aesthetic guideline adherence. Simulations were also generated for inclusion in the documents. **($35K) 2004**

Black Mountain Water Treatment Plant EIR, County of San Diego, California. Task Manager for visual simulations and visual resource assessment assistance for an EIR for a proposed 42-acre water treatment plant within Black Mountain Ranch Subarea I boundaries. Interactive 3-D model of the water treatment plant in addition to simulations were prepared for use with the environmental documentation relating to the project. Viewshed modeling was also conducted as part of the project. **($25K) 2001**

Mariposa Composting Facility EA/EIR, Mariposa County/U.S. Forest Service, California. Visual Resource Task Manager for preparation of an EA/EIR evaluating the expansion of a landfill facility in Mariposa County, California. New project components included construction of a composting facility and lighted parking area. Lighting and glare studies were completed to comply with the area night-sky ordinance. Because of the project's rural nature and its proximity to Yosemite National Forest, visual character mitigation was also included in the assessment. Because the U.S. Forest Service was partially funding the project, an EIR was also completed incorporating several visual simulations.
California Environmental Policy Act/National Environmental Policy Act. **($35K)**

Port of Long Beach, Piers J South Marine Terminal Projects, Long Beach, CA. Task manager for three separate EIS/EIRs and Application Summary reports for a 385-acre marine terminal project to be located on Pier J South. The Project features associated with all development scenarios included landfilling (from 52 to 115 acres) submerged land, dike and wharf construction, and inter-modal rail. Additionally, the project entailed the demolition of 15 acres of terminal on Pier F to allow for Pier J The U.S. Army Corps of Engineers was the federal lead agency. **($500K) 2003**

Metropolitan Water District Habitat Conservation Program (MWD HCP), Southern California, US. Task Manger for the Geographic Information Systems (GIS) component of the project. GIS was utilized to map and analyze environmental constraints for the Water District's owned properties. Since the project area was huge, sample areas were

chosen using the GIS and each area was analyzed then compiled to form the basis for potential habitat conservation in the area. **($50K)**

Pier T Terminal Modification, Port of Long Beach, CA. As the on-call consultant to the Port of Long Beach, Ms. Leiba helped prepare the Addendum to the Long Beach Complex Environmental impact Report. The Addendum assessed the 20-acre site within the greater Pier T complex for a change from development as a ship repair facility to an expansion of adjacent container terminal facilities. **($150K) 2003**

Piers G and J Terminal Development, Port of Long Beach, California. As the on-call consultant to the Port of Long Beach, California, Ms. Leiba helped prepare of the EIR and Application Summary Report for this 315-acre marine terminal redevelopment project. The EIR evaluated the four-phased project that would be constructed over an 11-year period. Project features included landfilling 53 acres of submerged land, dike and wharf construction, inter-modal rail. **($150K) 2003**

Vegetation Management EA, Federal Emergency Management Agency, San Bernardino, California. Visual Resource Task Manager for preparation of an EA evaluating several burn sites in San Bernardino. A viewshed assessment was completed to help with overall analysis. The managed burn sites were mapped in GIS in relation to any area sensitive viewers, which helped with overall assessment of the project. **($25K)**

Edom Hill Transfer Station EA, Cathedral City, California. Task Order Manager for the Visual Resources section for Waste Management of California, Inc./Waste Management of the Desert to design and construct a 35,000-square-foot, enclosed transfer station and an adjacent 2,500-square-foot office building on 27.5 acres east and south of Edom Hill Road, near the west side of the Edom Hill Landfill in the Coachella Valley. **($35K)**

Sorrento Valley Road EIR, City of San Diego, California. 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 and mapped in GIS with special emphasis on traffic and noise impacts as well as biological permitting and mitigation. Plan and Final Report were generated as part of this project. **($350K)**

Mira Sorrento Place Road Extension, City of San Diego, California. Task Manager 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. This project won an Association of Environmental Professionals (AEP) award for environmental documentation. **($85K)**

Miramar Hills Curve Realignment/Second Main Track EIR, North County Transit District (NCTD), San Diego, California. Task Manager for preparation of an Environmental Impact Report for proposed realignment and second main track through Soledad Canyon in San Diego, California. Served as task leader for land use impacts analysis and helped coordinate preparation of the Environmental Impact Report. **($85K)**

SONGS Unit 1 Reactor Pressure Vessel Transport Project. Task Managed preparation of a NEPA EA on Marine Corps Base Camp Pendleton and in other aspects of project permitting, including permitting through the California Coastal Commission. **($85K) 2002-2003**

Carmel-Valley Road Improvements, City of San Diego/Caltrans, California. Task Manager for the CEQA compliance for the controversial Carmel Valley Road Project. After extensive coordination with permitting agencies and the community, an EIR was prepared to evaluate the effects of improving Carmel Valley Road between Interstate 5 and the Pacific Coast Highway. Oversaw mapping which included potential wetland impacts due to the expansion of the roadway. **($300K) 2000**

State Route 56 EIR, City of San Diego, California. Task Manager for the State Route 56 (SR-56) EIR and associated studies. The project involved working closely with the City on preparation of biological and land use constraints analyses consistent with the MSCP and City MSCP Subarea Plan, which were finalized during the SR-56 study process. Using GIS background data, a database was updated through focused biological surveys, including surveys for sensitive chaparral plant species, the California gnatcatcher, vernal pools and San Diego fairy shrimp, and wetlands delineations. Assisted in an analysis using GIS MSCP data to facilitate a potential MSCP boundary adjustment for a parcel near the Camino Ruiz interchange. Section 404/401 and 1601 permit applications were performed using the updated MSCP dataset, and mitigation ratios were based on City MSCP plans. **($400K) 2000**

Miramar Road Pipeline Project, San Diego County, California. Task Manager for evaluating potential project impacts to noise levels, vegetation, and sensitive species in the project area. Also incorporated a VISTA (site assessment and remediation) database to evaluate hazardous materials sites in and around the project location.

Pacific Street Bridge, City of Oceanside, Oceanside, California. Task Manager for review of potential impacts relating to three proposed bridge alternatives in Oceanside California. Very controversial as bridge was within the coastal zone and above wetlands. Presented paper and won

technical symposium award on behalf of the City of Oceanside for use of innovative GIS modeling to calculate past wetland impacts.

GIS Database Development and Support, San Diego Unified School District, California. Project Manager responsible for 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.

McClellan Palomar Airport Noise Compatibility Study, County of San Diego, California. GIS Manager 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.

GPS Survey and GIS Database Development, Port of San Diego, California. Project Manager responsible for overseeing field crew collection of drain, inlet, and pipe information in GPS format. A complete version of the populated data was entered into a personal geodatabase format for delivery to the client. An FGDC-standard data dictionary and complete metadata were also included in the deliverable. GPS training of Port of San Diego staff was also included so that in-house staff could make necessary future updates to the GIS database.

Otay/Kuchamaa GIS Database Development, Biological Monitoring Plan, and Cultural Resource Study, Bureau of Land Management, California. GIS Manager 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.

County Trails Assessment, County of San Diego, California. Project Manager 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 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.

Black Mountain Water Treatment Plant EIR, County of San Diego, California. Task Manager for an EIR for a proposed 42-acre water treatment plant within Black Mountain Ranch Subarea I boundaries. The proposed site is adjacent to and partially within the Multi-Habitat Planning Area (MHPA). MSCP GIS data layers for regional vegetation, sensitive species, and the MHPA boundaries were used as baseline information for the project analysis. Imported MHPA boundaries from regional data were incorporated into project GIS maps. Findings relevant to a boundary adjustment analysis were presented in the Biological Resources section of the EIR and in the biology technical report.

Environmental Services for Emergency Storage Project, San Diego County Water Authority, California. Task Order Manager for visualization and related project components of the first five-year phase of the $760 million contract. The Authority's proposed 24,000-acre-foot reservoir and dam are key components to solving regional water-storage needs. One task was to create a "dynamic" model that could incorporate data layers from over 20 different consultants. Built this three-dimensional geospatial model in GIS for resource specialists to analyze impacts to environmental resources, including biology, cultural resources, and water quality. Won several technical/GIS awards for work on this project.

East Otay Mesa Specific Plan, San Diego County, California. Task Manager assisting the County in its efforts to amend the Specific Plan for the 3,300-acre East Otay Mesa Specific Planning Area as documented on the County's MSCP Subarea Plan. The proposed amendment would modify previously approved land use designations and conservation areas within the SPA. Analyses conducted would also be used to process a minor amendment to the County's MSCP Subarea Plan, as well as a boundary adjustment to MHPA boundaries. MSCP GIS data layers for regional vegetation, sensitive species, and MHPA boundaries were analyzed as baseline information to plan current biology field survey needs and for project analysis. The regional GIS vegetation database is being updated via ongoing surveys, and all past and current data will be assessed to revise conservation boundaries and development constraints and opportunities within the SPA.

Hopewell National Historic Park Ethnographic Overview, National Park Service, Chillicothe, Ohio. Task Order Manager for the document prepared to address park ethnography. The document focused on the park's dedication to preservation and interpretation of the Hopewell culture. The park contains nationally significant archeological resources, including large earthwork and mound complexes that provide an insight into the social, ceremonial, political, and economic life of the Hopewell people. All aspects of the project were mapped, analyzed, and presented in the document in GIS format.

Biscayne National Park Ethnographic Overview, National Park Service, Biscayne National Park, Florida. Task Order Manager providing a complete ethnographic overview of Biscayne National Park, which is in Biscayne Bay and the offshore waters along the Atlantic Coast south of Miami in Miami-Dade County, Florida. The park encompasses almost 173,000 acres and has relatively pristine estuarine and marine environments. Several off-shore GIS databases were compiled, analyzed, integrated, and exhibited for this project.

City of San Diego As-Builts Project, San Diego, CA. Project Manger for the compilation for final As-Built drawings and files for water/wastewater resource projects completed by URS over ten years ago. Tracked all final CAD fines and drawings down, updated as necessary via engineering mark-ups and presented all to City of San Diego for final processing.

Pelagic Fisheries EIS, National Marine Fisheries Service, Hawaii. Task Order Manager analyzing impacts on the human environment resulting from management of U.S. pelagic fisheries under the Fishery Management Plan for the Pelagic Fisheries of the Western Pacific Region (Pelagic FMP). Analyzed environmental impacts caused by fisheries managed under the FMP. The EIS provided a comprehensive overview of pelagic fisheries conducted under the FMP and their effects, as well as described management actions that would mitigate such negative effects. All fisheries information was cataloged, integrated into database format, and loaded into GIS for ongoing efforts.

Raising of the Ehime Maru, U.S. Navy, Southwest Division, Honolulu, Hawaii. Created the visual simulation to show the raising of the Ehime Maru, the Japanese fishing vessel sunk by a nuclear submarine in Hawaii. Worked with the Navy to help visualize raising the ship from a 6,000-foot depth to an approximately 150-foot depth to recover those that perished in the accident. Created visual simulations to show how the Ehime Maru, barge, and subsequent equipment would be positioned once the move occurred.

Salton Sea Geotechnical Study, Imperial County, CA. Task Manger for the Geographic Information Systems (GIS) component of the Salton Sea geotechnical evaluations. GIS was used to help map boring locations and track resources within the area.

Midcoast Transportation Study, San Diego County, CA. Task Manger for the traffic and transportation study of the Midcoast transportation corridors. Geographic Information Systems were utilized to help review potential constraints including slope issues and other environmental and manmade constraints potentially affecting the project.

Agua Caliente New Casino Project EA, Agua Caliente Indian Reservation, San Diego County, California. Managed the visual component for the Casino, as well as the subsequent signage components for the project. GIS and aerial images were combined to produce a base. CAD and GIS files were incorporated and extruded adding the Casino, subsequent parking structure, and later signage components to the overall assessment. Key observation points were identified and photographs from each of these points taken. The models were eventually placed in these photographs for realistic representation. **(2001)**

San Diego Unified School District Administrative Space Study, San Diego, CA As GIS and CAD Manager, provided analysis and graphics of the buildings for conducting a Space Utilization Study, development of Space Requirement Report, Alternatives and Cost Estimates, and the final report describing methodology, information obtained, alternatives considered, and preferred alternatives.

Emergency Response/Emergency Planning Projects

City of San Diego Flood Mitigation Plan, San Diego County, CA. Project Manager for the Flood Mitigation Plan (FMP). Coordinated with the City of San Diego, State Office of Emergency Services, and FEMA to coordinate a risk assessment, vulnerability analysis and complete mitigation measures for the Plan. Planning efforts also included managing public outreach measures, including hosting public meetings, flyer generation and website development with the City of San Diego. The project will allow the City of San Diego to continue to receive mitigation funding for flood-related mitigation projects from FEMA.

County Hazard Mitigation Implementation Plan, San Diego County, CA. Project Manager for the Implementation of the San Diego County Multi-Jurisdictional Hazard Mitigation Plan (HMP). Coordinated with the County Office of Emergency Services and all eighteen incorporated cities to implement mitigation strategies identified in the HMP. Responsible for press releases, county- and jurisdictional-level working group meetings and public notices, information flyer development and GIS updates relating to the county-wide efforts.

Multi-Jurisdiction All Hazard Mitigation Plan, Municipal Water District of Orange County, CA. Deputy Project Manager for the for the preparation of a confidential hazard mitigation plan for all natural and man made hazards for 20 water districts in Orange County. Oversaw GIS coordination of assets and hazards information, Hazard analysis and write-up,

risk assessment, vulnerability assessment, and mitigation strategy preparation. Coordinated working group and district-level meetings.

San Diego Gas & Electric Seismic Study, San Diego County, CA. Task Manger for the Geographic Information Systems (GIS) component of the project. CAD and GIS were utilized to map and analyze seismic issues within right-of-ways for the San Diego Gas & Electric transmission systems and owned facilities. Geotechnical data was input into GIS and distributed to agency following the project.

Multi-hazard Mitigation Plan, Viejas Band of Mission Indians, San Diego County, CA. Deputy Project Manager for the preparation of the tribe's Hazard Mitigation Plan (HMP). Coordination of GIS efforts and write-up of Planning document. Also facilitated tribal council meetings, public and inter-agency workshops. Helped develop risk assessment, vulnerability analysis and tribe's mitigation strategy, and provided general oversight of preparation of the HMP. **(2001)**

Multi-hazard Mitigation Plan, Oregon Tribal Hazard Mitigation Plans, OR. Task Manager for the preparation of three tribal Hazard Mitigation Plans. Oversaw GIS elements for project which included a Hazard Analysis, Risk Assessment, and Vulnerability Assessment. Coordination of GIS efforts and write-up of GIS-related sections of planning document. Provided QA/QC of all GIS efforts.

US Postal Service Landslide Susceptibility Studies, Western US. Project Manager for the preparation of landslide susceptibility studies for all postal offices within the western United States. Working under an on-call contract with FEMA, URS helped evaluate potential at-risk post office locations following torrential rains in California. Focusing on California, and then moving toward the western United States, Ms. Leiba worked directly with USPS and FEMA to help with this evaluation.

Multi-hazard Mitigation Plan, Concow Maidu (Mooretown Rancheria), Sacramento Area, CA Deputy Project Manager for the preparation of the tribe's Hazard Mitigation Plan (HMP). Oversaw GIS elements for project which included a Hazard Analysis, Risk Assessment, and Vulnerability Assessment. Coordination of GIS efforts and write-up of GIS-related sections of planning document. Provided QA/QC of all GIS efforts.

Federated States of Micronesia (FSM) Multi-State Hazard Mitigation Plan, Federal Emergency Management Agency (FEMA), Government of FSM/National Emergency Management Office (NEMO). Project Manager for the multi-state FSM Hazard Mitigation Plan. As a recognized county who 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. Managed extensive public outreach efforts held throughout the islands during the project. Prepared Public Participation Plan

including federal website uploads, press releases, public meeting materials/preparation/and presentations, working group participation and data collection, agency and interested party site visits and interviews and more. The Plan included a complete risk assessment, vulnerability analysis, and separate mitigation strategies for each State. **(2005)($150k)**

Guam Hazard Mitigation Plan, Federal Emergency Management Agency (FEMA), Guam. Task Manager in support of planning and GIS-related efforts for the Guam Multi-Hazard Mitigation Plan. Helped with QA/QC of Plan, GIS analysis and HAZUS-99/HAZUS-MH modeling, input to public outreach efforts, and general planning team support. The Plan included a complete risk assessment, vulnerability analysis, and mitigation strategy.

Multi-Jurisdictional Hazard Mitigation Plan, Federal Emergency Management Agency (FEMA), Office of Emergency Services (OES), County of San Diego, CA. Deputy Project Manager for San Diego County's Multi-Jurisdictional Multi-Hazard Mitigation Plan. Oversaw 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. Riskbasilo9 assessment, vulnerability analysis, and mitigation strategies were generated for each jurisdiction. Coordinated 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. Project won two awards including Outstanding Environmental Document from the Association of Environmental Professionals and a National Award through the National Association of Counties. **(2004)($250k)**

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. 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.

