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October 16, 2008

File No. 030137-0012

VIA FEDEX

CALIFORNIA ENERGY COMMISSION

Attn: Docket No. 07-AFC-3

1516 Ninth Street, MS-4

Sacramento, California 95814-5512

DOCKET

07-AFC-3

DATE OCT 16 2008

RECD. OCT 16 2008

Re: CPV Sentinel Energy Project: Docket No. 07-AFC-3

Dear Sir/Madam:

Pursuant to California Code of Regulations, title 20, sections 1209, 1209.5, and 1210, enclosed herewith for filing please find Applicant's Prehearing Conference Statement.

Please note that the enclosed submittal was also filed today via electronic mail to your attention.

Very truly yours,



Paul E. Kihm
Senior Paralegal

Enclosure

cc: CEC 07-AFC-3 Proof of Service List (w/encl. via e-mail)
Michael J. Carroll, Esq. (w/ encl.)

Michael J. Carroll
Shannon D. Torgerson
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650 Town Center Drive, Suite 2000
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STATE OF CALIFORNIA
ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

In the Matter of:)	Docket No. 07-AFC-3
)	
Application for Certification,)	APPLICANT'S PREHEARING
for the CPV SENTINEL ENERGY PROJECT)	CONFERENCE STATEMENT
by CPV SENTINEL, LLC)	
)	
)	

Pursuant to 20 C.C.R. § 1718.5 and the Revised Committee Order dated October 1, 2008,
Applicant hereby submits its Prehearing Conference Statement.

STATUS SUMMARY BY TOPIC AREA

Applicant is prepared to proceed to evidentiary hearings on all topic areas, including air quality. Applicant acknowledges that as a result of a recent court decision challenging the decision of the South Coast Air Quality Management District to make emission offsets available to power plants through its Priority Reserve, offsets from that source are not currently available for the Project, and an alternative source of offsets has not yet been secured. However, with the exception of the emission offset issue, all other substantive air quality issues have been resolved and there is no reason not to proceed with this topic area and close the evidentiary record on air quality with the exception of the emission offset issue. The following Table 1 sets forth a summary of:

- Whether or not there are substantive disputes or outstanding issues between the parties concerning the topic area;
- Identities of witnesses sponsored by Applicant, a summary of the testimony to be offered by each witness, and the time estimated to present direct testimony; and
- Topic areas on which Applicant desires to cross-examine witnesses, and the time estimated for cross-examination.

Table 1 includes time estimates that are based on the assumption that many topic areas can be submitted into the evidentiary record on declaration. In the event that other parties request live testimony on any of these topic areas, Applicant reserves the right to modify its Prehearing

Conference Statement to include additional witnesses and additional time for direct and cross-examination.

Following Table 1 is a topic-by-topic discussion of the precise nature of the substantive disputes and outstanding issues.

Appendix A to this Prehearing Conference Statement contains the qualifications of the witnesses sponsored by Applicant. Appendix B identifies the tentative list of exhibits and declarations that Applicant intends to offer into evidence and the technical topics to which they apply. Appendix C includes Applicant's proposed modifications to Conditions of Certification as set forth in the Final Staff Assessment ("FSA").

Table 1

Topic Area	Substantive Dispute	Outstanding Issue	Witnesses	Testimony Summary	Direct Estimate	Cross Estimate
Executive Summary	No	Yes	None	None	None	None
Project Description	No	Yes	Mark Turner, CPV	Declaration	None	None
Air Quality	No	Yes	John Lague, URS	Declaration	None	None
Biological Resources	Yes	Yes	David Kisner, URS	Witness will dispute staff's assessment of mitigation measures necessary to protect mesquite hummocks.	1 hour	1 hour
Cultural Resources	No	No	Brian Hatoff, URS	Declaration	None	None
Cultural Resources	No	No	Rand Herbert, JRP	Declaration	None	None
Hazardous Materials	No	Yes	S. Tariq Hussain, URS	Declaration	None	None
Land Use	No	Yes	Tammy Dorje, URS	Declaration	None	None
Noise and Vibration	No	No	Ronald Reeves, URS	Declaration	None	None
Public Health	No	No	Julie Mitchell, URS	Declaration	None	None

Socio Resources	No	No	Mara Feeney, Mara Feeney & Assoc.	Declaration	None	None
Soil and Water Resources	Yes	Yes	Giorgio Molanario, URS	Declaration	None	None
Soil and Water Resources	Yes	Yes	Dale Ross, Stantec	Declaration	None	None
Soil and Water Resources	Yes	Yes	Kris Helm, Kris Helm & Assoc.	Witness will provide testimony regarding Applicant's water supply plan and proposed modifications to Conditions of Certification.	1 hour	1 hour
Soil and Water Resources	Yes	Yes	Bob Hren, CPV	Witness will dispute CEC's assessment of alternative water supply plans.	1 hour	1 hour
Soil and Water Resources	Yes	Yes	George Muehleck, URS	Witness will explain Applicant's groundwater modeling and proposed modifications to Conditions of Certification.	1 hour	1 hour
Soil and Water Resources	Yes	Yes	Robert Krieger, Krieger & Stewart	Declaration	None	None
Soil and Water Resources	Yes	Yes	Anne Connell, URS	Declaration	None	None
Traffic and Trans.	No	Yes	Noel Casil, URS	Declaration	None	None
TLSN	No	No	John Seidler, Spectrum Energy	Declaration	None	None

Visual Resources	No	No	Richard Stuhan, URS	Declaration	None	None
Waste Mangmt.	No	No	Erki Skov, URS	Declaration	None	None
Worker Safety	No	Yes	Lisa Griggs, URS	Declaration	None	None
Facility Design	No	No	John Seidler, Spectrum Energy	Declaration	None	None
Geology	No	No	William O'Braitis, URS	Declaration	None	None
Geology	No	No	Raymond Rice, URS	Declaration	None	None
Paleo	No	No	Dr. Lanny Fisk, Paleo-Resource Consultants	Declaration	None	None
TSE	No	Yes	John Seidler, Spectrum Energy	Declaration	None	None
Project Alternative	No	No	Kathy Rushmore, URS	Declaration	None	None

DETAILED DISCUSSION BY TOPIC AREA

The following discussion provides additional details regarding substantive disputes or outstanding issues identified in Table 1.

Executive Summary

1. As indicated in Applicant's comments on the Preliminary Staff Assessment ("PSA"), the route of the proposed transmission line connecting the Project to the existing Devers substation has been modified slightly from the route presented in the AFC. This minor modification is due to further detailed design by Southern California Edison ("SCE") of the transmission interconnection. The currently proposed transmission line route will exit the 37-acre Project site at the southwest corner, in the same location as previously presented in the AFC. However, the transmission line will be located approximately 270 feet north of the previous alignment proposed in the AFC as it continues west adjacent to Powerline Road to the Devers substation. This modification will reduce the length of the transmission line from 3,250 feet to approximately 2,300 feet; 1,850 feet of which would be located outside of the project site. No unidentified or new environmental impacts are expected with this minor modification to the transmission line route. The FSA does not consistently reflect this project modification (see, e.g., FSA pp. 1-1 and 1-2).

Project Description

2. In discussing the source of potable water, at times the FSA correctly points out that potable water would be supplied by *either* a 3,200-foot potable water supply line extending off Dillon Road, *or* on-site groundwater wells. There are however, certain locations where the groundwater well option is omitted (see, e.g., FSA p. 3-2).

Air Quality

3. While the Project is located within the jurisdictional boundaries of the South Coast Air Quality Management District ("SCAQMD"), it is important to note that the SCAQMD is comprised of two geographical air basins – the South Coast Air Basin and the Salton Sea Air Basin. The Project is located in the Salton Sea Air Basin. Attainment designations are based on air basin boundaries, as opposed to air district jurisdictional boundaries. The Salton Sea Air Basin is designated as Unclassifiable/Attainment for the federal PM2.5 standard and Unclassified for the state PM2.5 standard.

Biological Resources

4. Applicant requests modification of Condition of Certification BIO-11, numbered paragraph 4, as indicated in Appendix C.

5. Applicant disagrees that the drawdown in the Mesquite Hummocks area would be two feet because it is given without context and is an overly conservative estimate that is inapplicable to Mission Creek Subbasin aquifer system conditions. This citation is from a HydroFocus July

18, 2008 submittal, which, as Applicant understands it, is the same as that presented in Appendix C of the PSA (which the Applicant commented on) and Appendix C of the FSA. FSA Appendix C Table 1a is a comparison of maximum drawdown using Scenario 1 (from the URS July 8, 2008 submittal to CEC). Scenario 1 includes pumping 1,100 afy and recharging at DWA 1,100 afy. The cited 2.0 feet drawdown at the CVWD wells is from Scenario 1 applying a T value of ½ Tyley and an anisotropic ratio of 2:1. Applying the same using a T equal to Tyley results in an estimated drawdown of 1.3 feet in the CVWD wells. If the T value was 2x Tyley the estimated drawdown would be 0.8 feet. Applicant believes that the more likely T values are at least 2X Tyley. As such, the expected drawdowns would be more likely to be in the 0.8 foot range using Scenario 1 from the July 9, 2008 submittal.

6. Applicant disagrees with staff's assessment that it is necessary to pre-charge the groundwater basin 25 months in advance in order to avoid impacts to the mesquite hummocks. Applicant believes that this conclusion is based on an overly conservative assessment of the likely impacts of project groundwater pumping and re-charge.

Hazardous Materials

7. At page 4.4-8, numbered paragraph 3, the FSA states "the emergency response planning guideline level 2 of 150 ppm, which is also the RMP level 1 criterion used by U.S. Environmental Protection Agency (EPA) and California; and" As indicated in Applicant's comments on the PSA, the statement is not correct. The third benchmark level used was 200 ppm, not 150 ppm. The 200 ppm concentration used is equivalent to the 0.14 milligram/Liter toxic endpoint presented by California Accidental Release Prevention Program (CalARP) regulations and U.S. Environmental Protection Agency (U.S. EPA) Chemical Accident Prevention Provisions. This 200 ppm concentration is equivalent to the former emergency response planning guide line level 2 (ERPG-2), before it was updated to 150 ppm.

8. At Page 4.4-9, second paragraph, last sentence, the FSA states "Potential off-site ammonia concentrations were estimated using the SLAB numerical dispersion model." As indicated in Applicant's comments on the PSA, the off-site consequence analysis was performed using the SCREEN3 atmospheric dispersion modeling program.

Land Use

9. FSA Pages 4.5-12 and 4.5-33 reference Condition of Certification BIO-13, which has been deleted from the FSA.

Soil and Water

10. Applicant requests modifications to several Soil & Water Conditions of Certification, as indicated in Appendix C.

11. While the CEC's 2003 Integrated Energy Policy Report (IEPR) is appropriately identified under State Policies and Guidance in Soil & Water Table 1, there are various references to the IEPR throughout the FSA which suggest that it is a LORs (see, e.g., FSA, p. 1-8). The IEPR is an assessment and forecasting tool. The IEPR is not a law, ordinance, or regulation and does not promulgate a standard.

12. Soil and Water Table 9 lists months of precharge for various transmissivity and isotropic/anisotropic ratios. A similar table was issued by the CEC on September 24, 2008 together with a summary of the analysis supporting the table that appears to be identical to the summary in the FSA. The data in Table 9 is not the same as the September 24, 2008 document, even after adjusting for percolation duration of four months. The following table lists the data from the two tables, all using four months percolation, with the first number from the September 24, 2008 document and the second number from Table 9:

	<u>½ Tyley</u>	<u>Tyley</u>	<u>2 X Tyley</u>
Isotropic (1:1)	109/110	59/60	31/32
Anisotropic (2:1)	49/42	25/25	15/16

As can be seen, the only number that is the same is for Anisotropic ratio of 2:1 and a transmissivity of Tyley. Both the CEC and the applicant believe that transmissivity of ½ Tyley is ultraconservative, and that the isotropic ratio of 1:1 is also conservative. The applicant has performed modeling that duplicates the results of the CEC consultant's September 24, 2008 report, and the applicant believes those precharge months are the correct values. Therefore, for a transmissivity of 2X Tyley, the months of precharge should be 15 not 16.

13. Applicant disagrees with staff's conclusion that use of reclaimed water from the Horton Wastewater Treatment Plant is neither environmentally undesirable or economically unsound. The staff's analysis fails to fully account for the economic and environmental implications of the alternatives that involve use of reclaimed water from this source.

Traffic and Transportation

14. Melissa Lane, between Dillon Road and 16th Avenue, will be located within dedicated right-of-way and the full roadway section (Riverside County Standard No. 136) can be constructed. Between 16th Avenue and the southerly property line of the Project site, a 33-foot wide dedicated right-of-way exists west of the centerline of the Melissa Lane alignment. A 50-foot wide reservation exists east of the centerline. However, the reservation crosses several properties owned by Southern California Edison (SCE). SCE has indicated that they do not want any facilities (roadways or utilities) constructed within their property, including the 50-foot wide reservation. Within the project site, a 50-foot wide reservation exists west of the centerline and can be dedicated to Riverside County as right-of-way, but the property east of the centerline is owned by the federal government and no reservation or right-of-way exists. Therefore, Melissa Lane can be constructed to Riverside County standards between Dillon Road and 16th Avenue. North of 16th Avenue, a 20-foot wide paved roadway (private drive) can be constructed within existing right-of-way and also on the project site within the reservation. The 20-foot wide

roadway north of 16th Avenue will be subject to reconstruction to Riverside County standards in the future when the full right-of-way has been acquired. The proposed private portion of Melissa Lane (north of 16th Avenue) will be constructed as an all-weather access and will be maintained by CPV Sentinel. Based on the foregoing, Applicant requests that TRANS-5 be modified as indicated in Appendix C.