Statewide Hazard Mitigation Plan, Federal Emergency Management Agency (FEMA)/Office of Emergency Services (OES), State of Arizona. 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. **(2004)**

Urban Area Security Initiative, City of San Diego/Federal Emergency Management Agency (FEMA). Participated 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. The preparation of mitigation measures was also a component of this project.

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. Project Manager responsible for 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. **(2003-2004).**

Flood Modeling Projects

Digital Flood Insurance Rate Map (D-FIRM) Mapping; Federal Emergency Management Agency (FEMA), Map IX-Mainland Joint Venture, Napa County, San Mateo County, Alameda County, Marin County, Sacramento County, Sonoma County, Tulare County, Monterey County, and Solano County CA; Maui County, HA,. Project Manager for the Joint Venture Project with URS Corp. and Dewberry. FEMA is undertaking a nationwide effort to update and convert hard-copy flood maps for the entire nation to digital geographic information system (GIS) electronic data. FEMA has tasked the partnership with creating these "geodatabases" containing over fifty layers of updated flood information per County. After compiling local, state and federal data, each database was converted to federal standards and detail checked for accuracy. Once complete, quad-scale maps were produced for each county (100-200 maps per county). Each map was then quality assured/quality checked for accuracy. Agencies, local governments, and the public will utilize the geodatabases and corresponding maps to help analyze flood risks in their communities. **(2005).**

Federal Emergency Management Agency Post-Fire Floodplain Mapping, San Diego, Riverside, San Bernardino, Los Angeles, and Ventura Counties, California. Task Manager responsible for 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. **(2003-2004).**

Floodplain Management Study and Plan, Viejas Indian Reservation, California. Task Manager responsible for floodplain modeling, mapping, and drainage system assessment. The contract also required storm water 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.

Chollas Creek Wetlands Management Plan, San Diego County, California. Task Manager 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.

Rio de Flag Flood Control Study, Los Angeles Army Corps of Engineers, Rio de Flag, Arizona. Task Manager responsible for GIS modeling/mapping for the Los Angeles Corps of Engineers (LACOE) for impacts relating to possible flooding of the lower Rio de Flag drainage. Erosion-control issues were incorporated into the analysis. Three-dimensional modeling in GIS was performed using the LACOE's HEC-RAS extension. Special attention was also given to manmade alterations of the stream's channel made in the early 1900s.

Murrieta Creek Flood Control BCR and EIS/EIR, LACOE, Los Angeles, California. Working with the LACOE, Task Managed modeling to help determine possible impacts associated with the Murrieta Creek Flood Control project. Some major modifications assessed were (1) removing the B Street bridge, (2) constructing a bridge over Ivy Street, (3) replacing the Washington Avenue bridge, (4) modifying detention/collection basins, (5) assessing equestrian trails, (6) assessing bicycle/pedestrian trails, and (7) replacing the Main Street bridge. Using HEC-RAS and GIS, environmental impacts associated with these studies were mitigated. **(2000) (Task $300k)**

San Timoteo Creek EIR/EIS, Riverside, California. Complex GIS analysis and mapping was conducted to help evaluate biological, cultural, social, and other potential environmental impacts from proposed enhancements for flood control at San Timoteo Creek, which drains a watershed of approximately 126 square miles of the San Bernardino Mountains and foothills in eastern Riverside and San Bernardino counties.

The San Timoteo Creek study area falls within several small communities, including Redlands, Colton, Loma Linda, and San Bernardino, California. The study area, which includes the 100-year floodplain of San Timoteo Creek, extends along San Timoteo Creek from a short distance downstream of Alessandro Road west to the confluence with the Santa Ana River in San Bernardino.

Military Planning Projects

Naval Base San Diego Asset Evaluation, Department of the Navy, San Diego, CA. Project Manager responsible for the oversight of the drafting of the floor plans and the GIS conversion process of data into SDSFIE compliant GIS forma for updating of Property Record Cards and Facility Planning Documents of the floor plans and space utilization data for more than 800 buildings in the metro San Diego Area spread across Naval Bases Point Loma and San Diego.

Naval Special Warfare Group 1(NSWG-1), Naval Amphibious Base (NAB, Department of the Navy, Coronado, CA
As GIS and CAD Manager, provided oversight for analysis and graphics of the buildings on NAB for Asset Evaluations (AE), development of Basic Facility Requirements (BFR), and preparation of a Facilities Development Plan to support future development of NSWG-1. This project includes development of Special Project or MILCON projects to eliminate existing facility deficiencies.

Naval Base Point Loma AOP, Department of the Navy, San Diego, CA
As GIS and CAD Manager, provided oversight for analysis and graphics of the buildings on NBPL. The goal of the RSIP (Regional Shore Infrastructure Plan) was to develop a program of capital improvements which alleviate deficiencies through adaptive reuse, consolidations, facility expansions and new construction, and to reduce shore infrastructure costs associated with excess and underutilized facilities. The Overview Plan will also include recommendations for improvements to meet DoD standards for Anti-Terrorism/Force Protection.

Naval Base San Diego AOP, Department of the Navy, San Diego, CA
As GIS and CAD Manager, provided analysis and graphics of the buildings on NBSD. The goal of the RSIP (Regional Shore Infrastructure Plan) was to specifically address regional land and facility requirements from a functional point of view for Naval Base San Diego. Development included conducting data collection through site visits, questionnaires, interviews, and a visioning workshop with NBSD tenants. The RSIP identifies and aligns future infrastructure investment strategies with CNO guidance and Navy regional planning objectives of reducing footprints and costs, increasing existing capabilities and sustainability, and maximizing efficiencies.

Naval Base Coronado Asset Evaluation, Department of the Navy, San Diego, CA. As GIS and CAD Manager, provided oversight of the CAD and GIS conversion process of data into SDSFIE compliant GIS format for updating of Property Record Cards and Facility Planning Documents of the floor plans and space utilization data for more than 2,000 buildings in the metro San Diego Area.

Powerplant Siting Study, ENPEX Development, Marine Corps Air Station, Miramar, CA. Task manager for GIS components of powerplant siting study. Worked to develop model of environmental and man-made constraint information, compiled GIS model and mapping elements to show areas with potential for site development. Coordinated with Air Station, agency, ENPEX and sub-consultants to identify, gather and reconcile relevant GIS data for project.

Basilone Road Realignment, Marine Corps Base Camp Pendleton, CA. Task Manager for realignment of Basilone Road. Oversaw GIS database development, GIS mapping and analysis and all electronic database development in support of the Environmental Assessment. Oversaw coordination with Base and agency GIS contacts. **(2005) (Approx $350k).**

Advanced Amphibious Assault Vehicle, MCAS Camp Pendleton, California. Task Manager for an EA/BA and subsequent EIS. Oversaw creation of a suitability model to break down the 125,000-acre-plus military area into military maneuver suitability classes. The model analyzed slope restrictions, incorporated seasonal habitat information, and added over two-dozen environmental and manmade constraint layers. **(2000) (Approx $350k).**

Flood Repair-MCAS Camp Pendleton, MCAS Camp Pendleton, California. Task Manager overseeing extensive GIS mapping and modeling. Several environmental constraint, developmental, and flood-related layers were entered into a GIS/HEC-RAS model to help determine flood repair areas on base. Drainage information, precipitation information, and slope were just a few such entries. The model and data layers were installed at the base upon completion of the project so that the MCAS Camp Pendleton GIS department could analyze and use the data results for its ongoing future planning efforts. Specialized training was provided to the base to help with future flood-related potential impact assessments. **(2004) ($100k).**

San Clemente Island Ranges Environmental Assessment, Los Angeles County, CA. Task Manager responsible for analysis, and map preparation for the environmental assessment and Coastal Consistency Determination for Small Arms, Demolition Ranges, and Training Areas, including biological resource survey mapping/analysis and cultural resource investigation support services. **(2000) (Approx $150k)**

Regional Shore Infrastructure Plan, San Diego County, California. Task Manager responsible for analysis and mapping support for investigating three complexes. Also prepared analysis/modeling/and support mapping for natural resources, biological, cultural and historical data inventory.

Long Beach Naval Complex EIS/EIR, Los Angeles County, California. Task Manager responsible for analysis and mapping in support of the preparation of an EIS/EIR to evaluate the future environmental consequences of three alternatives for reuse of the 1,229-acre site, including an adaptive use feasibility study for the Roosevelt Base Historic District. The adaptive use feasibility study received an award for cultural resource reports from the California Preservation Foundation. **(1998)(Approx $300k)**

Conforming Storage Facility Environmental Assessment, MCB Camp Pendleton, San Diego County, California. Analyst involved in analysis and mapping for preparation of an environmental assessment that analyzed the environmental consequences associated with three alternative sites for a proposed conforming storage facility for hazardous wastes and hazardous materials.

Tomahawk Land Attack Missile Program, San Clemente Island, Los Angeles County, California. Task Manager responsible for modeling/analysis, database compilation, and mapping relating to the preparation of an environmental assessment in support of the Tomahawk Land Attack Missile Program to consider effects of proposed test flights of land and sea launches at San Clemente Island.

MCAS Camp Pendleton Airfield Environmental Assessment, San Diego County, California. Analyst responsible for analysis relating to the preparation of an addendum to a 1988 environmental assessment for airfield improvements. The project included mapping sensitive species, calculating impacts to wetlands, and preparation of maps in support of the Corps of Engineers Section 404 Permit application and the Regional Water Quality Control Board Section 401 water quality certification and waiver request.

Others:
Miramar Landfill Reuse Plan, San Diego, California. Task Manager for landfill reuse plan. Sub-consultant to Onyx Group.
MCAS El Toro Closure EIS, Santa Ana, California. Oversaw analysis related to preparation of the environmental impact statement relating to the closure of MCAS El Toro. **(1996) (Approx $500k)**
MCAS Yuma EIS, Yuma, Arizona. Analyst for the preparation of the environmental impact statement relating to MCAS Yuma.
NAB Coronado EA, BA, and OTMMP, San Diego, California. Analyst for the preparation of several environmental documents for NAB Coronado.
Long Beach Shipyard EIS, Long Beach, California. Analyst for the preparation of the environmental impact statement.

Wire Mountain Housing EA, San Diego, California. Analyst for the preparation of the environmental assessment.
San Clemente Island OMP, Los Angeles, California. Oversaw analysis related to preparation of an operations management plan.
MCAS Camp Pendleton P-633 and 527B Archaeological Testing and Surveys, San Diego, California. Task Manager for archaeological mapping component.
Santa Margarita Complex Archaeological Surveys, San Diego, California. Task Manager for archaeological mapping component. Extensive historical modeling/mapping of the area was included.
Chocolate Mountain Aerial Gunnery Range, California. Task Manager for mapping related to archaeological surveys/reports.
NAVSTA Pier 10/11 EIS, California. Analyst for the preparation of the EIS. Sub-consultant to SAIC.
Deluz Housing EA, SWDIV, California. Analyst for the preparation of the environmental assessment of proposed new housing.
Yermo Test Track EA, SWDIV, California. Analyst for the preparation of the environmental assessment for the Yermo Test Track.

Julie A. Mitchell

Air Quality Scientist

Areas of Expertise

Air Quality Impact
Health Risk Assessment
Air Quality Modeling
Visibility Modeling
Greenhouse Gas Studies
Meteorological Analysis
Hazardous Materials Risk Analysis
Computer Programming

Years of Experience

With URS: 11 Years
With Other Firms: 6 Years

Education

BSc/Atmospheric Sciences/ University of British Columbia/ 1994

BSc/Mathematics and Computer Science/McGill University/ 1993

Chronology

URS Corporation, Air Quality Scientist, San Diego, California, 1999–present

Scripps Institute of Oceanography, Center for Clouds, Chemistry and Climate, Science Support, San Diego, California, 1998–1999

Levelton Engineers, Air Quality Scientist, Vancouver, British Columbia 1994–1998

Overview

Ms. Mitchell has worked in the air quality consulting field since 1994. Ms. Mitchell is responsible for technical oversight of air quality work which includes permitting and compliance support for government and industrial facilities, air quality impact assessments, air toxics evaluations, and air quality and meteorological monitoring, primarily for industrial facilities in the US and abroad. Her technical specialties include operation and assessment of air dispersion models for air quality and health risk impact assessments, evaluation of greenhouse gas emissions, meteorological data analysis, and computer programming to process data or modify air dispersion models.

Project Specific Experience

Air Quality Impact and Health Risk Assessment Studies:

- Air and public health manager for the Hydrogen Energy California (HECA) Project, an Integrated Gasification Combined Cycle (IGCC) 250 MW power plant near Bakersfield, California. HECA plans to gasify petcoke and/or coal to create hydrogen gas to power a combined cycle combustion turbine. 90% of the project CO_2 will be sequestered in a nearby oil field. AFC, ATC and PSD applications were prepared for CEC, SJVAPCD and EPA, respectively. The applications provided estimations of criteria pollutants, toxic air pollutants and greenhouse gases. Local criteria impacts were assessed using the AERMOD model and air toxics with AERMOD/HARP. Class I impacts were analyzed using CALPUFF. Visible plume modeling for CEC was conducted with the SACTI model for cooling towers and CSVP for the CTG/HRSG.
- Prepared the air section of the EIR for the Lost Hills Solar Project. The development consists of two adjacent solar photovoltaic projects on a single land parcel in western Kern County for a combined electric generating capacity of 32.5 MW. Analyses included quantifying construction and operational emissions using the EMFAC and OFFROAD models and emission factors from EPA and CARB. As the region is endemic for coccidioidomycosis (valley fever), a detailed discussion of its transmission and prevention were included.
- Air quality and public health technical manager for the San Joaquin Solar 1 & 2 Hybrid Project near Coalinga, California. The project consists of two collocated plants, each sized for a nominal 53.4 MW net of solar generation, complemented by 40 MW net of biomass-generated production, fueled with agricultural wood waste and municipal green wastes. Prepared the public health and air quality sections of the Application for Certification for the California Energy Commission and the Air Permit Application for the SJVAPCD. The air quality analysis examined the impacts from criteria pollutants

against the NAAQS, CAAQS, and SJVAPCD standards. Health risk impacts were analyzed using the HARP model. Short-term effects from constructing the power plant were also analyzed. Greenhouse gas emissions were calculated using EMFAC, OFFROAD and CCAR protocols for both operational and construction phases.

- Air quality and public health technical manager for the Solar Two Project near El Centro, California. The project consists of approximately 30,000 solar collectors capable of producing 750 MW of electricity. Prepared the public health and air quality sections of the Application for Certification for the California Energy Commission. Also prepared the application to construct for ICAPCD. The air quality analysis examined the impacts from criteria pollutants against the NAAQS, CAAQS and ICAPCD standards. The air permit and HRA modeling were conducted with SCREEN3 then toxicity factors were applied to determine health risks. Potential impacts from the mobile sources during the operation and construction phases of the power plant were also analyzed using AERMOD. Project related greenhouse gas emissions were estimated for both operational and construction phases from stationary and mobile sources, on- and off-site.

- As air quality technical manager, prepared the air quality section for two Environmental Assessments for the Naval Hospital Camp Pendleton Project and Marine Corps Exchange Retail Complex Project at Marine Corps Base – Camp Pendleton. Analyzed the construction and operational emissions using URBEMIS and EMFAC2007. Conducted a CO Hotspots analysis using CAL3QHC and EMFAC. Prepared the general conformity analysis and the RONA (Record Of Non-Applicability) form.

- Air quality technical manager for the Interstate 805 North Corridor Manage Lane Expansion for Caltrans, in San Diego. Prepared the air technical report, which included determination of federal conformity, conducting CO Hotspots, PM Hotspots, and Mobile Source Air Toxics analyses. Models used in these analyses included EMFAC, CALINE4 and CT-EMFAC.

- Prepared the air impact analyses for an Environmental Impact Manifest (MIA) for the expansion of the Chihuahua pipeline system. Calculated emissions associated with the construction and operation of the pipeline. Impacts were examined using the SCREEN3 model. Outlined the applicable Mexican air quality and equipment emission standards and demonstrated project compliance.

- Air quality technical manager for the Teledyne Ryan Demolition Project next to the San Diego Airport. Prepared the air technical report for the EIR. Analyzed criteria pollutant and greenhouse gas emissions from demolition activities, including haul and delivery truck emissions, using URBEMIS. Conducted a CO Hotspot analysis using EMFAC and CALINE4.

- Air quality and public health technical manager for the Mt Signal Solar and Biomass Power Station, near El Centro, California. Prepared the air technical report for an EIR. Emissions were estimated using the EMFAC and OFFROAD models for construction, source test data for the operation of the biomass combustor for criteria pollutants and air toxics, and CCAR protocols for greenhouse gases. Operational impacts were modeled with AERMOD and HARP. Potential offsite odors were assessed qualitatively. Estimated the greenhouse gas emissions and reductions using CCAR protocols.