Worker Safety and Fire Protection

15. Pages 4.14-10 through 4.14-11 of the FSA indicate that “The information in the AFC indicates that the project intends to meet the fire protection and suppression requirements of the California Fire Code, all applicable recommended National Fire Protection Association (NFPA) standards (including Standard 850 addressing fire protection at electric generating plants), and all Cal/OSHA requirements with one exception (see below). Fire suppression elements in the proposed plant would include both fixed and portable fire extinguishing systems. The fire water would be potable water supplied from the Sweetwater Authority (CPV Sentinel 2007a).” Subsequent text does not appear to identify the exception to California Occupational Safety and Health Administration requirements referred to in this paragraph. In addition, the source of fire water should be changed from water supplied from the Sweetwater Authority to raw water pumped from on-site production wells that would be stored in raw water storage tanks. The source of fire water is described in AFC Section 2.4.4 and Section 2.4.8.

Transmission System Engineering

16. Applicant requests certain modifications to TSE Condition of Certification, as indicated in Appendix C.

17. FSA Page 5.5-2, California ISO’s Role, sixth sentence, states: “On satisfactory completion of the SCE Facility study and in accordance with the Large Generator Interconnection Procedure (LGIP) as in the California ISO Tariff, the California ISO instead of issuing a final approval letter, would perform an Operational study examining the impacts of the project on the grid based on 2010 in-service date as a requisite for execution of the Large Generator Interconnection Agreement (LGIA) between the California ISO and the project owner.” The underlined text is factually incorrect. As explained in the California ISO’s August 8, 2007 letter to the Commission, pursuant to the Large Generator Interconnection Agreement between the Applicant, SCE and the California ISO, which has already been executed, SCE will complete an operational study examining the impact of adding the proposed project as of the in-service date. The underlined text should be corrected to state that “Pursuant to the June 6, 2008 Large Generator Interconnection Agreement (LGIA) between the CPV Sentinel, SCE and the California ISO, SCE will complete an operational study examining the impact of adding the proposed project as of the in-service date.”

18. FSA Pages 5.5-8 and 5.5-9, California ISO Review, first paragraph, states “The California ISO letter of August 8, 2007 addressed the April 6, 2005 SIS and the January 6, 2006 FS reports for interconnection of the project with 2008 summer peak and spring system conditions based on May, 2008 on-line date, which is inconsistent with the May, 2010 on-line

date as stated in the Application For Certification (AFC). In their letter the California ISO stated that they would shortly complete a Large Generator Interconnection Agreement (LGIA) with the CPV Sentinel. And pursuant to Section 12.2.4 of the Large Generator Interconnection Procedures (LGIP) in the California ISO Tariff, after the execution of the LGIA the California ISO would perform an Operational study examining the impacts of the proposed project on the grid base on the 2010 in-service date.” The underlined text is factually incorrect. The California ISO’s analysis is not inconsistent with the on-line date. As explained in the California ISO’s August 8, 2007 letter to the Commission, the California ISO provided its approval for the proposed project to interconnect to the grid subject to the Large Generator Interconnection Agreement, which requires that SCE complete an additional operational study examining the impact of adding the proposed project as of the in-service date. The text should be corrected to state “The California ISO letter of August 8, 2007 addressed the April 6, 2005 SIS and the January 6, 2006 FS reports for interconnection of the project with 2008 summer peak and spring system conditions based on May, 2008 on-line date, ~~which is inconsistent with the May, 2010 on-line date as stated in the Application For Certification (AFC).~~ In their letter the California ISO stated that they would shortly complete a Large Generator Interconnection Agreement (LGIA) with the CPV Sentinel. And pursuant to Section 12.2.4 of the Large Generator Interconnection Procedures (LGIP) in the California ISO Tariff, after the execution of the LGIA, SCE will complete an operational study examining the impact of adding the proposed project as of the in-service date.”

19. FSA Page 5.5-9, first sentence, states “The applicant in their November 5, 2007 data response indicated they would provide the required information (LW 2007c; CPVS 2007b).” The underlined text is unclear. As explained in the California ISO’s August 8, 2007 letter to the Commission, pursuant to the Large Generator Interconnection Agreement between the Applicant, SCE and the California ISO, which has already been executed, SCE will complete the operational study. The text should be corrected to state that “The applicant in their November 5, 2007 data response indicated they would provide the operational study to the CEC when it is available.”

20. FSA Page 5.5-10, Conformance with LORS and CEQA Review, first paragraph, last sentence, states “The applicant’s submission of a California ISO Operational Study report would ensure system reliability in the California ISO grid and conformance with the reliability LORS.” As explained in the California ISO’s August 8, 2007 letter to the Commission, the California ISO provided its approval for the proposed project to interconnect to the grid. Pursuant to the Large Generator Interconnection Agreement between the Applicant, SCE and the California ISO, which has already been executed, SCE will complete an operational study examining the impact of adding the proposed project as of the in-service date. However, “the CAISO does not believe it would be necessary or appropriate to defer the data adequacy determination pending completion of the study given the delay this could cause to the Project.” Therefore, this text should be deleted.

21. FSA Page 5.5-11, Conclusions and Recommendations, No. 2, states “The current April 6, 2005 SIS and January 9, 2006 FS were performed by SCE to evaluate the system impact of the 850 MW CPV Sentinel generation output with 2008 system conditions based on May, 2008 estimated commercial operation date (COD) of the project, which is inconsistent with the May,

2010 COD as stated in the AFC. The California ISO in their August 8 letter stated that they would shortly complete a Large Generator Interconnection Agreement (LGIA) with the CPV Sentinel. And pursuant to Section 12.2.4 of the LGIP in the California ISO Tariff, after the execution of the LGIA the California ISO, would perform an Operational study examining the impacts of the proposed project on the grid based on the 2010 in-service date.” The underlined text is factually incorrect. The California ISO’s analysis is not inconsistent with the on-line date. As explained in the California ISO’s August 8, 2007 letter to the Commission, the California ISO provided its approval for the proposed project to interconnect to the grid subject to the Large Generator Interconnection Agreement, which requires that SCE complete an additional operational study examining the impact of adding the proposed project as of the in-service date. The text should be corrected to state “The current April 6, 2005 SIS and January 9, 2006 FS were performed by SCE to evaluate the system impact of the 850 MW CPV Sentinel generation output with 2008 system conditions based on May, 2008 estimated commercial operation date (COD) of the project, ~~which is inconsistent with the May, 2010 COD as stated in the AFC.~~ The California ISO in their August 8 letter stated that they would shortly complete a Large Generator Interconnection Agreement (LGIA) with the CPV Sentinel. And pursuant to Section 12.2.4 of the LGIP in the California ISO Tariff, after the execution of the LGIA, SCE will complete an operational study examining the impact of adding the proposed project as of the in-service date.”

22. FSA Page 5.5-11, Conclusions and Recommendations, No. 2, last sentence, states “The applicant indicated in their November 5, 2007 data response that they would provide the required information.” The underlined text is unclear. As explained in the California ISO’s August 8, 2007 letter to the Commission, pursuant to the Large Generator Interconnection Agreement between the Applicant, SCE and the California ISO, which has already been executed, SCE will complete the operational study. The text should be corrected to state that “The applicant indicated in their November 5, 2007 data response that they would provide the operational study to the CEC when it is available.”