- Public health and hazardous materials technical lead. Analyzed the air quality, public health and hazardous materials impacts from the addition of the Willow Pass (500 MW) and Marsh Landing (830 MW) Generating Stations at the Pittsburg and Contra Costa Power Plants, respectively, for AFC and PSD applications. The air quality analysis examined the impacts from criteria pollutants against the NAAQS, CAAQS, BAAQMD and PSD standards. Health risk impacts were analyzed using the HARP model. Greenhouse gas emissions were calculated using the CCAR protocols. The offsite consequence analysis of the aqueous ammonia was conducted using SCREEN3 with EPA and CalARP impact estimations.

- Public health and air quality technical lead for the City of Anaheim Canyon Power Plant, a proposed 200 MW simple cycle gas turbine power plant. Prepared the required air quality and public health analyses in support of an Application for Certification to the California Energy Commission and prepared the air quality permit application to the South Coast Air Quality Management District for the Canyon Power Plant in Anaheim, California.

- Public health and air quality technical lead for the City of Colton Agua Mansa Power Plant expansion from a 50 MW simple cycle facility to a 63 MW combined cycle facility. Developed CEQA Mitigated Negative Declaration and prepared SCAQMD air permit. Conducted and assessed all air quality and health risk modeling.

- Prepared the air quality and public health analyses in support of an Application for Certification to the California Energy Commission and prepared the air quality permit and PSD application to the San Joaquin Valley Air Pollution Control District for the Kern Front Project, a new 700 MW base load natural gas combine cycle generating station near Bakersfield, California for BP Alternative Energy. Air quality modeling was conducted with AERMOD and the health risk assessment was conducted with HARP.

- Air quality and public health technical manager for the Sentinel Energy Project (850 MW peaker plant) near Palm Desert, California. Prepared the public health and air quality sections of the Application for Certification for the California Energy Commission. The air quality analysis examined the impacts from criteria pollutants against the NAAQS, CAAQS, and SCAQMD standards. The near field visibility was analyzed using VISCREEN and PLUVUE II. Health

risk impacts were analyzed using the HARP model. Short-term effects from constructing the power plant were also analyzed. Greenhouse gas emissions were calculated using the CCAR protocols.

- Public health technical lead for the 177 megawatts solar thermal Carrizo Energy Solar Farm near Simmler, California. Prepared the public health and air quality sections of the Application for Certification for the California Energy Commission, and the application to construct for SLOAPCD. The air quality analysis examined the impacts from criteria pollutants against the NAAQS, CAAQS and SLOAPCD standards. The HRA modeling was conducted with SCREEN3 then toxicity factors were applied to determine health risks due to diesel particulate. Potential criteria pollutant impacts from the mobile sources during construction and stationary sources during operations were analyzed using AERMOD. Project related greenhouse gas emissions were estimated from the operational sources.

- Public health technical lead. Prepared the public health and air quality sections of the Application for Certification for the San Gabriel Generating Station (615 MW) expansion of the Etiwanda Generating Station near Ontario, California. The air quality analysis examined the impacts from criteria pollutants against the NAAQS, CAAQS, SCAQMD and PSD standards for Class I and II areas. The air quality related values analyzed were deposition, regional haze, and visibility. The CALPUFF model was utilized for the far field regional haze and deposition modeling. VISCREEN was used for the near field visibility analysis. Health risk impacts were analyzed using the HARP model. Short-term effects from constructing the power plant were also analyzed.

- Prepared the EFSEC and PSD air permit applications for the Pacific Mountain Energy Center (PMEC), an Integrated Gasification Combined Cycle (IGCC) 600 MW development, at the Port of Kalama, WA. The PMEC would gasify petcoke and/or coal to create synthesis gas to power two combined cycle combustion turbine electric power generating plants. The applications provided estimations of criteria pollutants, toxic air pollutants and greenhouse gases. Local impacts were assessed using the AERMOD model. A regional haze analysis was performed to determine whether the visibility in the nearby Class I area would be degraded due to the emissions from the facility. The analysis was conducted using the air quality dispersion model CALPUFF in screening mode per the recommendation of the Washington State Department of Ecology and the FLAG and IWAQM guidance documents. Carbon sequestration was analyzed for phase two of the project.

- Public health technical lead. Prepared the Small Power Plant Exemption Application for the California Energy Commission and Imperial County Air Pollution Control District for the Niland Gas Turbine Plant, a 90 MW peaking power plant. The application involved operational and construction air quality impact analyses using

ISCST3, Class I regional haze, deposition and criteria pollutant analyses using CALPUFF, and air toxics health risk assessment using HARP.

- Public health technical lead. Evaluated the air quality and air toxics health risk impacts from re-powering the Unit 3 boiler with a new turbine/HRSG with new pollution controls for the El Centro Generating Station for a Small Power Plant Exemption Application for the California Energy Commission and Imperial County Air Pollution Control District. The application involved operational and construction air quality impact analyses using ISCST3, Class I regional haze, deposition and criteria pollutant analyses using CALPUFF, and air toxics health risk assessment using HARP. The potential impacts from an accidental release of anhydrous ammonia were evaluated with the dense gas model SLAB.
- Conducted the public health and air quality modeling for the Colusa Generating Station (660 MW) Colusa, California, for the AFC and PSD applications. The air quality analysis examined the impacts from criteria pollutants against the NAAQS, CAAQS, CCAPCD and PSD standards for Class I and II areas. Health risk impacts were analyzed using the HARP model.
- Prepared the air quality and public health sections of the AFC for CEC and ATC for SJVAPCD for the Starwood Power–Midway Peaking Project facility near Fresno, California which consists of two FT8-3 SwiftPac simple cycle turbines (120 MW).
- Prepared the air quality and public health analyses in support of an Application for Certification to the California Energy Commission and prepared the air quality permit application to the San Joaquin Valley Air Pollution Control District for the Panoche Energy Center, a new 400 MW peaking generating station near Firebaugh, California. Air quality modeling was conducted with ISCST3 and the health risk assessment was conducted with HARP.
- Construction and operational emissions of air toxics were calculated for the expansion of the Frank R Bowerman Landfill in Orange County, California. The potential health risks associated with the expansion were estimated using the HARP model. A CO hotspot analysis was conducted using the model CALINE4. Potential offsite odors were assessed with ISCST3. All results were incorporated in the EIR document.
- Technical reviewer. Review EIR air quality studies for the County of Riverside. Most studies include quantification of project and construction emission using a combination of URBEMIS, EMFAC and SCAQMD CEQA emission factors. Impacts from these emissions are analyzed with the air dispersion model ISCST3 or AERMOD and the CO hotspot model, CALINE4.
- Air quality project manager. Determined the potential health risks associated with the diesel particulate matter during the construction of

the Redlands Commons/Trojan Grove Development, in Redlands, California using ISCST3 and SCAQMD recommended HRA techniques for inclusion in an EIR.

- Air quality project manager. Determined the potential health risks associated with the diesel particulate matter during the construction and operations of the Santa Anita Park Development, in Arcadia, California using ISCST3 and SCAQMD recommended techniques for inclusion in an EIR. Operational impacts from delivery and consumer vehicles on- and off-site were analyzed at sensitive and grid receptors.

- To determine the significance, under CEQA, of the new extraction project at Hansen Aggregate's Channel Road facility in Lakeside, California, fugitive dust and criteria pollutant emissions were estimated for each phase of the project. A cumulative analysis was also conducted including a neighboring proposed project.

- To prepare applications for the Federal Energy Regulatory Commission, Coast Guard, U.S. EPA and Texas Commission on Environmental Quality, for two LNG projects proposed in the Gulf of Mexico for ExxonMobil, emissions were calculated for the construction and operational phases of the projects. Screening level modeling was conducted to determine potential impacts from the offshore LNG terminal using CALPUFF. Refined modeling using ISCST3 assessed potential criteria pollutant and air toxics impacts from operations.

- Assessed the potential impacts from the ChevronTexaco Escravos Gas to Liquids Project in Nigeria on neighboring villages using the air quality model ISCST3. Calculated particulate emissions from the construction and pipe laying activities for the West Africa Gas Pipeline (WAGP) Project that runs through Nigeria, Benin, Togo and Ghana.

- Modeled air quality impacts from the ExxonMobil Chad Export Project, which includes the development of an oil field and crude oil pipeline connecting the oil field in Chad to a marine loading terminal in Cameroon. The results of this modeling were compared with applicable World Bank standards to ensure that there would be insignificant health impacts.

- Created an emissions inventory for the Cabinda Gulf Oil Company in Angola for numerous offshore oil production platforms and the supporting onshore facility. These emissions were used in the ISCST3 model to predict the air quality impacts on the surrounding area from these facilities.

- Prepared an Authority to Construct permit application for the anticipated stationary sources of air pollutants at the Ivanpah Valley Airport in Clark County, Nevada. This included creating an inventory of the NO_2, PM_{10}, SO_2, CO, VOC, and HAPs emissions and modeling the NO_2, PM_{10}, SO_2 and CO emissions with ISCST3.

- Conducted a dispersion modeling analysis as part of a site constraints evaluation for a new power generation plant near Baker, California to compare predicted air quality impacts against the NAAQS, CAAQS and PSD increments for Class I and II areas. Also conducted a visibility analysis for a Class I area that spans across the near and far field.

- Prepared the public health section of the Application for Certification to the California Energy Commission for the Salton Sea Unit 6 Geothermal Power Plant in Imperial County, California. This included conducting the health risk assessment by modeling the air toxics using the ISCST3 and ACE2588 models. The risks from radionuclides contained in the geothermal fluid were included in the ACE2588 modeling and validated with CAP88. Risks from electro-magnetic fields were also examined.

- Conducted the dispersion modeling for the air quality section of the Application for Certification for the Ocotillo Power Plant (450 MW) near Palm Springs in Riverside County, California for Intergen North America. The air quality impact analysis examined the impacts from PM_{10}, NO_2, SO_2 and CO against the NAAQS, CAAQS, SCAQMD and PSD standards for Class I and II areas. The air quality related values analyzed were deposition, regional haze, and visibility. All three EPA levels for near field visual effects were examined using the VISCREEN and PLUVUE models. The CALPUFF model was utilized for the far field regional haze and deposition modeling. Health risk impacts were analyzed using the ACE2588 model. Short-term effects from constructing the power plant were also analyzed.

- Prepared the Application for Certification for the California Energy Commission for the Indigo Energy Facility, a 135 MW peaking power plant in Riverside County. Licensing for this project was conducted under the Governor's Executive Order for a 21-day accelerated approval process for peaker power plants, and a Permit to Construct application for the project was prepared for the South Coast Air Quality Management District. The application involved air quality impact analyses using ISCST3, near-field Class I visibility analyses using VISCREEN, far-field Class I regional haze analyses using CALPUFF, and air toxics health risk assessment using ISCST3 and software I designed to implement the SCAQMD recommended calculation methods.

- Evaluated the air quality impacts from retooling two 50-year-old boilers (450 MW total) with new pollution controls for the Huntington Beach Generating Station in southern California. The project involved evaluating the impacts of the refurbished units' emission of criteria pollutants against NAAQS, CAAQS, and SCAQMD standards using ISCST3 for inland areas and SCREEN3 to examine areas affected by shoreline fumigation. Impacts from construction were examined using the SCAQMD CEQA emission factors and ISCST3. Class I area visibility and regional haze impacts were evaluated with VISCREEN and CALPUFF respectively. The

project included fast-track licensing of the new units with the California Energy Commission and obtaining a Permit to Construct/Permit to Operate from the South Coast Air Quality Management District during the energy crisis of 2000/2001.

- Estimated the potential air quality impacts from the Big Horn Generating Station in Arizona for comparison with NAAQS and PSD increments. Modeled the ammonia slip to demonstrate impacts were below the ammonia significant health risk level. Also examined the potential air quality impacts and Air Quality Related Values in the Grand Canyon (Class I area) and Lake Mead National Recreation Area (Class II area).

- To acquire an authority to construct permit for the Silver State Waste Management Center, Nevada, PM_{10}, NO_x, SO_2, CO, VOC, and HAPs were modeled and compared with the NAAQS and the PSD standards for the region. Visibility and criteria pollutant impacts were analyzed in the Grand Canyon and Lake Mead Recreation Areas.

- Conducted an indoor air quality study targeting mold spores, bacteria and dust for H.G. Fenton Company to determine potential health nuisances.

- Conducted a detailed environmental assessment for the planned construction and operation of Westcoast Energy Inc.'s new Tumbler Ridge Gas Plant in British Columbia, Canada. Potential areas of impact addressed as part of this assessment included air, water, soil, vegetation, wildlife, noise, odor, acidic deposition, and emergency response. As part of the study, dispersion modeling using the ISC and CTDM models with site-specific meteorology was performed.

- To assess vehicle emission dispersion in the West End of Vancouver, a portable CO monitoring system was created for the Ministry of Transportation and Highways, Lions Gate Crossing Project. These data were compared to the results from a typical rush hour scenario modeled with CAL3QHC.

Air Quality Modeling:

- Provided technical support for the development of Chevron's Air emissions environmental performance standard (the Standard) for upstream operations worldwide. This Standard consists of a series of procedures for upstream facility operators to use in evaluating whether current or future pollutant emissions cause an acceptable impact on local air quality. It consists of several elements, including: (1) a user-friendly calculation tool to generate a facility emissions inventory; (2) minimum emission control requirements for criteria and hazardous air pollutant emissions from specific equipment at upstream facilities; and (3) a screening analysis based on dispersion modeling to evaluate whether the facility emissions would cause impacts above certain ambient pollutant levels. Feedback loops within the Standard require re-evaluation of emission control requirements based on the results of the other analyses. The standard

is intended to provide a self-evaluation procedure that can be readily used by operators of any upstream operation, but at a minimum compliance with locally applicable regulatory is mandatory where they exist.

- Conducted air quality, air toxics and odor modeling assessments for the Nursery Products Composting Facility, in San Bernadino County, California, Environmental Impact Report, 2006. The Project was expected to receive approximately 400,000 wet tons per year of biosolids and green material to produce Class A compost by means of a combination of windrow and modified static pile composting techniques. Important air quality issues included potential generation of odors in the handling of incoming waste streams and in the composting process, as well as emissions from large trucks delivering biosolids and green material to the site and removing finished compost. A full evaluation was conducted of applicable federal, state and local air regulatory requirements and potential mitigation measures for the proposed project and alternatives.

- Prepared the air impact analyses for an Environmental Impact Manifest (MIA) for the ChevronTexaco Puerto Coronado offshore LNG regasification facility in Mexico. This involved modeling, using ISCST3 and AERMOD utilizing the PVMRM option, the potential impacts from airborne pollutants during construction and operation of the facility and assessing the potential impacts to the local population. To determine the most appropriate model to estimate an accidental release of LNG, a comparative analysis of the models ALOHA, SLAB, ISCST3 and CHARM was conducted. The CHARM model was then used to assess the possible impacts from an accidental release of LNG. Conducted a study of ambient ozone and nitrogen dioxide concentrations collected at upwind onshore monitoring stations and downwind island stations in the Los Angeles basin, to estimate appropriate ambient concentrations on Coronado Island.

- Prepared an application to modify the existing Covered Source Permit for installation of a new combined gas turbine cogeneration plant and two new steam generating boilers to replace existing boilers at the Chevron Hawaii Refinery on Oahu. Determined the emission increases and decreases from replacing existing boilers with new turbines and conducted air quality modeling using ISCST3.

- A comparative study of three dense gas models, DEGADIS, CHARM and ALOHA, was conducted to determine the potential impacts from an accidental release of anhydrous ammonia at the Calpine Corporation Pastoria Energy Center.

- Conducted air quality impact analyses to evaluate potential effects of a proposed new heavy industrial park in the Apex Valley northeast of Las Vegas, Nevada. The assessment included an extensive air quality modeling study to estimate the quantities of emissions that could be located within the proposed development without resulting in exceedances of the applicable ambient air quality standards and

Prevention of Significant Deterioration increments. The study was performed in the context of an Environmental Assessment on the transfer of land from the Bureau of Land Management that would enable the proposed industrial park to be developed.

- The dense gas models SLAB and DEGADIS were run and compared to determine the potential impacts from a spill of anhydrous ammonia from a stationary tank for Contra Costa Power Plant operated by Mirant Corporation.
- Assessed the potential impacts from a variety of accidental release scenarios from the tank farm at the Chevron Burnaby Refinery using the dense gas model SLAB. The study was used to determine if there was potential to negatively impact neighbors and to identify safe locations for personnel in the event of an accidental release.
- Completed air quality modeling assessments for the proposed expansion of six mainline gas compressions stations in British Columbia for Westcoast Energy. Assessed the effects of local meteorology on dispersion of pollutants in an airshed and investigated options for emission trading.
- For Westcoast Energy conducted an air dispersion modeling study to establish a monitoring framework to evaluate the potential vegetation impacts resulting from continuous stack and intermittent flaring emissions of SO_2 from the proposed expansion of the Pine River gas plant.
- Conducted an air dispersion modeling analysis to determine the possible magnitude of air quality impacts due to the expansion of Kelowna Industrial Plastics in British Columbia, Canada. The study used available meteorological data for the ISC model and was submitted for permitting.
- Confirmed an indoor airflow and CO dispersion problem in a private home using the model CONTAM96, and evaluated potential solutions.

Visibility Modeling

- A regional haze analysis was performed to determine whether the visibility in the nearby Class I area would be degraded due to the emissions from a new coal gasification power plant near Kalama, Washington. The analysis was conducted using the air quality dispersion model CALPUFF in screening mode per the recommendation of the Washington State Department of Ecology and the FLAG and IWAQM guidance documents.
- For Mammoth Pacific, conducted a modeling study to estimate cooling tower visible moisture plume frequency statistics for the proposed Casa Diablo 4 geothermal power plant near Mammoth Springs, California. The SACTI plume model developed by the Electric Power Research Institute was used with a three-year record of local meteorological data to develop frequency statistics on visible

plume lengths, widths and heights to be included in the Environmental Impact Report for the Casa Diablo 4 project.

- Analyzed the plume visibility from the Reliant Energy Colusa Power Plant heat recovery steam generator and auxiliary boiler. A number of different meteorological conditions were examined in the Combustion Stack Visible Plume (CSVP) model. The results were presented as part of the Application for Certification for the California Energy Commission.

- Analyzed the plume visual, fogging and icing effects from cooling towers for a number of proposed power plants in Wisconsin, California and Illinois for Mirant. The cooling tower plume model SACTI was used for these analyses, in each case incorporating local meteorological data and facility-specific cooling tower design information.

Greenhouse Gas Studies

- Air technical manager. Estimated the greenhouse gas emissions and reductions associated with the Mt Signal Solar and Biomass Power Station, near El Centro, California using CCAR protocols.

- Project Manager. Created a greenhouse gas inventory for the Calpeak facilities in California to comply with AB32 reporting requirements.

- Calculated the greenhouse gas emissions from a new coal gasification power plant near Kalama, Washington. Emissions presented in the PSD permit reviewed by the Washington State Department of Ecology and EPA. Carbon sequestration was analyzed for phase two of the project.

- Calculated greenhouse gas emissions from numerous projects for inclusion in EIS, EIR or CEQA documents and applications to construct for air permits for local air districts and the California Energy Commission. Emissions are calculated from both primary and secondary sources.

- Developed greenhouse gas and pollutant emissions data for the West Africa Gas Pipeline (WAGP) project proposed by Chevron Overseas Petroleum, Inc. The project would process and transport natural gas recovered at crude oil production sites offshore Nigeria to existing and planned power plants and industrial facilities in Togo, Benin and Ghana. The gas is currently flared due a lack of local markets and infrastructure. The difference between future regional emissions with and without the WAGP project were calculated and used as a portion of the argument for certifying the project as a Clean Development Mechanism project, as defined by the Kyoto Protocol.

- Developed a spreadsheet-based system to calculate the annual greenhouse gases emissions inventories for Unocal worldwide facilities for 1999 through 2002. This system used facility activity data provided by each business unit that was gathered in a questionnaire

developed by URS. Refinement of the questionnaire and calculations of the greenhouse gases emissions continued for numerous years.

Meteorological Analysis

- Created AERMOD ready meteorological data files for numerous facilities in California and Hawaii, using AERMET and AERSURFACE.
- Prepared the air impact analyses for an Environmental Impact Manifest (MIA) for two facilities in Mexico, the Cantarell Nitrogen Plant Expansion in Campeche, and the Valladolid III Power Plant in Yucatan. Conducted ISCST3 modeling and prepared the technical impact report for each facility. Created ISCST3 ready meteorological input files from nearby Servicio Meteorologico Nacional station data by writing a Fortran program to process the data, as typical meteorological processing programs would not work on the available Mexican meteorological data.
- Advised ExxonMobil on the appropriate meteorological monitoring equipment to install at three remote stations in Chad and Cameroon to obtain data for dispersion modeling. Created programs to process the meteorological data for input into the air quality model ISCST3.
- Developed specifications for a multi-station network of meteorological monitoring stations to support air quality dispersion modeling to evaluate onshore impacts of the ChevronTexaco oil production concessions offshore Cabinda, Angola and the associated onshore facilities.
- Analyzed wind data collected for the South Coast Ozone Study with National Center for Environmental Prediction ETA model data to identify the predominant wind flow for 50 miles offshore from Point Conception to San Diego for the Port of Long Beach to determine the shipping route that would have the least onshore impact from ship emissions.
- Inspected and quality controlled a meteorological station and numerous precipitation stations and the accompanying data for an herbicide testing facility for Bayer in California.
- INDOEX – Indian Ocean Experiment – An international study of natural and anthropogenic climate forcing by aerosols and feedbacks on regional and global climate. As part of the research team, Ms. Mitchell retrieved, assessed, presented, and archived atmospheric data from the remote site Kaashidhoo Climate Observatory (KCO), Maldives. Coordinated aircraft and ship inter-comparisons with KCO. Proposed, procured, shipped and installed the remote power system and computer facility.
- Designed, installed, monitored and maintained a remote meteorological monitoring station for the proposed expansion of the Pine River Gas Plant for Westcoast Energy Inc. Prepared detailed site specifications and operating protocols to ensure high-quality data

capture. Then used the meteorological data in the air pollution dispersion models ISC and CTDM as part of the Environmental Assessment.

Hazardous Materials Risk Analysis

- A Program 1 Risk Management Plan (RMP) was prepared for aqueous ammonia unloading, storage and handling facilities for a NOx control retrofit project at the Encina Power Station operated by Cabrillo Power, LLC in Carlsbad, California (San Diego County). The RMP was developed pursuant to Section 112(r) of the Clean Air Act and state CalARP regulations. Completion of the RMP involved interacting with the local Administering Authority (San Diego County Health Services Department) and the Carlsbad Fire Department to determine specific Plan requirements and demonstrate compliance with local and CalARP regulations. Although not required for a Program 1 RMP, a Process Hazard Analysis was conducted to ensure the safe design and operation of the aqueous ammonia systems at the Encina Power Station. Additionally, a transportation risk study was conducted for the City of Carlsbad to show the statistical probability of an accident occurring with an ammonia truck bound for the Encina plant.

- A Program 2 Risk Management Plan was prepared for the aqueous ammonia facilities associated with the required Selective Catalytic Reduction (SCR) emission controls at the El Segundo Power Station operated by NRG. The RMP included a worst-case and alternative scenario offsite consequence analysis. Producing the RMP involved interacting with the local Administering Authority (El Segundo Fire Department) to ensure compliance with CalARP and US EPA regulations. Along with the extensive documentation compiled for a Program 2 RMP, a Process Hazard Analysis was conducted to identify and rectify possible problems with the design or operations associated with the aqueous ammonia system for the SCR system.

- A Program 2 Risk Management Plan (RMP) was prepared for the aqueous ammonia unloading, storage and handling facilities at the Pittsburg Power Plant operated by Mirant Corporation in Contra Costa County, California. Development of the RMP involved close interaction with the local Administering Agency (Contra Costa County Health Services Department) to ensure conformance with local, CalARP and EPA requirements. A Process Hazard Analysis was conducted to ensure safe design and operation of the aqueous ammonia systems at the plant. Additionally, an analysis of the health risks resulting from the ammonia slip emissions associated with the retrofit Selective Catalytic Reduction controls on the facility boilers was conducted.

- To assess the risk from hazardous materials associated with the expansion of the Contra Costa Power Plant operated by Mirant Corporation in Contra Costa County California, URS conducted an offsite consequence analysis for the Hazardous Materials Handling section for the Application For Certification to the California Energy

Commission for a new 500 MW combined cycle generating unit. The offsite consequence analysis was also used by URS in developing a Program 1 Risk Management Plan to address aqueous ammonia unloading, storage and handling facilities associated with the proposed new unit, as well as SCR retrofits on three existing utility boiler units. The preparation of the RMP involved close interaction with the local Administering Agency (Contra Costa County Health Services Department) to ensure that the Plan was compliant with local and CalARP requirements. A statistical transportation analysis was also conducted to determine the potential risk of an accident associated with trucks transporting aqueous ammonia to the plant. Additionally, a plume visibility analysis from the turbine stacks with the CSVP model and an analysis of the health risks due to the ammonia slip associated with the SCR on the turbines were performed.

- Conducted an analysis of hazardous materials handling that was submitted with Mirant's Application for Certification to the California Energy Commission for the expansion of the Potrero Power Plant in the City of San Francisco. This assessment included evaluation of the off-site consequence associated with the stationary aqueous ammonia tanks and a transportation risk study to estimate the expected number of accidents that could occur with a truck delivering aqueous ammonia to the plant for use as a reagent in the plant's pollution control equipment. Additionally, a plume visibility analysis from the turbine stacks with the CSVP model was conducted. Assisted with the preparation of a Risk Management Plan for the ammonia systems associated with the new combined cycle unit and SCR retrofit on existing boiler Unit 3.

Computer Programming

- Designed a Microsoft Access database to manage wetland data and proposed best management practices. Created forms for remote data input on Handheld PCs with detailed instruction regarding synchronization between the desktop computer and the handheld device.
- Created a Microsoft Access database for TABC to manage their VOC emissions inventory for compliance with South Coast Air Quality Management District regulations. Created to allow easy data entry through numerous user-friendly window interfaces, manipulated extensively with hidden MSBasic programs.
- Wrote programs for Cariboo Pulp & Paper Company mill personnel to evaluate the impact from emergency releases of SO2.
- Designed and maintained a company webpage for Levelton Engineering.

Professional Societies/Affiliates

Air and Waste Management Association

Publications

Presented "A Case Study of Building Envelopes to Examine the Indoor Airflow and Contaminant Dispersion using CONTAM96," at the PNWIS Conference in Vancouver, 1997

Languages

English – Fluent
Spanish – Conversational

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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

With URS: 12 Years
With Other Firms: 19 Years

Education

PhD, Biology, University of California, Los Angeles
CPh, Biology, University of California, Los Angeles
BS, 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 30 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 Specific 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, CA. 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, AZ/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, CA. 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, CA. 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, City of Brea, Brea, CA. 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. 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. (2006)

Raptor Ecology and Management Study on Otay Ranch, City of Chula Vista, CA. 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, CA. 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, CA. 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, CA. 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, CA. 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, CA. 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, CA. 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, CA. 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, CA. 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, CA. 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.

The Headlands, Headlands Reserve, LLC., Dana Point CA. Assisted 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. Developing & implementing the habitat management, mitigation and restoration plans.

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, NM. 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, CA. 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, CA. 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.

EA/BA for New Hospital and Exchange projects at Camp Pendleton,
US Navy. Sr. Biologist overseeing biological assessment of proposed new facilities. Issues include California gnatcatcher and vernal pool habitat.

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 over-flight 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, U.S. Air Force, Commonwealth of the Northern Marian Islands. 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, Mammoth Lakes, CA. Senior biologists overseeing the biological assessment of new commercial service at regional airport. Issues included indirect impacts to breeding grounds of sage grouse.

Teledyne-Ryan Demolition EIR, Port of San Diego/Airport Authority, 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.

Mitigation Credit Valuation and Biological Assessments, San Diego County Regional Airport Authority, San Diego, CA. Project

Manager assisting airport staff in the valuation of mitigation credits assigned to wildlife refuge lands being restored with Airport Authority funds. Biological assessments associated with least tern breeding and foraging areas at the airport.

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.

On-call Environmental Services, County of San Diego Public Works. Biology Task Manager for numerous public works (road and utility) projects.

Coastal Rail Trail EIR/CE, San Diego, CA. 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.

Mira Sorrento Place Extension EIR, City of San Diego, CA. Project Manager and Biology task manager. ASCE award-winning project.

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

Construction Monitoring and Burrowing Owl Removal Program for SR-7, Caltrans, El Centro, CA. 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, CA. 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, CA. 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, CA. 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, CA. 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, CA. 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, CA. Provided biological assessment and assistance in processing streambed alteration agreement.

Atchinson Avenue Bridge Replacement Project, City of Roseville, CA. 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, CA. 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, RES America Developments, Brisco County TX. 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, Mexico. 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 CalNev Pipeline. Principal Scientist supporting Biology Task Manager for 233-mile fuel pipeline project from Colton, CA to Las Vegas, NV. Task includes vegetation, jurisdictional waters, sensitive species surveys, impact assessments, and permitting.

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, Kern County, CA. Senior biologist overseeing biological assessment and ESA permitting of power plant project in Kern County.

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

Ausra Solar Thermal Energy Project AFC, San Luis Obispo County, CA. 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, San Bernardino County, CA. 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, Imperial County, CA. Senior biologist overseeing biological assessment and ESA permitting of power plant project in Imperial County. Project involved intensive surveys for flat-tailed horned lizard on an 8,000-acre project site and 8-mile transmission line.

Bethel Solar Thermal Hybrid Power Project, Niland, Imperial County, 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 NV. 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, Los Angeles County, CA. 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 Landfill Capacity Increase EIR, City of San Diego Environmental Services, San Diego, CA. Assisted with the preparation of the EIR document for the proposed increased capacity of the landfill by increasing the landfill height by 20 feet and extend the landfill life span by 4+years. This document won the top AEP San Diego Chapter environmental document award in 2007.

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, City of Shenzhen, China. 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 Sewage Authority. Principal investigator responsible for assessment and recommendations for biological and water quality monitoring program for the Shanghai Sewage System.

Alvarado Water Filtration Plant Project, City of San Diego, CA. 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., San Bernardino County, CA. 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, CA. 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, Lyon Communities, Carlsbad, CA. 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, CA. 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, CA. 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, CA. 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, CA. 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, CA. 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, CA. Provided assessment of biological impacts for a proposed residential and golf course development on a 470-acre site near Redlands, California.

Willows Development Project, Willows Investment Group, Temecula, CA. Senior biologist for wetlands delineation and permitting program for a 32-acre residential development.

Vista Palisades Estates Project, Capital Pacific Homes, Vista, CA. 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, CA. 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, CA. 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, ESPN, Mission Bay San Diego, CA. 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, CA. 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.

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, Silver Strand Marina Association, Marina del Rey, CA. 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, CA. 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, Elsinore Water Authority, Lake Elsinore, CA. 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.

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.

Other Relevant Experience

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.

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 Peer 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
- Core Group Reviewer, Natural Communities Conservation Planning (NCCP) 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
- Reviewer of abstracts submitted for The Wildlife Society National 2009 Meeting in Monterey, CA

Professional Societies/Affiliates

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.

Contact Information

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Matt Moore, PE, CPESC, CPSWQ

Senior Project Engineer

Areas of Expertise

Surface Hydrology
Hydraulic Modeling
Drainage Design
Floodplain Modeling
Sediment Transport and Scour Analysis
Erosion and Sediment Control
Stormwater Quality BMP Design

Years of Experience

With URS: 4 Years
With Other Firms: 10 Years

Education

MS/Civil Engineering (Water Resources), Virginia Tech
BS/Civil Engineering, Virginia Tech

Registration/Certification

Registered Civil Engineer, CA #56780
Certified Professional in Erosion and Sediment Control #3497
Certified Professional in Stormwater Quality #486

Overview

Mr. Moore is a Registered Civil Engineer and Certified Professional in Erosion and Sediment Control (CPESC) with 14 years of experience with hydrologic and hydraulic engineering for urban drainage facilities, flood control improvements, and erosion control facilities. His work has included preliminary and final engineering design phases, as well as FEMA and NPDES documentation. He has extensive experience evaluating riverine erosion processes related to the analysis, design, and preparation of bridge and levee lining scour investigations and erosion control remediation documents, and preparation and review of stormwater quality BMP design and documentation including technical assistance/review of the San Diego County Low Impact Development Manual. Mr. Moore is skilled using HEC-1, HEC-2, HEC-RAS, HEC-6, Los Angeles County computer programs, Ventura County VCRAT, WSPG, Civil-D, and PondPack.

Project Specific Experience

Hydrology and Hydraulic Analysis and Drainage Design

Interstate 805 Preliminary Design, San Diego County, California - Drainage Design Lead
The overall project consists of preliminary drainage design for widening of the I-805 along nearly its entire length. URS responsibilities include approximately 10 miles of preliminary freeway widening design including: redesign of the drainage and water quality systems; preparation of water quality reports; roadway drainage reports; Location Hydraulic Studies, and preliminary Structure Hydraulic (scour) Reports for bridge crossings and floodplain encroachments all consistent with Caltrans standard requirements.