23. FSA Page 5.5-11, Conclusions and Recommendations, No. 4, last sentence, states “The applicant’s submission of a California ISO Operational Study report as stated in item 2 above would ensure compliance with the reliability LORS.” As explained in the California ISO’s August 8, 2007 letter to the Commission, the California ISO provided its approval for the proposed project to interconnect to the grid. Pursuant to the Large Generator Interconnection Agreement between the Applicant, SCE and the California ISO, which has already been executed, SCE will complete an operational study examining the impact of adding the proposed project as of the in-service date. However, “the CAISO does not believe it would be necessary or appropriate to defer the data adequacy determination pending completion of the study given the delay this could cause to the Project.” Therefore, this text should be deleted. *See* comments on Conclusion and Recommendation No. 2, above.

24. Condition of Certification TSE-5 (f)(iv) states “The Operational study report based on 2010 system conditions (including operational mitigation measures) from the California ISO and/or SCE,” As explained in the California ISO’s August 8, 2007 letter to the Commission, pursuant to the Large Generator Interconnection Agreement between the Applicant, SCE and the California ISO, which has already been executed, SCE will complete the operational study. The

text should be corrected to state that “the operational study examining the impact of adding the proposed project as of the in-service date will be provided when it is available.”

25. Paragraph (g) of the Verification for Condition of Certification TSE-5 states “The Operational study report based on 2010 or current COD system conditions (including operational mitigation measures) from the California ISO and/or PG&E.” As explained in the California ISO’s August 8, 2007 letter to the Commission, pursuant to the Large Generator Interconnection Agreement between the Applicant, SCE and the California ISO, which has already been executed, SCE will complete the operational study. The text should be corrected to state that “The operational study examining the impact of adding the proposed project as of the in-service date will be provided when it is available.”

SCHEDULE

Applicant believes that the evidentiary hearing can be completed on November 3, 2008, but that the evidentiary record will have to remain open with respect to Air Quality pending resolution of the emission offset issue. Applicant requests that the Committee schedule one round of briefs, if necessary, to be filed within two weeks of the availability of the transcript of the evidentiary hearing. Applicant is not aware of any other matter that would affect the proposed schedule.

DATED: October 16, 2008

Respectfully submitted,


Michael J. Carroll
LATHAM & WATKINS LLP

APPENDIX A
WITNESS QUALIFICATIONS



Noel Casil, PE, TE, PTOE

Senior Traffic Engineer

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.

Areas of Expertise

Traffic Engineering,
Transportation Planning,
ITS Planning

Years of Experience

With URS: 8 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) AHB-40 Committee on
Highway Capacity and Quality of
Service, Research Subcommittee
(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

Project Specific Experience

Energy Sector Studies, Licensing and Support Services

- Kinder Morgan Carson Facility Expansion (Kinder Morgan)
- Bigwest Refinery Clean Fuels EIR (Flying J Corporation)
- Colton Phase II Expansion Project (Kinder Morgan)
- Watson Cogen Expansion AFC (BP Alternative Energy)
- Luvs - Lost Hills Project Traffic Study (Pilot Corporation)
- Speedy Fuel Diesel Station Project Peer Review (BNSF)
- 7-11 Store and Gas Station Traffic Study (City of Vista)
- Niland Energy Center AFC (Imperial Irrigation District)
- El Centro Generating Center Expansion (IID)
- Salton Sea Unit 6 Power Project AFC (CalEnergy)
- 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)
- Tehachapi Renewables Transmission Project (SCE)
- 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)

Transportation Planning Projects

- 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)
- Palmdale Airport Master Plan (LAWA)
- LAX/South (Orange County) High-Speed Ground Access Study (SCAG)
- Bakersfield Systems Study (Kern Council of Governments)
- Los Angeles County Park and Ride Master Plan (LACMTA)
- UCLA-Santa Monica Hospital EIR (UCLA Capital Improvements)
- Long Beach Naval Shipyard Reuse EIR (Port of Long Beach)
- 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)
- 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)



Anne Connell, P.E.

Water Resources Analyses

Overview

Anne Connell is a seasoned engineer with over 25 years experience in project management and a specialty in water quality and hydrology. Her extensive experience covers a wide range of projects, including power plants, site development, airports, hazardous waste sites, mining operations, irrigation, and hydroelectricity. She has been responsible for environmental impact evaluations, peer review of hydrologic analyses, remedial investigations, water rights negotiations, permit applications, determination of design storms and floods, the collection and analysis of hydrologic and hydrogeologic data, and site characterization, modeling, contaminant transport analysis, and assessment of remedial alternatives.

Areas of Expertise

- Project Management
- Hydrology/Hydraulics
- Water Quality
- Flood Plains and Drainage
- Storm Water Permitting
- Hydroelectricity
- Contaminant Transport Analysis

Education

- M.S./Civil Engineering,
Hydrology/1980/Stanford
University
- B.Sc./Hydrology/1979/McGill
University

Registration/Certification

- 1982/Civil Engineer/
California/No. C34494

Specialized Training

- 2005/URS Project Manager
Certification
- 2004/Critical Transitions in Water
and Environmental Resources
Management/ASCE and EWRI
- 2001/Chevron EPDEP Knowledge
Transfer
- 1996/ 8-hour Supervisor's Course,
Hazardous Waste Operations
and Emergency Response
Training
- 1988/ 40-hour OSHA Hazardous
Waste Operations and
Emergency Response Training

Project Specific Experience

Project Manager, Marsh Landing Generating Station Application for Certification, Mirant Marsh Landing, LLC. Responsible for Application for Certification preparation, budget and schedule control, and coordination of work activities for an Application for Certification for the proposed 930 megawatt generation facility. The plant would use recycled water from the local sanitation district and dry cooling technology. In addition to project management, project responsibilities included the preparation of the water resources section of the application.

Senior Project Engineer , Willow Pass Generating Station Application for Certification, Mirant Willow Pass, LLC. Responsible for Application for Certification preparation, budget and schedule control, and coordination of work activities for an Application for Certification for the proposed 500 megawatt generation facility. The plant would use recycled water and dry cooling technology. In addition to project management, project responsibilities included the preparation of the water resources section of the application.

Project Manager, San Gabriel Generating Station Application for Certification, San Gabriel Power Generation, LLC. Responsible for Application for Certification preparation, budget and schedule control, and coordination of work activities for an Application for Certification for the proposed 656 megawatt combined-cycle natural gas power plant. The plant would use primarily recycled water and dry cooling technology. In addition to project management, project responsibilities included the preparation of the water resources section of the application.

Senior Project Engineer, CPV Sentinel Energy Project Application for Certification, CPV Sentinel, LLC. Evaluated environmental setting, impacts, and mitigation with respect to water resource-related issues, and prepared the section on water resources for an Application for Certification under the California Energy Commission's licensing process for large power plants. Managed a detailed groundwater modeling



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program and groundwater test well program for the cooling water source to be used for the project. The proposed 800 megawatt simple cycle plant would utilize a zero-liquid discharge wastewater system.