San Diego County Regional Airport Authority, RON Apron Design, San Diego, California - Water Resources Engineer
Project consisted of preparing the 30% Design Drainage Report including preliminary level hydrology and hydraulics calculations and stormwater quality design for a proposed Remain-Over-Night Apron. Work included preparation of the drainage report; research and design of a StormFilter stormwater quality treatment vault, and porous pavement section. Continued work includes 70% design of the drainage facilities and update of the drainage report and stormwater quality treatment facility design.

Los Angeles County World Airports (LAWA), LAX Terminals 1, 2, and 3 Expansion Stormwater Quality BMP Design
Project consisted of preparing the 100% stormwater quality BMP design sheets for retrofit of storm drain inserts and construction of a new stormwater quality hydrodynamic separator. Duties included hydrologic

and hydraulic design of the post-construction BMPs; coordinationg with BMP vendors, Project Architect, and LAWA.

Marine Corps Logistics Base Barstow, Storm Drain Study, Barstow, California - Water Resources Engineer
Assisted in conducting a storm drain study for MCLB Barstow, CA at Nebo Main Base, Yermo Annex, and the Rifle Range. The Study included the following tasks: 1) Inventory existing storm drainage system; 2) Determine which stormwater outfalls are subject to the Industrial Storm Water General Permit; 3) Prepare DD1391 forms for locations of the storm drainage system that require maintenance, repair or replacement; 4) Develop hydrology and hydraulic design criteria for the design of new storm drainage systems.

BNSF Cajon Main Third Track, San Bernardino County – Water Resources Senior Project Engineer
Project consisted of preparation of EIR/EIS documentation and final engineering construction drawings for 15 miles of proposed third main heavy rail track from Summit to Keenbrook. Duties included preparing pre- and post-project hydrology and hydraulic analyses of over 70 culverts/bridges using Rational Method, USGS Regression Equations, CulvertMaster, WSPG-W, HEC-RAS, and HEC-18 Scour Analysis. Analyzed and mapped 10- and 100-year floodplains for over 10 stream miles using HEC-RAS. Provided preliminary design of proposed culvert extensions, energy dissipation, and bridge scour countermeasures. Prepared EIR/EIS Hydrology Technical Report, EIR/EIS impacts and mitigation measures discussion, and Final Engineering Hydrology and Hydraulic Reports.

State Route 76 Widening and Realignment, San Diego County – Water Resources Senior Project Engineer
Project consists of preparing final engineering construction drawings for a 2.3 kilometer widening and realignment of an existing rural state route along San Luis Rey River and bridge widening along a River tributary. Duties included the preparation of hydrology and hydraulic analyses, reports, and storm drain design for final engineering construction drawings including: Rational Method and Unit Hydrograph Method hydrology calculations, culvert, ditch, and inlet design and analysis using CulvertMaster, WSPG-W, and FlowMaster (HEC-22) software; hydraulic floodplain calculations and mapping using HEC-RAS; bridge scour analysis using HEC-18; sediment transport and scour protection design along San Luis Rey River using HEC-6 and HEC-23, and FEMA and Caltrans plan/report preparation and processing.

Plum Canyon Tract 31802, Los Angeles County, Water Resources Project Engineer
Project consisted of preparation of final engineering construction drawings for backbone improvements (grading, street, and utilities) for a 500-lot subdivision adjacent to the City of Santa Clarita. Duties included: storm drain system layout; L.A. County hydrology and hydraulic analyses

(MODRAT and WSPG-W) including sediment yield (debris) calculations; CDS Unit sizing and analysis; hydrology and hydraulic report preparation and processing; floodplain analysis, mapping and Conditional and Final Letters of Map Revision (CLOMR/LOMR) preparation and processing through FEMA.

Bressi Ranch Development, Carlsbad – Water Resources Project Engineer
Project consisted of preparation of a tentative map and final engineering construction drawings for backbone improvements (grading, street, and utilities) for a 620-unit, 585-acre mixed use development. Duties included: storm drain layout and preliminary design, hydrology and hydraulic analysis of storm drain system and CDS Units; detention pond design; erosion and sediment control plans, two construction SWPPPs, and final post-construction water quality implementation plans.

Kelly Ranch Residential Development, Carlsbad – Water Resources Project Engineer
Project consisted of preparation of tentative map and final engineering construction drawings for backbone improvements (grading, street, and utilities) for a 1600-unit, 433-acre residential development. Duties included: final engineering hydrology and hydraulic storm drain analysis and reports; detention basin analysis; post-construction water quality BMP concept plans and facility sizing; and sediment yield/erosion calculations using MUSLE and RUSLE for a 170-acre portion of the development.

Bishop's School Redevelopment, La Jolla, San Diego – Water Resources Project Engineer
Project consisted of preparation of tentative map level redevelopment engineering plans for a private high school located in a developed urban area. Duties included: Rational Method hydrology and WSPG-W hydraulic analysis of large offsite surface and underground storm drain system, concept plans and modeling for surface routing of offsite flows through site, preparation and processing of hydrology and hydraulic reports through City of San Diego.

Big Sky Ranch Residential Development, Ventura County – Water Resources Project Engineer
Project consisted of tentative map preparation and processing for a large residential development in Simi Valley. Drainage related work included preparation of a Modified Rational Method hydrology study utilizing VCRAT to determine existing and developed runoff, street and inlet hydraulic capacity calculations, debris storage and bulk flow analysis utilizing Scott's Method for estimating debris potential, HEC-RAS floodplain analysis, water quality basin sizing utilizing Ventura County methodology, and detention basin analysis utilizing PondPack and VCHYDRO.

Santa Fe Depot Redevelopment, San Diego – Water Resources Project Engineer

Project consisted of planning phase redevelopment of Santa Fe Depot in downtown San Diego. Duties included: Rational Method and Unit Hydrograph Method hydrology and WSPG-W hydraulic analysis of the 'B' Street Flume (Box Culvert) and tributaries which drain over a square mile network of storm drains within Balboa Park and downtown San Diego.

California Terraces North Residential Development, San Diego – Water Resources Project Engineer
Project consisted of preparation of tentative map and final engineering construction drawings for backbone improvements (grading, street, and utilities) for a 50 lot residential development. Duties included: final engineering hydrology and hydraulic storm drain analysis and reports; detention analysis; post-construction water quality BMP concept plans and facility sizing.

Floodplain Modeling and FEMA Processing

State Route 76 Widening and Realignment, San Diego County – Water Resources Project Engineer
Prepared pre- and post-project hydraulic floodplain calculations and mapping for San Luis Rey River using HEC-RAS. Prepared and processed FEMA CLOMR.

BNSF Cajon Main Third Track, San Bernardino County – Water Resources Senior Project Engineer
Prepared, analyzed and mapped pre- and post-project conditions 10- and 100-year floodplains for over 10 stream miles using HEC-RAS including 8 existing bridge crossings and 4 widened bridge structures.

Plum Canyon Tract 31802, Los Angeles County - Water Resources Project Engineer
Prepared pre- and post-project floodplain analysis and mapping. Prepared and processed Conditional and Final Letters of Map Revision (CLOMR/LOMR) submittals through FEMA.

Loma Alta Creek, Oceanside – Water Resources Project Engineer
Prepared a FEMA flood map revision for the City. Performed creek survey oversight, hydraulic modeling and floodplain mapping for creek and flood map processing through FEMA.

Erosion and Sediment Control and Stormwater Quality

Rancho Santa Fe Village Presbyterian Community Church, Porous Pavement Design - Water Resources Engineer
Provided hydrology, hydraulic, and porous pavement storage layer thickness to provide stormwater quality and detention for increased peak runoff flows for a small redevelopment project.

Port of San Diego SUSMP Review and Preparation– Water Resources Senior Project Engineer

Project consists of the review and preparation of selected Standard Urban Stormwater Mitigation Plans (SUSMP) for tenant and capital projects within the Port's jurisdiction. Duties include review and preparation of the project SUSMP documents to ensure compliance with the Port's requirements including analysis of the receiving water quality, pollutants of concern, and proper implementation of site design, source control, and treatment control BMPs. URS is also providing support in updating the Port's SUSMP Manual to reflect a new Municipal Stormwater Permit.

Caltrans Roadside Vegetated Treatment System (RVTS) Stormwater Quality Monitoring - Task Order Manager
Project consists of monitoring, sampling, and analysis along Interstate 5 in San Onofre and along State Route 91 in Yorba Linda as part of on ongoing Caltrans stormwater quality monitoring effort. Duties include supervising field crews, installation of monitoring equipment, preparation of technical memos, and project financials.

Caltrans SWPPP/WPCP Templates and Preparation Manual Updates – Assistant Task Order Manager
Caltrans Headquarters tasked URS to update their Storm Water Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) templates and Preparation Manual to address comments received over the last several years. Specific role includes providing response to comments, quality assurance and quality control on template revisions, and coordination with Caltrans Headquarters.

Caltrans Cellular Confinement System Research – Task Order Manager
This project consisted of assisting Caltrans Headquarters to determine the suitability of use and application guidelines for Cellular Confinement Systems (CCS) as a temporary construction storm water BMP. Duties included investigating existing literature, websites, and manufacturers to conduct research and determine applicable uses of CCS as a temporary construction BMP.

Marine Corps Air Station (MCAS) Miramar –Senior Project Engineer
Project consisted of field erosion assessments, evaluation, and prioritization of active erosion sites on the undeveloped areas of MCAS Miramar. Work included landscape level inventories of soil erosion sites on the undeveloped portions of the station; evaluation of these sites for potential restoration; documentation of these sites using digital photography, Global Positioning Systems (GPS) and Geographic Information Systems (GIS) mapping technology; recommendations for soil stabilization and long-term erosion minimization of the sites; and prioritization of erosion site restoration suggestions.

CingularWireless Site, City of Moorpark, California – Water Resources Senior Project Engineer

Project consisted of the preparation of final engineering construction drawings for the grading and placement of two unmanned cellular communication facilities on an existing steep hillside. Duties included the preparation of erosion and sediment control plans and WPCP in compliance with the Ventura County municipal stormwater permit.

Mission City North, City of San Diego – Water Resources Project
Engineer Prepared construction SWPPP, Erosion Control Plan, and Water Quality Technical Report including post-construction BMP design for a 120-acre multi-family residential development.

Bressi Ranch Development, Carlsbad – Water Resources Project Engineer
Prepared hydrology and hydraulic analysis of storm drain system and CDS Units; detention pond design; erosion and sediment control plans, two construction SWPPPs, and final post-construction water quality implementation plans.

Santa Fe Depot, City of San Diego – Water Resources Project Engineer
Prepared Water Quality Technical Report, construction SWPPP, Erosion Control Plan, and drainage design and report for a downtown high-rise building.

Professional Societies/Affiliates

American Society of Civil Engineers, Associate Member
American Public Works Association
International Erosion Control Association

Rachael Nixon, RPA

Senior Archaeological Project Manager

Areas of Expertise

Project Management
Principal Investigator
Section 106, CEQA, NEPA
Historic Research
Archaeological Management and Treatment
Protohistoric Archaeological Sites (Mission Era),
Colorado/Yuma Basin and Mojave Desert Archaeology

Years of Experience

With URS: 2 Years
With Other Firms: 10 Years

Education

MA, History (Programs in Historic Resource Management, Public History), University of California, Riverside
BA, Anthropology emphasis in Archaeology, University of California, Riverside

Registration / Certification

Register of Professional Archaeologists 2010

Overview

Rachael Nixon has twelve years of cultural resource management experience including prehistoric, protohistoric, and historical archaeological sites. She has performed and directed cultural resource investigation under the National Historic Preservation Act for both CEQA and NEPA environmental evaluation documents. Ms. Nixon has planned and conducted cultural resources literature searches, historic/archival research, archaeological field surveys, site recordation and mapping, construction monitoring, archaeological resource treatment plans, directed both laboratory and field testing and data recovery procedures, and has prepared large archaeological collections for curation. Rachael has provided consulting to the Native American Heritage Commission and Native American Tribal representatives, and has served as liaison between contract personnel, tribal monitors, and agency representatives. She has her Masters Degree in Historic Resource Management, meets the Secretary of Interiors standards, and is a Registered Professional Archaeologist (RPA).

Project Specific Experience

Stirling Energy Systems Solar One Project, Class III Intensive Field Survey, Barstow, CA. Ms. Nixon served as Principal Investigator for the Solar One Project. The Class III Intensive survey of over 10,000 acres was conducted under the Bureau of Land Management (BLM-Lead Agency) and California Energy Commission (CEC) direction. The cultural resources assessment was provided as partial fulfillment of the environment studies required under NEPA, Section 106 and CEQA for both the required BLM technical report and CEC Application for Certification (AFC) for the proposed Solar Power facility. Principal Investigator responsibilities include preliminary site assessment, background research, research design, direct survey crews, identification and evaluation of cultural resources, recordation of sites on Department of Parks and Recreation (DPR) forms, coordinate with BLM and CEC, BLM technical report, CEC AFC, and supervise office staff. (2008)

Kinder Morgan Energy Partners–Calnev Expansion Project, Colton, CA. Ms. Nixon served as the Field Director for the cultural resources Calnev Expansion project which is a 234 mile long pipeline replacement and expansion project from the existing North Colton terminal in the city of Colton, CA to Bracken Junction, located a few miles west of McCarran International Airport in the City of Las Vegas, NV. (2008)

Stirling Energy Systems Solar Two Project, Class III Intensive Survey, El Centro, CA. Ms. Nixon served as Crew Chief and intermittently as Principal Investigator through the duration the Solar Two Project. The Class III Intensive survey of over 8,000 acres was conducted under the Bureau of Land Management (Lead Agency) and California Energy Commission (Application for Certification) direction. The cultural resources assessment was provided as partial fulfillment of

the environment studies required under NEPA, Section 106, and CEQA for the both the required BLM technical report and CEC Application for Certification (AFC) for the proposed Solar Power facility. Crew Chief responsibilities include site assessment and identification of cultural resources, survey, and recordation of sites on Department of Parks and Recreation (DPR) forms, direct survey and recordation crews. (2008)

Alta Mesa Wind Corporation for the Bureau of Land Management (Prehistoric/Historic), Palm Springs, CA, Class I Cultural Resource Investigation. Ms. Nixon served as Principal investigator for the Alta Mesa Project. Her responsibilities included coordination with BLM, client, and Native American representatives, tribal consultation/coordination, interpret archaeological findings, and edit/prepare site records, background /archival research, and editor of the final technical report. (2007)

Palm Ridge (Prehistoric), LLC, Palm Springs, CA, Phase I Cultural Resource Investigation. Ms. Nixon served as Principal Investigator for this Project. Responsibilities included, task management and oversight, tribal consultation/coordination with monitors, interpret archaeological findings, and edit/prepare site records, background research /archival research, and the preparation of the final report. (2007)

Tierra Bonita/Augustine Band of Cahuilla (Historic/Prehistoric), Phase IV Cultural Resource Construction Monitoring and Emergency Data Recovery, Coachella, CA. Ms. Nixon served as Principal Investigator for this Project. Her responsibilities included task management and oversight, preparation of curation documents (curation terms and deed of transfer), tribal consultation, background research/archival research, direct laboratory staff, and synthesize findings into final report. (2006-2007)

Quail Ranch (Prehistoric/Historic) Phase I Cultural Resource Investigation and Phase II Archaeological Testing/Evaluation of Significance, Moreno Valley, CA. Ms. Nixon served as Principal Investigator for this Project. Her responsibilities included task oversight and management, track budget, interpret archaeological findings, edit/prepare site records, tribal consultation, background research/archival research, laboratory director, and prepare final report. (2006-2007)

Indio Trails (Prehistoric/Historic), Phase I Cultural Resource Investigation, Indio, CA. Ms. Nixon served as Principal Investigator on this Project. Her responsibilities included task management and project oversight, interpret archaeological findings, edit/prepare site records, tribal consultation, background research/archival research, direct laboratory staff, and prepare final report. (2006)

Indio Water Authority, Phase I Cultural Resource Investigation, Indio, CA. Ms. Nixon served as Principal Investigator on this Project. Her responsibilities included: interpret archaeological findings, prepare site records, project management, tribal consultation, background research and archival research, final interpretative report. (2006)

Manufactured Gas Plant (Protohistoric/Historic), Phase III Data Recovery, Santa Barbara, CA. Ms. Nixon served as Staff Archaeologist on this Project. Her responsibilities included HAZMAT data recovery excavation, HAZMAT field laboratory/laboratory set-up and management, mapping, preparation of site forms, photographs. (2006)

Brand Park, Mission Hills (Protohistoric), CA. Phase III (Stage A) Data Recovery Excavation, Staff Archaeologist. Responsibilities included, field laboratory set-up and management, flotation sampling, preparation of site forms, and photographs.(2006)

Brand Park (Protohistoric) Phase II Testing for Significance Evaluation, Mission Hills, CA. Ms. Nixon served as Staff Archaeologist on this Project. Her responsibilities included excavation, mapping, Trimble (Terasync) application, preparation of site forms, and photographs. (2005)