Senior Project Engineer, Water Resources, Colusa Generating Station Application for Certification, E&L Westcoast, LLC.

Evaluated environmental setting, impacts, and mitigation with respect to water resource-related issues, and prepared the section on water resources for an Application for Certification under the California Energy Commission's fast-track licensing process for large power plants. The proposed 660 megawatt combined cycle plant would utilize an air cooled condenser to reduce consumptive water use and a zero-liquid discharge wastewater system.

Senior Project Engineer, Bridgeview Power Plant Application for Certification, TransCanada Pipeline. Responsible for evaluating the environmental setting, regulatory setting, and potential project impacts to water resources for a proposed 360 megawatt simple cycle power plant to be built on a reclaimed Brownfield site. Prepared the water resources section for an Application for Certification that subsequently was not submitted to the California Energy Commission.

Senior Project Engineer, Contra Costa Power Plant Application for Certification, Mirant Corporation. Provided technical support related to hydrologic issues in preparation for expansion of the power plant. Evaluated potential impacts and prepared responses to comments related to hydrologic and water quality issues. Responded to requests from the California Energy Commission and other interested groups for additional information and clarification regarding hydrologic and water quality issues. Also updated and prepared the draft Storm Water Pollution Prevention Plan, the Erosion and Sedimentation Control Plan, and the Spill Prevention Control and Countermeasure Plan.

Senior Project Engineer, Potrero Power Plant Application for Certification, Mirant Corporation. Provided technical support related to hydrologic issues in preparation for expansion of the power plant. Evaluated potential impacts and prepared responses to comments related to hydrologic and water quality issues. Responded to requests from the California Energy Commission and other interested groups for additional information and clarification regarding hydrologic and water quality issues. Also updated and prepared the draft Storm Water Pollution Prevention Plan, the Erosion and Sedimentation Control Plan, and the Spill Prevention Control and Countermeasure Plan.

Senior Project Engineer, El Centro Generating Station Project, Imperial Irrigation District. Prepared the water resources section for a Small Power Plant Exemption Application for the construction and operation of the El Centro Generating Station Unit 3 Repower Project. This project would increase the Unit 3 generating capacity by 84 megawatt. Also assisted with the preparation of a U.S. Environmental Protection Agency's Underground Injection Control permit application to



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install new deep injection wells at the plant to be used for injection and disposal of the plant's wastewater.

Senior Project Engineer, Colusa Power Plant Application for Certification, Reliant Energy. Reliant Energy proposed to construction a nominal 500 megawatt combined cycle gas fired power plant in rural Colusa County. The Application for Certification is the California Energy Commission's CEQA-equivalent document requiring more stringent information regarding power plant efficiency, reliability, and related issues. The Application for Certification was completed on time and on budget in 3½ months, and was deemed complete within 30 days. Significant issues included air quality, public health, biological resources, impacts on a rural community, and changes in land use. The project also entailed the preparation of all permits and responses to comments from the California Energy Commission. Project responsibilities included an evaluation of the environmental setting and project impacts, the development of mitigation measures for site water resources, preparation of the section on water resources, assistance with permit applications, including an application for a permit to transport water from a canal managed by the Bureau of Reclamation, and a Notice of Intent for Low Threat Discharge to Surface Waters.

Senior Project Engineer, Hydroelectric Facility Re-Licensing, Pacific Gas & Electric Company. Reviewed and developed water and power studies, project hydrology, and economic analyses for the re-licensing of several hydroelectric projects in the Mokelumne and Kings River basins, including the Mokelumne River, Kings River, DeSabra-Centerville, and Narrows hydroelectric systems. Assisted in negotiation with outside agencies regarding water rights and prepared exhibits for FERC license applications. Also conducted dam safety analyses for an existing dam, which included determining the probable maximum flood, modeling a hypothetical dam failure, and assessing the resulting inundation downstream.

Deputy Project Manager, Offshore LNG Terminal and Pipeline FERC 7c Certificate of Application, Confidential Client. Assisted with the management of a large multi-disciplinary team assessing site locations and technologies, conducting environmental studies, and preparing Resource Reports and permit applications for a FERC Certificate Application.

Senior Project Engineer, Title 22 Evaluation, Confidential Client. Responsible for technical support related to water resources. Support included evaluation of Title 22 water reuse and design of disposal system, hydrologic analysis to evaluate the storm water management system, including identification of best management practices, and review of the storm water pollution prevention plans. Also providing assistance with the preparation of the NPDES permit application for discharge of treated effluent to surface waters, including preparation of supporting technical studies and documentation.



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Project Manager and Principal Hydrologist, Iron Mountain Mine Superfund Site, Stauffer Management Company. Managed the budget, technical support, and coordination of project activities. The project entailed various remedial actions to help reduce the mass discharge of heavy metals from acid mine drainage, which consists of low pH sulfuric acid solution with elevated concentrations of metals, in particular copper and zinc. Remedial actions included the consolidation and isolation of priority waste rock piles in an engineered disposal cell; engineering of an 11,600-foot-long pipeline to transfer the acid mine drainage from the mine workings to the existing aerated simple mix lime treatment plant; design of a 150-foot-high earth embankment for use as a retention pond to temporarily store the acid mine drainage prior to treatment; site drainage improvements; the use of storage tanks; and improvements to an on-site tunnel. Project work included field investigations (geotechnical and water quality sampling), assessment of remedial alternatives, design, cost estimates, preparation of construction bid documents, litigation support, and assistance with negotiations with regulatory agencies.

Deputy Project Manager, McColl Superfund Project, The McColl Site Group. The McColl Superfund site is a 22-acre inactive disposal facility for refinery waste – primarily acidic sludge waste generated during the refining process for high-octane aviation fuel during the 1940s. The site houses twelve waste sumps that contain about 97,100 cubic yards of contaminated refinery waste and drilling mud. Assisted with management of the project, litigation support, technical support, the assessment of remedial alternatives, and negotiations with regulatory agencies. Also prepared sampling and analysis plans for field investigations, treatability evaluations, and geotechnical testing.

Project and Task Manager, Richmond Refinery No. 1 Oxidation Pond and Channel, ChevronTexaco. Managed the site characterization efforts, including topographic surveys, extensive drilling, sampling, and geotechnical testing. Provided technical support for corrective action projects, including the assessment of remedial alternatives, feasibility analyses, regulatory and permitting review, development of strategies for effective remediation, and the evaluation of storm water management and floodplain issues. Prepared the summary report that presented the site characterization, corrective action work plan, and corrective action plan for submittal to the Regional Water Quality Control Board.

Senior Project Engineer, 250-Foot Channel at Richmond Refinery, ChevronTexaco. Developed the Sampling and Analysis Plan for an extensive site characterization performed to provide information to understand the complex nature of the site and to support the selection and design of a corrective action alternative for the 250-Foot Channel. Site characterization efforts included topographic surveys, extensive underwater drilling and sampling in the Channel from a barge, geotechnical testing, admixture testing and installation and monitoring of piezometers. Also provided technical support for corrective action at the Channel, including assessment of remedial alternatives, feasibility analysis,

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chemical flux modeling to assess the performance of cap alternatives, regulatory and permitting review, strategy development and evaluation of storm water issues. Prepared characterization summary report, corrective action work plan, and corrective action plan submitted and approved by the Regional Water Quality Control Board. The Regional Water Quality Control Board was designated as the lead agency for purposes of Resource Conservation and Recovery Act corrective action at the Richmond Refinery.

Hydrologist, Uranium Mill Tailings Remedial Action Program, U.S. Department of Energy. For the UMTRA Program, prepared NPDES permit applications for surface water control systems, performed seepage and transient drainage analyses, and prepared floodplain maps at multiple project sites. Projects included (1) an NPDES permit application for a surface water control system in Texas; (2) seepage analyses, including sensitivity studies to assess the impact of material placement, for a tailings impoundment at a rifle site in Colorado; (3) transient drainage analyses, including development of material properties, construction of a two-dimensional flow model, and analysis of saturated/unsaturated flow conditions, for a tailings disposal cell in Colorado; (4) preparation of floodplain maps for both existing and post-reclamation floodplain conditions as part of the remedial action design and permitting process for the Naturita site in Colorado; and (5) review and analysis of pumping and laboratory test data to determine hydrological parameters; evaluation of the effectiveness of the dewatering system, which included pumping and monitoring wells, well pits, a toe trench, and an evaporation pond; and preparation of status reports at the Durango site in Colorado.

Hydrologist, North Fork Tolt River Water Supply and Hydroelectric Project, Seattle Water Department. Developed stream flow data using historical data, correlation and regional regression analyses, evaluated industrial and municipal water supply, and estimated energy production for alternative hydroelectric schemes.

Staff Hydrologist, Swan Falls Hydroelectric Project, Idaho Power Company. Performed reservoir operation studies and backwater studies to assess proposed improvements to the dam and power plant located on the Snake River. The dam was built in 1901.

Senior Project Engineer, San Joaquin Pipeline No. 4 Environmental Analysis Services, San Francisco Public Utilities Commission. Responsible for peer review of issues related to water resources and the EIR section on water resources for the San Joaquin Pipeline No. 4 project, which entails maintenance for the existing 47-mile-long pipeline and construction of a new pipeline to ensure the long-term reliability, operational flexibility, and redundancy of the City's water transmission system. Project approach focuses on integration of the environmental review process with the entire San Francisco Public Utilities Commission planning, design, and operations team to maximize use of existing information, tying off of the Programmatic EIR, and providing a project-specific environmental document that will allow for flexibility in future



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project phases – permitting, final design, construction and mitigation monitoring, and environmental management during operations and maintenance.

Project Manager, Salado Creek Floodplain Map Revision, KB

Home. Prepared an application to the Federal Emergency Management Agency for a floodplain map revision to incorporate recently completed modifications to Salado Creek. Prepared a Letter of Map Revision and coordinated with FEMA staff during the review and approval process.

Senior Project Engineer, Riolo Vineyards Specific Plan EIR, County

of Placer. The proposed Riolo Vineyards Specific Plan area is located within the Dry Creek West Placer Community Plan, surrounded by Dry Creek on the north and south, and existing and planned development on the west, south, and east. The Specific Plan consists of fifteen parcels totaling about 527.5 acres proposed for residential development (837 dwelling units), parks and open space, and an expansion of the Roseville Cemetery. Extension of water and wastewater service to service the site is required. The project would require the approval of Large Lot Vesting Tentative Maps and various permits, including conditional land use permits, tree removal permits, and a floodplain development permit. Issues include development in the floodplain; traffic, including internal circulation; substantial planned growth in the area; and extension of infrastructure to the site. Project responsibilities include analyses of potential impacts related to increases in stormwater runoff, floodplain modifications, flooding at bridges and culverts, regional flooding, and degradation of water quality. Also responsible for the preparation of the hydrology, groundwater, and water quality section of the environmental document.

Publications

Connell, Anne and Tom Sweet. Sustainable Site Design Case Study at UC Berkeley. AWRA 2005 Annual Water Resources Conference, Seattle WA. November 7-10, 2005.

Connell, Anne, Dan Wanket, Gary R. Mass, Alberto Pujol, and Al Christiansen. "Resistance of Concrete to Acidic Water." AML 2000 Conference, September 2000.

Wesley, M.L., A.C. Connell, and J.P. Powers. "Remedial Action Contractor Responsiveness: Dewatering and the IPS During Construction at the Durango Disposal Cell." Waste Management '91, February 1991.

Forrest, M.P., A.C. Connell, and J. Scheuring. "Reclamation Planning of a Tailings Impoundment." 1990 Symposium on Safety and Reclamation of Tailings Dams, Australia National Committee on Large Dams (ANCOLD), May 1990.



Anne Connell, P.E.

Johnson, K., A.C. Connell, P. Patchin, and F. Myers. "Hydrological and Geochemical Controls Limiting Contaminant Transport in Groundwater at Weldon Spring, Missouri." In *Superfund '89 Proceedings of the 10th National Conference*, November 27-29, 1989, Washington, D.C.



Tammy Dorje, LEED® AP

Environmental Planner

Overview

Ms. Dorje is an environmental planner who assists with the preparation of CEQA and NEPA documents for various types of projects, including infrastructure, land development, surface and air transportation, and industrial development. She has functioned as the project coordinator and technical lead of environmental documents prepared to meet the requirements of the California Environmental Quality Act (CEQA), National Environmental Policy Act (NEPA), as well as the California Energy Commission (CEC) Power Plant Site Certification Regulations. She specializes in quantifying socioeconomic, economic, and environmental justice impacts.

Areas of Expertise

Socioeconomics
Environmental Justice
Environmental Planning
Natural Resource Economics

Years of Experience

With URS: 3 Years
With Other Firms: 2 Years

Education

B.A./Business Economics/2005/
University of California, Santa
Barbara
B.A./Environmental Studies/2005/
University of California, Santa
Barbara

Specialized Training

LEED® Accredited Professional
IMPLAN Economic Impact
Modeling System

Project Specific Experience

Transportation

Environmental Task Leader, Transbay Terminal Replacement Program, San Francisco, California, Transbay Joint Powers Authority:

An aging bus terminal in the Financial District of San Francisco, the Transbay Terminal serves as a terminus for numerous suburban, local, and long distance bus operators. URS is providing program management and program controls services for the 10-year-long, \$2 billion program to replace the existing Terminal. The program will also add a rail component to accommodate existing commuter rail service that currently terminates about a mile south of the Financial District, as well as a planned California High Speed Rail Authority service. A third component of the program is implementation of a Redevelopment Area Plan with related development projects, including transit-oriented development on publicly owned land in the vicinity of the new multi-modal Terminal. Environmental services include preparation of environmental documentation for NEPA and CEQA that may be required as the program proceeds through final design, implementation of extensive cultural resources mitigation measures, and monitoring of and reporting on the Mitigation Monitoring and Reporting Program for the project. Currently preparing environmental documentation related to project modifications, including an assessment of the redesign and construction phasing for the Terminal building and for proposed development projects in the surrounding Redevelopment Area.