Crowder Canyon (Historic), Phase III Data Recovery Mitigation, Cajon Pass, CA. Ms Nixon served as Staff Archaeologist on this Project. Her responsibilities included excavation, mapping, Trimble (Terasync) application, preparation of site forms, and identification of artifacts, processing artifacts in the laboratory, and field / professional report photographs. (2005)

La Loma Bridge (Historic), Phase II Testing for Significance, Pasadena, CA. Ms Nixon served as Staff Archaeologist on this Project. Her responsibilities included excavation of shovel probe units, preparation of site forms, mapping, processing and identifying artifacts in the laboratory, and field/professional report photographs. (2005)

National Resource and Conservation Services (Historic/Prehistoric), Phase I Cultural Resource Investigation, San Bernardino National Forest, Cleveland National Forest, CA. Ms Nixon served as Staff Archaeologist on this Project. Her responsibilities included survey and recordation of historic and prehistoric resources, mapping and preparation of site forms. (2005)

Helix Environmental (Historic), Phase II Testing for Significance Evaluation, Whitewater and Cabazon, CA. Ms. Nixon served as Staff Archaeologist on this Project. Her responsibilities included, test excavations and site documentation at Long Canyon Camp and Cabazon Shaft camp, two Colorado River Aqueduct construction camps, survey, mapping, use of global positioning systems (Trimble and Garmen units), photography, and preparation of site forms. (2004)

Desert Trace, Phase IV Cultural Resource Construction Monitoring, Indio, CA. Ms Nixon served as Staff Archaeologist on this Project. Her responsibilities included background research at the Eastern Information Center, monitoring, photography, and preparation of site forms. (2004)

Honda Section House (Historic/Prehistoric), Vandenberg Air Force Base, Lompoc, CA. Ms Nixon served as Staff Archaeologist on this Project. Her responsibilities included monitoring, data recovery excavation, photography, and preparation of site forms. (2004)

Colorado River Aqueduct, Riverside/Indio Counties, CA.. Ms Nixon served as Staff Archaeologist on this Project. Her responsibilities include background research at the Eastern Information Center.(2004)

East Cota Street, Santa Barbara, CA. Ms Nixon served as Staff Archaeologist on this Project. Her responsibilities laboratory processing, cataloging, data entry, and report preparation. (2004)

Natural Resource Conservation Services, Idyllwild, CA. Ms Nixon served as Staff Archaeologist on this Project. Her responsibilities field survey, use of satellite global positioning system, and preparation of site forms. (2004)

Metropolitan Water District, San Diego 6 Water Pipeline, Temecula, CA. Ms Nixon served as Staff Archaeologist on this Project. Her responsibilities monitoring, testing and data recovery excavation, photography, and preparation of site forms; laboratory processing, artifact identification, cataloging, and preparation of artifacts for shipment to analysts (obsidian hydration/sourcing, faunal, lithic, and soil). (2004)

Edwards Air Force Base, CA. Ms Nixon served as Staff Archaeologist on this Project. Her responsibilities included laboratory processing, artifact identification, cataloging, and preparation of artifacts for shipment to analysts (obsidian hydration/sourcing, faunal, lithic, and soil). (2004)

Cattelus/Union Station, Los Angeles, CA. Ms Nixon served as Staff Archaeologist on this Project. Her responsibilities included background research at University of California, Riverside Library and Special Collections; laboratory processing. (2004)

Copelands, San Luis Obispo, CA. Ms Nixon served as Staff Archaeologist on this Project. Her responsibilities included data recovery excavation, preparation of site forms, artifact processing at field lab, photography, laboratory processing, artifact cataloging, data entry, curation, preparation of artifacts for shipment to analysts (faunal, lithic, and floatation), data analysis, and report synthesis. (2003-2004)

Lompoc Landing, Vandenberg Air Force Base, Lompoc, CA. Ms Nixon served as Staff Archaeologist on this Project. Her responsibilities included data recovery excavation, photography, and preparation of site forms; laboratory processing, artifact cataloging, data entry, and preparation of the collection for permanent curation. (2003-2004)

University Park Utility Project, Lompoc, CA. Ms Nixon served as Staff Archaeologist on this Project. Her responsibilities included laboratory processing, artifact identification, background research, and preparation of the collection for permanent curation. (2003-2004)

Caltrans District 7 Headquarters Replacement Project, Los Angeles, CA. Ms. Nixon served as Staff Archaeologist on this Project. Her responsibilities included data recovery excavation and preparation of site forms; laboratory processing, artifact cataloging, data entry, and preparation of collection for permanent curation, installation at the Caltrans building in Los Angeles of an exhibit requested by the client. (2002-2004)

Manufactured Gas Plant, Santa Barbara, CA. Ms. Nixon served as Staff Archaeologist on this Project. Her responsibilities included laboratory processing, artifact cataloging, data entry, background research, and ceramic analysis. (2002-2004)

Lake Mathews Project, Riverside County, CA. Ms. Nixon served as Staff Archaeologist on this Project. Her responsibilities included field survey, identification and documentation of milling slicks. (2003)

Glendale Sanitarium Site, Glendale, CA. Ms. Nixon served as Staff Archaeologist on this Project. Her responsibilities included laboratory artifact processing, ceramic and glass analysis. (2002)

Capitol Area East End Project, Sacramento, CA. Ms. Nixon served as Staff Archaeologist on this Project. Her responsibilities included laboratory processing, artifact cataloging, data entry, preparation of artifacts for shipment to analysts, and preparation of the collections for permanent curation. (2002-2003)

Marsh Street Garage, San Luis Obispo, CA. Ms. Nixon served as Staff Archaeologist on this Project. Her responsibilities included data recovery excavation and preparation of site forms; laboratory processing, artifact cataloging, data entry, and preparation of collection for permanent curation. (2002-2003)

Caltrans District 8 Project, San Bernardino, CA. Ms. Nixon served as Staff Archaeologist on this Project. Her responsibilities included data recovery excavation, artifact processing at field laboratory, and preparation of site forms; laboratory processing, artifact cataloging, data entry, photography, and preparation of collection for permanent curation. (2001-2003)

CalPers Headquarters Expansion Project, Sacramento, CA. Ms. Nixon served as Staff Archaeologist on this Project. Her responsibilities included data recovery excavation, artifact processing at field laboratory, site mapping using a transit, photography, and preparation of site forms. (2001-2003)

Volunteer Projects

U.S. Forest Service, Passport in Time, Six Rivers National Forest, Altaville, CA. Project focused on historical archaeology of a copper mining district, specifically the dwelling sites of Chinese migrant workers. Responsibilities included excavation, photography, illustration, and lab work. (2000)

Specialized Training

SB 18 Tribal Consultation Training 2007
Principals of Tribal Consultation, 2006
Desert Tortoise Protection Training, 2004
HAZWOPER 40-Hour Certification (OSHA approved) and refresher course 2006.

Related Coursework:

Field Course in Maya Archaeology, Yalahua Project, University of California, Riverside, 2001.

Lab Course in Archaeological Techniques, Mt. San Jacinto Community College, 1998–1999.

Publications/Reports

Rachael A. Nixon, Project Manager/Principal Investigator

2007 Phase I Archaeological Survey and Phase II Archaeological Testing Report (Draft). Quail Ranch Project, between Moreno Valley and San Jacinto, Riverside County. Submitted to the Stantec Moreno Valley Office.

2006 Phase I Cultural Resources Investigation IWA West (Granite Construction Properties) Indio Hills Water Reservoir Project, City of Indio, Riverside County, California. Submitted to the Indio Water Authority, Indio, California, City of Indio, California, and the Eastern Information Center, Riverside, California.

2006 Cultural Resource Monitoring Report (Draft) of the Tierra Bonita Project, a 29.7 Acre Parcel Located in Coachella, Riverside County, California. Submitted to North American Residential Communities, Inc., City of Coachella, California, and the Eastern Information Center, Riverside, California.

2006 Phase I Cultural Resources Investigation Josue Coronel Property, City of Indio, Riverside County, California. Submitted to Josue Coronel c/o Feiro Engineering, INC., Indio, California, Leslie Mouriquand with the City of Coachella, California, and the Eastern Information Center, Riverside, California.

2006 Phase I Cultural Resources Investigation Regency Homes Property, City of Indio, Riverside County, California. Submitted to Regency Homes, Rancho Mirage, California and the Eastern Information Center, Riverside, California.

2006 Phase I Cultural Resources Investigation IWA West (Wilhelm Properties) Indio Hills Water Reservoir Project, City of Indio, Riverside County, California. Submitted to Indio Water Authority, Indio, California, City of Indio, California, and the Eastern Information Center, Riverside, California.

2006 Cultural Resource Monitoring Report of the Tierra Bonita Project, A 29.7 Acre Parcel Located in Coachella, California, Riverside County, California. Prepared for North American Residential Communities, Inc. San Dimas, California.

2005 Cultural Resource Monitoring of the KB Home Somerset Project, A 37 Acre Parcel Located in Coachella, California, Riverside County, California. Letter report prepared for KB Home Coastal, Inc. Indio, California.

2004 Extended Phase 1, 27 East Cota Street Santa Barbara Genuity Project: Archaeological Monitoring and Site Assessment, CA-SBA-3745, edited by M. Colleen Hamilton. Applied EarthWorks, Inc., Hemet, California.

2004 Interpreting Chumash Subsistence Strategies during the Early Mission Era. Prepared for the Copelands project, CA-SLO-1419H, Applied EarthWorks, Inc., Fresno, California.

Mattiussi, Sarah and Rachael Nixon, Project Archaeologist

2007 Class I Cultural Resource Investigation for the Alta Mesa Project: 308 Acres Located Northwest of the City of Palm Springs, Riverside County, California. Submitted to the Bureau of Land Management.

Nixon, Rachael (Project Archaeologist) and Sarah Mattiussi

2007 Phase IV Archaeological Monitoring Report for the CK Development Project: 7 Acres located at the corner of Country Club Drive and Yucca Lane, Bermuda Dunes, Riverside County, California. Submitted to CK Development Group, LTD, Palm Desert, California, and the Eastern Information Center, Riverside, California.

Nixon, Rachael (Project Archaeologist) and Sarah Mattiussi

2007 Phase I Cultural Resources Investigation of the Indio Trails Project: Indio, California. Submitted to Palm Desert Heights Development Group, LLC, Mission Viejo, California and the Eastern Information Center, Riverside, California.

2007 Phase I Cultural Resources Investigation of the Palm Ridge. LLC Project: 20 Acres located within the City of Palm Springs, Riverside County, California. Submitted to Palm Ridge LLC, Palm Springs, California, the Eastern Information Center, Riverside, California, City of Palm Springs' Planning Department, Palm Springs, California, and the Agua Caliente Band of Cahuilla Indians' Department of Historic Preservation, Palm Springs, California.

Hamilton, M. Colleen, Rachael Nixon, Joan George, and Keith Warren

2006 Archaeological Monitoring and Data Recovery at the Former Santa Barbara I Manufactured Gas Plant Site, Santa Barbara, California. Submitted to URS Corporation for Southern California Edison. **Nixon, Rachael, and Susan K. Goldberg**

2006 Cultural Resources Construction Monitoring of the State Route 86S at Avenue 50 and 52 Intersection Improvement Project City of Coachella, Riverside County, California. Prepared for California Department of Transportation District 8, San Bernardino, California.

Nixon, Rachael and C. Dennis Taylor

2005 Cultural Resources Ground Disturbance Monitoring of Avenue S Corridor Improvement Project City of Palmdale, Los Angeles County, California. Prepared for Lim and Nascimento Engineering Corporation, Palmdale, California.

Chronology

January 2008-Present URS Corporation, San Diego, CA.
2006-2008 Stantec, Palm Desert, CA.
2000-2006 Applied EarthWorks, Hemet, CA.

Contact Information

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Suite 1000
San Diego, CA 92108
Rachael_Nixon@urscorp.com

Resume

Overview

Mr. Reiff, a Senior Project Manager with R. W. Beck, has been with the firm for over 24 years and is involved with the Independent Engineering practice. With over 30 years in the power industry, he has a wide range of experience in the design, construction, start-up, performance testing, and operation of waste-to-energy, biomass, coal-fired, nuclear, and combined-cycle power plants. His review and testing of power-producing technologies includes gas-fired combustion turbines, fluidized bed combustion, wood waste, pulverized coal, and waste-to-energy plants.

He has attended various power plant conferences and seminars and has worked on numerous power plants, both in the U. S. and overseas. Mr. Reiff has reviewed and tested a wide range of power producing technologies including fluidized bed combustion, gas fired combustion turbines, biomass, pulverized coal, and waste-to-energy plants. Mr. Reiff also has operation and maintenance experience regarding marine power plants, which he gained during his six years of service in the U.S. Navy's nuclear power program.

Independent Engineering Reviews

Mr. Reiff is an experienced project manager of both power and non-power projects financed through commercial lending or bond financing. He manages all activities associated with independent engineering reviews which include coordinating the design review, monitoring construction, reviewing payment requisitions, and overseeing start-up and performance testing.

He began his operation and maintenance activity with marine power plants, which he gained during his six years of service in the U.S. Navy's nuclear power program. His broad assessment experience includes addressing facility condition and operation, capacity factor, planned and preventative maintenance program, spare parts inventory, and conducting interviews with key plant personnel. His Independent Engineering project experience includes:

- Abound Solar – Abound Solar; Longmont, Colorado; Independent Engineering report includes the design and build of a large-scale manufacturing facility to deliver 195 MW/yr. of PV panel capacity
- Abengoa Solar – Abengoa Solar; Phoenix, Arizona; Independent Engineering report for 280 MW concentrating solar power trough plant, Solana, the world's largest solar plant; Provided support to the company on their Department of Energy loan guarantee
- Abengoa Solar – Abengoa Solar; Barstow, California; Power purchase agreement with Pacific Gas & Electric for their new solar plant, Mojave Solar; 250 MW of concentrating solar
- Stirling Energy Systems – Stirling Energy Systems; Empire Valley, California; SunCatcher dish engine technology; three commercial plants with 750 MW and 30,000 units
- La Paloma – 4-unit, 1,000-MW GT24 combined-cycle gas turbine power plant
- Harquahala – 3-unit, 1,100-MW 501G combined-cycle gas turbine power plant
- Gregory Project – ING Capital Corporation; Gregory, Texas; two GE F7A combustion turbines with 401-MW of net output (including O&M phase services)
- De Pere Cogeneration Project – ABN-AMRO Bank; De Pere, Wisconsin; 180-MW net output plant utilizing a GE 7231-FA combustion turbine
- Smithfield Cogeneration Project – Toronto Dominion Australia Ltd; Smithfield, New South Wales, Australia; 160-MW GE Frame 6 combined-cycle gas turbine power plant (including O&M phase services)
- La Paloma Project – Citibank; Kern County, California; 1,022-MW natural gas-fired facility utilizing four ABB GT24 combustion turbines (including O&M phase services)

- MACH Gen Portfolio Project – Société Générale; independent engineering, including O&M phase services, for sale of generating assets, including Harquahala Generating Company in Arizona and New Covert Generating Company in Michigan
- Southdown Power Projects – Barclay's Bank, BZW and Mercury Energy, Ltd; Southdown, Auckland, New Zealand; gas-fired combustion turbine facility rated at 114 MW
- Stratford Power Project – Bank of New Zealand; New Zealand; 354-MW, GT 26 gas-fired combustion turbine project
- Island Cogeneration Project – Royal Bank of Canada; British Columbia, Canada; 254-W, GT 2A, gas-fired combined-cycle facility
- Cardinal Cogeneration Facility – Mutual Life Assurance Company of Canada; Cardinal, Ontario; 150-MW natural gas-fired, combined-cycle power generating
- Iroquois Falls Cogeneration Project – Iroquois Falls, Ontario; 100-MW natural gas-fired combined-cycle power generating station
- Midsun Power Project – Prudential Insurance; California; LM2500 combustion turbine gas-fired power project
- La Plata Refinery Power Project – Chase Manhattan and OPIC; Buenos Aires, Argentina; Frame 9, 127-MW combustion turbine facility
- Orroville Cogeneration Project – Bank of Boston; Oroville, California; 8-MW diesel cogeneration power plant
- Springerville Generating Station Expansion Project – Credit Suisse First Boston; Springerville, Arizona; construction of two new 400 net MW coal-fired electric generation facilities (including O&M phase services)
- Yallourn W Power Project – Yallourn Energy, Ltd; Melbourne, Australia; 1,450-MW brown coal-fired thermal power station including four brown coal-fired steam generating units divided into two stages which are operated independently from one another

Mr. Reiff has a Bachelor of Science degree in Mechanical Engineering and is a licensed Professional Engineer.