Transportation Planner, Rail Transportation Economic Impact Evaluation and Planning Feasibility Study, Western Nevada, Nevada, Nye County:

This feasibility study focuses on the potential commercial shared use of Nevada Rail on behalf of counties traversed by the proposed Caliente and Mina rail corridors. The proposed rail would serve the geologic repository for spent nuclear fuel at Yucca Mountain in Nye County, Nevada. The study also includes estimating the potential commercial freight traffic that could travel along a southern rail extension, from the repository to the Union Pacific and/or the Burlington Northern Santa Fe lines. Project



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responsibilities include identifying and interviewing potential rail shippers, developing preliminary traffic volume estimates and preparing a benefit cost analysis.

Environmental Planner, Elk-Grove-Rancho Cordova-El Dorado Connector Environmental Phase 1, Sacramento and El Dorado Counties, California, Sacramento Area Council of Governments:

The Sacramento Area Council of Governments has been evaluating the potential for development of a regional transportation facility to accommodate growth in travel demand in southeastern Sacramento County and eastern El Dorado County. The proposed connector would provide multi-modal linkage among residential areas and employment centers along a 40-mile-long corridor that would connect Elk Grove, Rancho Cordova, Folsom, and western El Dorado County. The connector would help bolster the Agency's efforts to establish and maintain sustainable communities by relieving congestion on three of the region's principal freeways – I-5, State Route 99, and US 50 – by contributing to regional initiatives to preserve open space and wildlife habitat, by improving air quality, and by improving access to employment centers in the region. As a precursor to a formal environmental process, the Phase 1 work will develop a draft purpose and need statement, prepare functional guidelines for the corridor, develop screening criteria, perform a fatal flaw environmental analysis of conceptual alternatives, perform transportation and conceptual engineering, assess funding opportunities and define funding strategies, and prepare a report that would set the stage for the next phases in the project. Issues include growth inducement, collaboration among several jurisdictions, and processing of a corridor-level evaluation in the face of aggressive development plans and concurrent processing of individual project components. Project responsibilities include the production of technical memoranda for environmental screening criteria and baseline resource data.

Socioeconomics Technical Lead, Berkeley/Albany Ferry Terminal Study and Environmental Document, San Francisco, California, San Francisco Bay Area Water Transit Authority:

Project entailed an alternatives analysis and environmental review for the development of a multi-modal ferry terminal on the waterfront in the East Bay that will increase the opportunities for the public to use trans-Bay travel and reduce automobile traffic in the highly congested I-80 and trans-Bay corridor. Three possible terminal locations are under consideration – one in the City of Albany at the foot of Buchanan Street, and two in the City of Berkeley, one at the foot of Gilman Street and one at the foot of University Avenue. The scope of work includes liaison with multiple regulatory agencies and institutional stakeholders. A highly contentious project, the scope of work also includes an extensive public outreach program to help bring disparate groups to consensus. Project responsibilities included preparing the socioeconomics and environmental justice section.

Socioeconomics Technical Lead, Waterfront Streetcar Extension EIS, San Francisco, California, National Park Service:

The National Park Service and other agencies have begun the preparation of an EIS to



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identify and study alternative routes for the extension of the San Francisco Municipal Railway's historic streetcar service from the existing F-Line terminus on Jones Street in Fisherman's Wharf to the San Francisco Maritime National Historical Park and the Fort Mason Center in the Golden Gate National Recreation Area. The EIS will evaluate the environmental impacts of the historic streetcar extension to the businesses and residents along the proposed routes and to the natural, cultural, and recreational resources in the National Parks that will be served by the rail extension. The study corridor includes three National Historic Landmark Districts – Ghirardelli Square, Fort Mason, and Aquatic Park. Most of the proposed routes feature the use of the historic railroad tunnel beneath Fort Mason. The extension of the historic streetcar service, which currently carries some 20,000 riders daily on The Embarcadero and Market Street, will greatly assist the National Park Service in its efforts to reduce the need for automobile-based trips to national parks by offering a mass transit option to the 3.5 million visitors per year to San Francisco Maritime National Historic Park and the 1.8 million visitors per year who attend the 15,000 annual programs hosted by Fort Mason's 40 non-profit organizations. Project responsibilities included preparing the socioeconomic and environmental justice section.

Water/Wastewater

Contract Manager, As-Needed Services for the Capital Improvement Program, San Francisco, California, San Francisco

Public Utilities Commission: As the primary consultant on a joint venture agreement, URS is managing a team of 21 subconsultants for the provision of as-needed environmental services for implementation of the Public Utilities Commission's \$3.6 billion Capital Improvement Program. Services include environmental analyses and technical studies; regulatory analyses and permit applications; and specialized natural resources, environmental, and planning services for the rehabilitation of the regional water and local water systems. Task orders have included helping the Commission with the development of a water supply alternative to meet future increased demands through the year 2030 through conservation, recycled water, and renewable groundwater programs. This task entails extensive computer modeling of more than 100 conservation measures, the identification of potential renewable groundwater sources in the Commission's service area, and the identification of potential funding mechanisms. Project responsibilities include liaison and coordination with the Commission, the preparation of invoices and supporting documentation, supervision of the quality control process, and checking project deliverables before submittal to the Commission to ensure compliance with technical requirements.

Power Plants

Socioeconomics Technical Lead, Colusa Generating Station Application for Certification, Colusa County, California,

Competitive Power Ventures: Prepared the socioeconomic section for the Application for Certification (CEQA-equivalent document) for submittal to the California Energy Commission for construction and operation of a 640 MW combined cycle power plant. Project



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responsibilities included Socioeconomics and environmental justice technical evaluations, IMPLAN analysis quantification of direct, indirect, and induced economic impacts; communication and coordination with the client, regulatory agencies, and project team.

Socioeconomics and Land Use Technical Lead, Sentinel Power Plant Application for Certification, Riverside County, California, Competitive Power Ventures: Prepared the land use section for the Application for Certification (CEQA-equivalent document) for submittal to the California Energy Commission for construction and operation of a combined 850 MW cycle power plant. Project responsibilities included preparation of the socioeconomics and land use sections, IMPLAN analysis, quantification of direct, indirect, and induced economic impacts; communication and coordination with the client, regulatory agencies, and project team.