Robert K. Scott

Principal Geologist

Areas of Expertise

Project Management
Phase I ESAs
Phase II ESAs
Remedial Investigations/ Feasibility Studies
Hydrogeology/Geochemistry
Laboratory QA/QC

Years of Experience

With URS: 19 Years

With Other Firms: 2 Years

Education

Graduate Course Work, Hydrogeology, Syracuse University
MS, Geology, Pennsylvania State University
BS, Geological Sciences (summa cum laude), State University of New York at Albany

Registration/Certification

Hydrogeologist/California, C.Hg. # 734
UST Consultant/Arizona, # 1218
Geologist/California, R.G. # 5334
Geologist/Arizona, R.G. # 29659

Overview

Mr. Scott is a California-Registered Geologist (PG) and Certified Hydrogeologist (CHg) who has been involved in a variety of environmental projects in San Diego, Southern California and Arizona for over 15 years. He has successfully provided consulting services to government and private clients. Mr. Scott's management style has been effective in developing project teams, as well as being a key player on them. Some of his relevant experience related to groundwater is detailed below.

Project Specific Experience

Goodrich Aerospace (Rohr, Inc.), Chula Vista, CA. Mr. Scott is the Program Manager providing environmental consulting services for a large aerospace manufacturing facility. Responsibilities include managing budgets, client and regulatory interfacing (DEH & RWQCB), coordinating investigative activities and providing hydrogeological expertise. Developed sampling programs to investigate many releases that have affected both soil and groundwater as part of RWQCB directives and due diligence for property transactions with the Port of San Diego. Responsible for developing a hydrogeologic conceptual model for the site under the oversight of the RWQCB and U.S. Department of Fish and Game. Conducted a deep drilling program to characterize geologic conditions in the San Currently investigating the vertical and lateral extent of TCE in groundwater and its potential to affect possible drinking water sources and San Diego Bay. Also evaluating the extent of metals-impacted sediment downgradient of its storm water conveyance system. He successfully negotiated an alternate approach to addressing potential ecological risk to receptors when compared to the local shipyards.

ITT Cannon, Santa Ana, CA. Registered geologist responsible for developing and conducting on- and off-site investigations at a 34-acre aerospace facility to delineate of TCE and PCE contaminant plumes in soil and groundwater. Program has included the installation of well clusters screened in three water-bearing zones to characterize the subsurface geology and develop a hydrogeologic conceptual model for contaminant migration. Assisted in the development of feasibility study and remedial alternatives. Provided hydrogeologic input to placement of wells for a bioremediation pilot-scale program and a dual-phase extraction system.

Manzanita Indian Reservation, San Diego County, CA. Managed a well installation and rehabilitation project to improve water supplies and quality. Evaluated groundwater resources, nitrate source identification, installation of two potable supply wells, preparation of a wellhead protection plan and recommendations for replacement and rehabilitation of existing water wells at the Reservation. An additional phase of work is currently underway to prepare bids and specifications, design and install four new and rehabilitate

four water supply wells, abandon out-of-service wells and conduct additional aquifer testing.

Meadow Valley Generating Project, Meadow Valley, NV. Assisted with peer review and evaluation of groundwater resources related to alluvial and Tertiary-age basin-fill aquifers as a potential water source for a proposed power generating facility. The project involved aquifer testing and evaluation of possible affects groundwater extraction would have on springs, riparian habitat and connection to the regional carbonate aquifer.

National City Well Field, National City, CA. Provided hydrogeologic peer review for the design of two deep test wells in the San Diego Formation at the well field. Reviewed geologic and aquifer test data, and downhole geophysical logs.

Superfund Site Remedial Investigation, City of Industry, CA. Served as Assistant Project Manager for remedial investigations conducted by a major principal responsible party (PRP) in the Puente Valley Operable Unit of the San Gabriel Valley Superfund Site. The site was formerly occupied by a circuit-board manufacturer. Installed monitoring well clusters over multiple screen intervals using hollow-stem-auger and mud-rotary drilling techniques. Performed aquifer testing. Supervised drilling programs. Evaluated field and laboratory data and interpreted geophysical logs. Performed stratigraphic evaluation and correlation, and prepared reports. Reviewed approximately 100 regulatory agency files to identify other major PRPs in the operable unit for the client.

Noah Webster Burn Site, San Diego Unified School District. SDUSD requested our assistance on a project based on our experience with historical burn sites, and we prepared a Preliminary Endangerment Assessment (PEA) work plan and implemented it during a three-day weekend two weeks later. All stakeholders met several times for a roundtable discussion and negotiated scope of work with regulators. Our work plan included the investigation of concerns specific to DTSC, the City Local Enforcement Agency (LEA), RWQCB and SDUSD. Managed multiple field teams on site that conducted trenching, drilling, soil gas and surface soil sampling at about 60 locations. Samples were collected and results were provided via an electronic deliverable (EDD) that enabled us to prepare a PEA report by late December, ahead of SDUSD's deadline. We are assisting SDUSD in preparing a remedial action work plan (RAW) and preparation of public participation documentation.

City of San Diego Burn Sites, San Diego, CA. Program manager for the development of sampling programs and assessments for burn sites located throughout the City. Activities have involved the investigation of three burn dumps that operated in the 1920s and 30s. The projects received local press coverage and involved considerable public involvement. Two of the sites are in residential areas and one is at a school site. Following investigation, we evaluated health risk and developed a Remedial Action Plan for each site. One site has been remediated and closure granted by VAP for some of the residential properties. DTSC granted closure following the partial removal and capping of burn ash at the other site.

Pacific Steel Inc., National City, CA. Managed the installation of groundwater monitoring wells, evaluated tidal influences to groundwater and evaluated remedial costs for a 9-acre site affected by hydrocarbons, metals, PCBs and solvents, under a Cleanup & Abatement Order with the RWQCB.

Preliminary Assessment Screening, U.S. Army Corps, Barstow-Daggett Airport, Yermo, CA. Provided peer review of a preliminary assessment screening for the redevelopment of the facility by the U.S. Army which included recommendations for further site investigation.

Shell Oil Company, Southern CA. Managing and performing Phase II site assessments to evaluate the extent of petroleum hydrocarbon and/or volatile organic compound contamination in soil and groundwater. Work has included conducting records reviews, installation of monitoring wells and geologic logging of borings, well design, well development, water sampling, and preparing Corrective Action Plans (CAPs) in accordance with San Diego DEH guidelines. Also successfully negotiated a reduction in monitoring requirements with the DEH for several sites.

Hofer Property, Tijuana Valley, San Diego, CA. Assistant Project Manager responsible for conducting RI/FS for a property with historical use as a disposal site under the oversight of the USACE. Project involved extensive soil sampling for metals, PCBs, and hydrocarbons, identifying source areas, estimating affected volumes of soil, and developing remedial alternatives.

Range 313, Camp Pendleton Marine Corps Base, CA. Provided peer review expertise related to the investigation and remediation of a firing range affected by lead. Assisted in conducting a preliminary evaluation of remedial alternatives and unit costs.

Professional Societies/Affiliates

San Diego County Department of Environmental Health, Brownfields Technical Work Group

Awards

Phi Beta Kappa

Languages

English

Basic Spanish

Basic German

Basic Italian

Basic French

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Joe D. Stewart

Principal Paleontologist

Areas of Expertise

Paleontology

Years of Experience

With URS: 1 Year
With Other Firms: 5 Years

Education

MA/1979/Systematics & Ecology/University of Kansas
Ph.D./1984/Systematics & Ecology/University of Kansas

Registration/Certification

Certified Paleontologist, Orange County

Overview

Joe Stewart is a vertebrate paleontologist with over 30 years of experience in paleontology and 22 years of experience in the geology and paleontology of California, particularly in Merced, Fresno, Kern, Santa Barbara, Los Angeles, Orange, Riverside, Imperial, and San Diego counties. Joe has been involved in the permitting or construction of four power plants, and has directed the paleontological monitoring and mitigation program for Path 15, a major transmission line project. He is also a certified paleontologist for the County of Orange. His publications include 30 peer-reviewed articles in books and journals. His research specialties are fossil fishes and Pleistocene vertebrate faunas.

Project Specific Experience

I-805 Managed Lanes South Project. Directed paleontological survey of 11.4-mile long project area in San Diego, National City, and Chula Vista and wrote the Paleontological Resource Assessment for SANDAG. **(2008-present)**

I-805 North Corridor Project. Directed paleontological survey of 4.4-mile long project area in San Diego and wrote the Paleontological Resource Assessment for SANDAG. **(2008)**

Calnev Pipeline Project. Directed paleontological survey of 234-mile long project area in San Bernardino County, California and Clark County, Nevada and wrote the paleontological assessment. **(2008-present)**

SES Solar One Application for Certification. Directed paleontological pedestrian survey of project area in San Bernardino County and wrote the paleontological resource section of the AFC. **(2008-present)**

San Joaquin One and Two Application for Certification. Directed paleontological pedestrian survey of project area in Fresno County and wrote the paleontological resource section of the AFC. **(2008)**

Willow Pass Generating Station Application for Certification. Participated in paleontological pedestrian survey of project area in Contra Costa County and wrote the paleontological resource section of the AFC. **(2008)**

Marsh Landing Generating Station Application for Certification. Participated in paleontological pedestrian survey of project area in Contra Costa County and wrote the paleontological resource section of the AFC. **(2008)**

SES Solar Two Application for Certification. Participated in paleontological pedestrian survey of project area and will edit the paleontology section of the AFC. **(2008-Present)**

IID Niland Gas Turbine Plant Phase III project construction. Oversaw the work of the paleontological resource monitors, made numerous site visits, and will write final report on paleontological resources. **(2007-2008)**

Carrizo Energy Solar Farm (Ausra) Application for Certification. Participated in paleontological pedestrian survey of project area and edited the paleontology section of the AFC. **(2007)**

Starwood Power-Midway, LLC Peaking Project Application for Certification. Participated in the responses to the CEC Provisional Staff Assessments. **(2007)**

BNSF Cajon Main Third Track Summit to Keenbrook permitting. Participated in the writing, editing, and production of the Paleontologic Resources Monitoring and Mitigation Plan and the Paleontological Resource Assessment. **(2007)**

Path 15 500-kV Power Transmission Line between Los Banos and Gates substations. Supervised paleontological resource monitoring, excavations, specimen preparation, specimen identification, and report writing for 80-mile power line. **(2003-2005)**

Professional Societies / Affiliates

Society of Vertebrate Paleontology

Mark C. Storm, INCE BD. CERT.

Senior Noise Control Engineer

Areas of Expertise

Mechanical Systems Noise Control
Architectural Acoustics
Environmental Noise Assessment

Years of Experience

With URS: 3 Years

With Other Firms: 15 Years

Education

BS, Aeronautics & Astronautics, Massachusetts Institute of Technology

Registration/Certification

INCE Board Certified, 08004

Overview

Mr. Storm's career in mechanical systems noise control and architectural acoustics spans over fifteen years, in various roles with established equipment manufacturers, consulting firms, and startup ventures. His market-proven skills and experience include noise analysis and sound attenuation projects for facilities, products and industrial equipment ranging from semiconductor "wafer fabs" to motorcycle exhaust mufflers.

Mark's current focus areas involve managing tasks for noise regulation and guidance review, field surveys, acoustical impact assessment, mitigation planning and compliance evaluation for various residential, commercial, municipal and industrial projects.

Project Specific Experience

Alternative Energy – Wind

Whistling Ridge Energy Project, **Skamania County, WA.** Noise Task Leader for EIR/EIS includes site surveys, noise models, impact assessments and mitigation recommendations. Proposed project is a 125-megawatt wind energy facility to be located in Skamania County, WA. (2008-2009)

Solano Wind Project Phase III, **Sacramento Municipal Utility District, Solano County, CA.** Noise Task Support for EIR/EIS includes noise models, impact assessments and mitigation recommendations. Proposed project involves eighty-four (84) 3-megawatt wind turbine generators (WTGs) in Solano County, CA. (2007)

Wind Implementation Monitoring Program Phase IV, Riverside County, CA. Noise Task Support for peer review and public workshop participant. Project located in Riverside County, CA. (2008)

Renewable Energy Systems, China Mountain Wind Power Project, Twin Falls County, ID. Noise Task Leader for EIR/EIS includes ambient noise estimates. Proposed project of 185 2.3-megawatt WTGs near the Idaho-Nevada border in Twin Falls County, ID. (2009)

BP Wind Energy, Mohave County Wind Project, Kingman, AZ. Noise Task Leader for EIR/EIS includes site surveys, construction and operation noise models, impact assessments and mitigation recommendations. Proposed 500-megawatt project involves WTGs near Kingman, AZ. (2009)

Fossil-fueled Power

Imperial Irrigation District, Niland Gas Turbine Plant. Noise Task Leader. Conducted post-construction noise measurement and analysis of peaker plant operations to demonstrate compliance with CEC conditions. The 94-megawatt project has a pair of simple-cycle gas turbines. (2008)

Starwood Power Midway Peaking Project, Fresno, CA. Noise Task Leader. Conducted post-construction noise measurement and analysis of peaker plant operations to demonstrate compliance with CEC conditions. Project has pair of 60-megawatt gas turbines near Fresno, CA. (2009)

Indiana Gasification. Noise Task Leader. Support for EIR/EIS includes screening-level construction and operation noise models, impact assessments and mitigation recommendations. Proposed project is a coal-fueled 300-megawatt plant to produce synthetic natural gas using General Electric gasification techniques. (2009)

Mississippi Gasification. Noise Task Leader. Support for EIR/EIS includes screening-level construction and operation noise models, impact assessments and mitigation recommendations. Proposed project is a petcoke-fueled plant that generates synthetic natural gas using Conoco-Phillips "E-Gas" technology and processes. (2009)

Alternative Energy – Solar

Starwood Solar I, Starwood Energy Group, Maricopa County, AZ. Noise Task Leader for Arizona Corporation Commission (ACC) Certificate of Environmental Compatibility, includes site surveys, noise models, impact assessment and mitigation recommendations. Proposed project is a 290-megawatt solar-to-thermal power plant in Maricopa County, AZ. (2009)

Carrizo Energy Solar Farm, Ausra, San Luis Obispo County, CA. Noise Task Leader support for California Energy Commission (CEC) Application for Certification (AFC), includes site surveys, noise models, analysis, impact assessment, mitigation recommendations, and meeting/workshop participation. Proposed project is a 150-megawatt solar-to-thermal power plant planned for the Carrizo Plains area of San Luis Obispo County, CA. (2007-2009)

Solstice, Ausra, Yuma, AZ. Noise Task Leader support for Arizona Corporation Commission (ACC) Certificate of Environmental Compatibility, includes site surveys, noise models, impact assessment and mitigation recommendations. Proposed project is a 240-megawatt solar-to-thermal power plant near Yuma, AZ. (2008-2009)

Tessera Solar/Stirling Energy Systems, Solar Two, Imperial County, CA. Noise Task Leader support for CEC AFC includes site surveys, noise models, impact assessment and mitigation recommendations. Proposed Project is a 600-megawatt solar-to-thermal power plant in Imperial County, CA. (2008-2009)

Tessera Solar/Stirling Energy Systems, Solar One and Solar Three, San Bernardino County, CA. Noise Task Leader support for CEC AFC includes site surveys, noise models, impact assessment and mitigation recommendations. Proposed solar-to-thermal power plant sites are located in San Bernardino County, CA. (2008-2009)

San Joaquin Solar 1 & 2, Spinnaker Energy, Inc., Coalinga, CA. Noise Task Leader support for CEC AFC includes site surveys, noise models, impact assessment and mitigation recommendations. Proposed

project is a 106-megawatt solar/biomass hybrid solar-to-thermal power plant near Coalinga, CA. (2008-2009)

Mt. Signal Solar, Southwestern Power Group II, LLC, Imperial County, CA. Noise Task Leader support for EIR/EIS includes site surveys, construction and operation noise models, impact assessments and mitigation recommendations. Proposed project is a 49-megawatt solar/biomass hybrid solar-to-thermal power plant in Imperial County, CA.(2008)

Architectural Acoustics

Centex Homes, Montefaro, La Jolla, CA. Noise Task Leader. Tested floor/ceiling assembly impact isolation at vertically adjacent luxury condominiums in La Jolla, CA. (2007-2009)

San Jose Police Department, PAB Interview Rooms. Noise Task Leader. Evaluated speech privacy upgrades based on contemporary "speech security" risk assessment techniques. Reviewed bid documents and potential material specifications. (2008)

Qualcomm MediaFLO Server Expansion. Noise Task Leader. Assessed sound isolation impact resulting from expansion of cooling capacity, and the corresponding added plug-fan cooling units, at a San Diego campus building server room. (2008)

Brenson Communities, BC Christensen Ranch. Noise Task Leader. Reviewed inter-dwelling sound isolation measures and recommended upgrades to help a Menifee, CA residential development attain compliance with California Building Code. (2007)

Forrester Creek, Pacific Scene Development, El Cajon, CA. Noise Task Leader, 2008. Analyzed sound isolation of proposed commercial building shells with respect to nearby airport and highway traffic in El Cajon, CA. (2008)

Surface Transportation

Bluegrass Motorsports, Gallatin County, KY. Noise Task Leader. Predicted outdoor noise from a proposed private racetrack near the Kentucky Speedway in Gallatin County, KY in order to assess potential community impacts and expedite project permitting. (2007)

Placer Parkway, Placer County, CA. Noise Task Support. Noise analysis for highway alternative analysis study and Tier 1 EIR in Placer County, CA near Sacramento. Proposed project has five alignment alternatives for new highway section through agricultural lands programmed for residential development. (2006-2007)

Folsom Bridge, Folsom, CA. Noise Task Team Member. Supervised traffic noise modeling of proposed bridge entry ramps with respect to residential receivers for project in Folsom, CA. (2006)

Burlington Northern Santa Fe (BNSF), Tehachapi Rail Expansion. Noise Task Support. Conducted vibration measurements at potentially impacted residences along the Tehachapi to Bena corridor. (2009)

Industrial – Natural Gas

SourceGas, Oil Springs, Elk Mountain, WY. Noise Task Leader. Conducted ambient noise survey and predicted operation noise for a new compressor station near Elk Mountain, WY as part of Federal Energy Regulatory Commission (FERC) Resource Report 9 (RR9). (2007-2008)

SourceGas, Norwood, CO. Noise Task Leader. Directed operation noise prediction, existing ambient noise measurement, and impact assessment for a new proposed compressor station near Norwood, CO. (2008)

Fayetteville Express Pipeline, AK and MI. Noise Task Leader. Prepared FERC RR9 noise section for a new proposed compressor station, horizontal directional drilling (HDD) sites, and natural gas piping alignment that traverses Arkansas and Mississippi. (2008-2009)

Liquefied Natural Gas Storage Facility, Confidential Client. Noise Task Leader. Investigated gas compression process noise with onsite sound and vibration measurement techniques. Recommended mitigation measures were installed and deemed successful after confirmation measurements. (2007-2008)

Riverton Metering Station, Kern River. Noise Task Support. Predicted propagation of natural gas pipe flow noise and buried valve noise. (2009)

Bradwood LNG. Noise Task Support. Predicted potential noise impacts for a variety of facility and pipeline construction activities associated with a new liquefied natural gas importation and distribution center on the Oregon bank of the Columbia River. (2006-2008)

HVAC / Mechanical

Network Appliance, Building. 2, Sunnyvale, CA. Noise Task Leader. Designed configuration of noise attenuation for six-fan high-capacity exhaust units of a data center in Sunnyvale, CA. (2007)

Qualcomm, Building N. Noise Task Leader. Supervised before-and-after interior sound measurement surveys of hundreds of ceiling-mounted fancoil units. Surveys enabled assessment of acoustical improvement due to fan motor change-outs. (2007)

TSA Baggage Inspection Area, San Diego International Airport, San Diego, CA. Noise Task Leader. Measured and analyzed occupational noise levels from baggage handling equipment and associated systems. Recommended noise control and sound abatement options to permit OSHA-compliant overall levels. (2008)

Calabasas Library AHU Performance Tests, Energy Labs, Tijuana, Mexico. Noise Task Leader. Witnessed conduct of air handling unit (AHU) performance tests, conducted at client's laboratory in Tijuana, Mexico, that met Air Movement and Control Association (AMCA) standards 210-99 and 300-95. (2007)

Albertson's, Nadel Architects, Coronado, CA. Noise Task Leader. Conducted existing ambient noise measurement and predictive operation

noise analysis for rooftop HVAC and refrigeration plant associated with a supermarket re-model and mechanical upgrade. (2007-2008)

Other

Three Rivers Quarry Expansion, L&W Stone Corporation, Clayton, ID. Noise Task Support. Conducted noise analysis for expansion of existing dual-pit flagstone quarry operation near Clayton, ID that included prediction of noise impacts on residential areas and wildlife. (2006)

Teledyne-Ryan Site Demolition, Port of San Diego, San Diego, CA. Noise Task Leader. Noise and vibration analysis support for EIR associated with demolition of industrial building campus adjacent to San Diego International Airport. Impact assessment included wildlife considerations. (2008-2009)

Main Exchange & Hospital Replacement, U.S. Marine Corps Base, Cam Pendleton, CA. Noise Task Leader. Developing draft noise sections of the Environmental Assessments (EA) for each of these projects at Camp Pendleton, CA. (2009)

San Diego International Airport Terminal 2 SmartCurb, San Diego, CA. Noise Task Leader. Review development of transit center architectural design with respect to reverberation control and paging system intelligibility. (2009)

Professional Societies / Affiliates

Institute of Noise Control Engineering
Society of Automotive Engineers

Publications

U.S. Patent No. 7,581,619 – Movable Baffle Columns for Use with Air Handling Units.

U.S. Patent No. 6,571,910 – Method and Apparatus for Improved Noise Attenuation in a Dissipative Internal Combustion Engine Exhaust Muffler.

"Prediction of Sintered Fibrous Metal Liner Influence on Muffler Sound Attenuation Performance and Noise Emission for Single-Cylinder Motorcycle Engine Exhaust", NCAD2008-73022, Proceedings of NCAD2008, NoiseCon2008-ASME NCAD, Dearborn, MI.

"Apparent Trends in Wind Turbine Generator Noise Criteria and Regulation Guidance", 10935, submitted for Proceedings of InterNoise-2009, Ottawa.

Chronology

01/06 – present: URS Corporation, San Diego
06/04 – 03/07: Energy Labs Inc., San Diego
08/02 – 06/04: Acentech Inc., Cambridge
08/01 – 08/02: Quietstorm LLC, Phoenix
01/97 – 08/01: Metal Form Mfg. Inc. - Commercial Acoustics, Phoenix

Contact Information

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mark_storm@URSCorp.com

Waymon Votaw, Tessera Solar, Senior Director and Head of Asset Management

Professional Profile

- More than 20 years experience in the energy sector
- Managed multiple site generation operations including operations, outage execution, maintenance management, EHS, and reliability engineering.
- Expertise implementing and managing world class operations and maintenance capabilities, practices and procedures guided by Lean and Six σ.
- Expertise in portfolio optimization including fuel and power supply strategies, dispatch planning, maintenance scheduling and causal analysis.
- Managed pricing, structuring and origination activities for multiple markets including product structuring, valuation, pricing and analytics.
- Experience in managing risks inherent in leading technologies (e.g., serial number 1 for GE 9FA ++ enhanced turbines and the Siemens annular combustors, fluidized bed generation, etc.).
- Expertise in international trade execution to include power and fuel supply strategy execution, real time market analytics, scheduling & logistics and ISO/RTO interface.

Professional Experience

Tessera Solar NA, Houston, TX
Senior Director and Head of Asset Management
Responsibilities

- Developing and implementing O&M capabilities, practices, and procedures for the pipeline of Tessera projects
- Support development activities with structuring, valuation and estimation for commercial and O&M activities

Booz & Company (formerly Booz Allen Hamilton), Houston, Texas
Energy, Chemicals and Utilities; Operations Consulting
Responsibilities:

- Apply Lean principles to develop tools to assist energy and utility clients with capital allocations, operational excellence, maintenance and project optimization, cost restructuring, process redesign / transformation, and operating model design

Achievements:

- Migrated a domestic generator from a state of low facility and equipment utilization, low productivity, frequent capital and operating budget overruns and lack of commercial control of their assets to a state of 1st quartile performance in all strategic and operational performance indicators
- Assessed and redesigned the service model for a large domestic IPP portfolio to align facility service demands with central support supply. Results simultaneously reduced costs and improved performance

Prisma Energy International, Houston, Texas
Director, Europe and Asia Region
Responsibilities:

- Manage all financial, operational, commercial, regulatory and governance aspects of power generation facilities in Turkey, Poland and Italy, and guide the success of the organization as a Director on the project level Boards of Directors

Achievements:

- Proactive mitigation of identified Value at Risk – Strategic divestiture of an asset to eliminate risks impacting cash flows to shareholders, and defended an international asset from threatened government seizure of $300 million of in-country assets.

SK-Enron, Seoul, South Korea
Executive Vice President, Operations
Responsibilities:

- Managed all company operational, regulatory, marketing and governance aspects within a 50:50 South Korean JV
- Assets included 9 local gas distribution companies, an LPG import / wholesale company, and coal-fired cogeneration

Achievements:

- Centralized and led the joint venture's regional capital projects resources (engineering and construction) with annual budgets ranging from $88 to $136 million. Increased bargaining power, economies of scale, and marketing to design linkages increased project rates of return by 7% on average
- Instilled a safety culture that reduced Lost Workday Severity Rate from 6.01 to zero, LTI Frequency Rate from 1.12 to zero, Total OSHA Recordable Incident Rate from 0.39 to 0.08, and Vehicle Accident Frequency Rate from 4.32 to zero

Education

Bachelor of Science, Civil Engineering, 1988, United States Military Academy at West Point, NY
Master of Business Administration, 1997, Rice University in Houston, TX
Master of Environmental Engineering, 1997, Rice University in Houston, TX

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Tricia Winterbauer

Senior Environmental Specialist

Areas of Expertise

Environmental Regulatory Compliance and Permitting
NEPA/CEQA
Energy Development Projects
Occupational Health & Safety
Phase I & II Environmental Site Assessments

Years of Experience

With URS: 13 Years

Education

BA/Environmental Studies/1992

Overview

Ms. Winterbauer has 13 years of experience in environmental regulatory compliance and permitting projects, NEPA/CEQA, energy development projects, occupational health and safety projects, hazardous waste soil and groundwater investigations and individual and multi-site Phase I and Phase II Environmental Assessments.

Project Specific Experience

NEPA/CEQA/Energy Development Projects

Ms. Winterbauer has conducted Environmental Impact Reports (EIRs), Environmental Impact Statements (EISs) and Environmental Assessments (EAs) through the NEPA/CEQA process, as well as the permitting of power generating facilities through the California Energy Commission's Application for Certification (AFC) permitting processes for new power generation facilities. She has also assisted existing power generation facilities with the development of environmental and health and safety compliance plans and documentation.

- **Stirling Energy Systems Solar One Generating Facility**. Served as task leader for Hazardous Materials, Hazardous Waste, and Worker Safety for the AFC of a 850 MW solar power generating facility in San Bernardino County. The AFC was submitted to the CEC in December, 2008.

- **San Joaquin Solar 1&2 Hybrid Solar Thermal Generating Facility.** Served as the task leader for Hazardous Materials, Hazardous Waste, and Worker Safety for the AFC of a 106.8 MW solar power generating facility in Fresno County. The AFC was submitted to the CEC in November, 2008.

- **Stirling Energy Systems Solar Two Generating Facility**. Served as task leader for Hazardous Materials, Hazardous Waste, and Worker Safety for the AFC of a 750 MW solar power generating facility in Imperial County. The AFC will be submitted to the CEC in June, 2008

- **Carrizo Solar Power Generating Facility Project**. Served as task leader for Hazardous Materials, Hazardous Waste, and Worker Safety for the AFC of a 163 MW solar power generating facility in San Luis Obispo County. The AFC was submitted to the CEC in October, 2007.

- **Anaheim Municipal Power Station**. Served as task leader for Hazardous Materials, Hazardous Waste and Worker Safety for the AFC of a 200 MW energy facility in Anaheim, Orange County. The AFC was be submitted to the CEC 2008.

- **Larkspur 3 Energy Facility Project**. Served as task leader for Hazardous Materials, Hazardous Waste, and Worker Safety for the AFC Amendment for the facility located in San Diego. The AFC Amendment was submitted to the CEC in May, 2007.

- **Panoche Energy Center**. Served as task leader for Hazardous Materials, Hazardous Waste and Worker Safety for the AFC of a 400 MW energy facility in Fresno County. The AFC will be submitted to the CEC July, 2006.

- **Bullard Energy Center**. Served as task leader for Hazardous Materials, Hazardous Waste and Worker Safety for the AFC of a 200 MW peaking energy facility within Fresno County. The AFC was be submitted to the CEC November, 2006.

- **Magnolia Power Project**. Served as task leader for Hazardous Materials, Hazardous Waste, and Worker Safety for the AFC of a 250 MW energy facility within the City of Burbank. The project was licensed in 2003. Assisted in the management of condition compliance activities from 2003-2005. Developed construction and operations Hazardous Materials and Hazardous Waste Management Plans, Stormwater Pollution Prevention Plans, A Health & Safety Program and a Risk Management Plan for the facility.

- **Agua Mansa Power Project**. Assisted in the preparation ad processing of an application to develop a 49 MW power facility in Colton, California. Project was constructed in 2003. Assisted in environmental compliance activities from 2003-2004. Developed Construction and Operations Hazardous Materials and Hazardous Waste Management Plans, a Spill Prevention Countermeasures and Contingency Plan, the operations Health & Safety Program and a Risk Management Plan for the facility.

- **Duke Energy Moapa Power Project**. Assisted Duke Energy of North America in environmental permitting and construction compliance activities for a power plant in Clark County, Nevada from 2000-2002. Prepared and submitted compliance documents to various local, state and federal agencies. Prepared a permit matrix to track the completion of each of the permits required prior to construction, during construction, and prior to operations. Also assisted with NEPA compliance and coordination with the Bureau of Land Management for the power plant and project linears.

- **AES Southland**. Prepared an Occupational Health & Safety Program to comply with Cal-OSHA requirements for 5 California AES power plants in 2004. Safety Plans and Programs included Injury Illness Prevention Program, Hazard Communication Program, Industrial Hygiene Program, Hearing Conservation Program, Respiratory Protection Program, Confined Space Entry Program, Hot Work Program, Elevated Work and Fall Protection Program, Lockout/Tagout

Program, Emergency Action/Fire Prevention Plans, Personal Protective Equipment Program, and Training Programs.

Environmental Regulatory Compliance

- Ms. Winterbauer has provided regulatory compliance assistance to various industrial and commercial facilities. Has developed and updated regulatory compliance documentation including hazardous waste management programs, hazardous materials management programs, Form R evaluations, hazardous material business plans, risk management plans, storm water pollution prevention plans, spill prevention control and countermeasure plans risk management plans and training programs.
- Has completed numerous Environmental Compliance Audits for industrial, commercial, and medical facilities.
- Has provided daily and weekly onsite regulatory compliance assistance for various industrial and commercial businesses. Activities included, weekly inspections of hazardous waste areas, development and daily implementation of a hazardous management and hazardous waste programs, assistance with storage requirements for hazardous materials, development of a chemical spill prevention programs, and assistance with air permit compliance documentation and training of employees.

Occupational Health and Safety

- Has provided occupational health and safety compliance assistance to various industrial and commercial facilities. Has developed health and safety programs that include all required Cal-OSHA plans and programs.
- Conducted occupational health and safety audits for the numerous industrial and manufacturing facilities to determine compliance of the Occupation Safety and Health Administration standards.

Phase I and Phase II Site Assessments

- Managed and conducted more than 200 Phase I Site Assessments of industrial and commercial facilities in Northern and Southern California. Investigations have focused on the potential for soil and groundwater contamination resulting from past and present site use. Specific tasks have included proposal preparation, budget tracking, site reconnaissance, historical land use investigation, topographic map and aerial photo review, and review of regulatory agency records concerning site compliance issues. Additional tasks have included collection of drinking water samples for analysis of lead content, and visual inspections and characterization of possible asbestos containing materials.
- Has Performed groundwater and soil sampling, at hazardous waste sites throughout California. Responsibilities have included well purging, sample collection, measurement of field parameters, report preparation and recommendations for further sampling analysis and remediation

activities. Has assisted on large Phase II projects conducting field work and preparing reports of findings.

Contact Information

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BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
COMMISSION OF THE STATE OF CALIFORNIA
1516 NINTH STREET, SACRAMENTO, CA 95814
1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION
For the CALICO SOLAR (Formerly SES Solar One)

Docket No. 08-AFC-13

PROOF OF SERVICE
(Revised 6/14/10)

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DECLARATION OF SERVICE

I, Jennifer Draper, declare that on June 30, 2010, I served and filed copies of the attached Applicant's submittal of Opening Testimony. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at: [www.energy.ca.gov/sitingcases/solarone].

The documents have been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(*Check all that Apply*)

FOR SERVICE TO ALL OTHER PARTIES:

_X_ sent electronically to all email addresses on the Proof of Service list;

____ by personal delivery;

_X_ by delivering on this date, for mailing with the United States Postal Service with first-class postage thereon fully prepaid, to the name and address of the person served, for mailing that same day in the ordinary course of business; that the envelope was sealed and placed for collection and mailing on that date to those addresses NOT marked "email preferred."

AND

FOR FILING WITH THE ENERGY COMMISSION:

_X_ sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (***preferred method***);

OR

____ depositing in the mail an original and 12 paper copies, as follows:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 08-AFC-13
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.state.ca.us

I declare under penalty of perjury that the foregoing is true and correct, that I am employed in the county where this mailing occurred, and that I am over the age of 18 years and not a party to the proceeding.

Original Signed By
Jennifer Draper

*indicates change