Air Transportation

Socioeconomics and Land Use Technical Lead, Fresno Yosemite International Airport Master Plan EA/EIR, Fresno, California, City of Fresno: Project entails preparation of the environmental documentation for a 20-year Master Plan for the Airport, which historically has functioned as a regional airport serving California's Central Valley primarily with 30-passenger turboprop aircraft. The Master Plan included a review of development scenarios to address airspace, airfield, terminal, and ground access issues. After gaining Federal Aviation Administration approval on the aviation forecast, existing facilities were evaluated for their ability to accommodate the future passenger and cargo growth. Capacity and demand studies were conducted of the airspace, airfield, terminal facilities, baggage system, rental car facilities, and parking and ground transportation facilities. After determining the capital improvement program and completing a financial feasibility study and cost/benefit analysis, an Airport Layout Plan was submitted to the Federal Aviation Administration for approval. The environmental study will review the preferred development alternative along with a range of other alternatives to acquire NEPA and CEQA approvals. This will enable the Federal Aviation Administration to approve the Airport Layout Plan and the City of Fresno to adopt the Master Plan. Project responsibilities include assistance with the preparation of several sections of the environmental document, including socioeconomics, environmental justice, the safety of children in the project vicinity, land use and community services, parks and recreation, visual and aesthetic and light emissions, wild and scenic rivers, farmlands, and traffic.

Socioeconomics and Land Use Technical Lead, Del Norte County Airport On-Call Planning, Environmental, and Engineering Services, Crescent City, California, County of Del Norte: As part of the California Aviation System Plan, the Del Norte County Airport is one of only two primary commercial non-hub airports within the North coast Region that have scheduled passenger service. The Airport is implementing a development plan that will allow for expansion of the facility and an eventual increase in commercial and passenger service using larger aircraft.



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Mrs. Dorje is the project coordinator and the technical lead for the socioeconomics, land use, parks and recreation, and coastal resources sections on an EA/EIR for a new terminal and related projects.

Socioeconomics and Land Use Technical Lead, Sacramento International Airport Master Plan Development EIS and EIR, Sacramento, California, County of Sacramento: This EIS/EIR analyzes future projects anticipated for the next 20 years in compliance with NEPA and CEQA. This project involves understanding the General Plan and other planning documentation and projects that will occur over the next 20 years. Mrs. Dorje jointly prepared the socioeconomic and land use sections on the EIS/EIR.

Professional Societies/Affiliates

Association of Environmental Professionals: Vice President of Social Programs

Leadership San Francisco: Class of 2008

Urban Land Institute

San Francisco Planning and Urban Redevelopment

United States Green Building Council

Chronology

11/05 - Present: URS Corporation, San Francisco, California

11/04 - 06/05: City of Goleta Planning and Environmental Services, Goleta, California

06/03 - 09/03 and 06/04 - 09/04: Pacific Gas and Electric Company, San Francisco, California

Contact Information

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RESUME OF MARA FEENEY

EDUCATION

University of British Columbia: M.A. in Community and Regional Planning, 1977

Bryn Mawr College: A.B. with Honors in Anthropology, 1973

PROFESSIONAL HISTORY

Mara Feeney & Associates, Principal, 1983-present

Woodward-Clyde Consultants, Senior Staff Scientist, 1980-1983

Sonoma State University, Instructor in Environmental Impact Reporting, Spring Semester, 1982

Strong, Hall and Associates, Senior Socioeconomist, 1978-1980

Independent Socioeconomic and Cultural Impact Consultant, 1975-1978

REPRESENTATIVE EXPERIENCE

Mara Feeney is a Planner with over thirty years of professional experience in socioeconomic impact analysis, land use compatibility analysis, environmental justice analysis, public involvement and relocation studies. Her assignments have included evaluation of potential impacts to land use, regional employment and income, population and demographic characteristics, public finance, adopted local plans and policies, farmland, housing, community infrastructure and services, recreation, environmental justice and quality of life.

Ms. Feeney is thoroughly familiar with the requirements of NEPA and CEQA for growth inducement, policy consistency, land use compatibility and socioeconomic impact analysis. In 1982, she was an Instructor in Environmental Impact Reporting at Sonoma State University. In addition, Ms. Feeney has extensive recent experience in socioeconomic and land use analysis for major public works, resource development and urban redevelopment proposals and projects throughout California, as well as community relations experience in many northern California communities. Relevant project experience is summarized below.

For the Placer County Transportation Planning Authority, Ms. Feeney managed the Community Impact Analysis and completed the Section 4(f) analysis for the Tier I Environmental document for a controversial new roadway proposal, Placer Parkway, to connect the rapidly growing communities of Roseville and Lincoln to Sacramento airport vicinity.

For the San Francisco Public Utilities Commission, she evaluated impacts to agricultural and recreational resources associated with the Water System Improvement Project to replace aging water transport facilities.

For Mirant Corporation, she provided peer review services for the socioeconomic and Environmental Justice analyses for the proposed Potrero Power Plant in San Francisco and served as an expert witness at CEC evidentiary hearings for this controversial urban energy project.

For the SFPUC Water Department, she managed public participation activities for

the environmental review process for the Chloramine Conversion project. This required publication of notices and conducting of public meetings in both rural and urban locations potentially affected by the project.

For Santa Fe Pacific Pipeline Company, she provided emergency communications services after a pipeline break that resulted in community sewer and water systems being affected by jet fuel and other petroleum products.

For the Bureau of Land Management and Frontier Pipeline Company, she was Task Leader for the assessment of socioeconomic impacts for a crude oil pipeline proposed for construction through five counties in Wyoming.

For Pacific Refining Company, she analyzed the potential local economic benefits (tax revenues, local purchasing, employment and income) associated with planned modifications to a refinery in Hercules, California.

For the San Francisco Housing Authority, she prepared the Public Participation Plan for site remediation required at the Bernal Dwellings housing redevelopment site on Cesar Chavez. She also drafted two fact sheets that were published in both English and Spanish for distribution to interested parties and area residents.

For the City and County of San Francisco Department of Public Works, she provided community outreach services for the cleanup of a former MUNI maintenance facility located near the San Francisco General Hospital. Services included drafting and distributing fact sheets (in both English and Spanish), developing a project mailing list, and coordinating and facilitating a community meeting.

For the San Francisco Department of the Environment and Department of Public Works, she helped design and implement public information and community outreach to evaluate alternative measures to address beach and bluff erosion at Ocean Beach to protect key City infrastructure, including the treatment plan and outfall.

For Reliant Energy Company, she analyzed land use plans and policies consistency, and prepared the land use compatibility and farmland impact sections for the Application for Certification for a proposed 500 MW power plant in a rural agricultural area of Colusa County, California. She also peer reviewed the socioeconomic and environmental justice analyses for this proposed project.

For the City of San Jose and Raisch Engineering, she prepared a Community Outreach Plan to keep a Hispanic community informed during the removal of a ring levee containing asbestos.

For San Francisco's Municipal Railway, she oversaw completion of the land use, Socioeconomic, growth inducement and Environmental Justice analyses for the Proposed Third Street Light Rail line in San Francisco.

For the Bureau of Land Management and La Sal Pipeline Company, she was Task Leader for the assessment of socioeconomic impacts for a shale oil pipeline proposed for construction through six counties in Colorado and Wyoming.

For the Emeryville Redevelopment Agency, Ms. Feeney provided public participation consulting services for a U.S. Environmental Protection Agency Brownfields Pilot project grant aimed at developing a regional approach to groundwater monitoring that would facilitate the City's reuse of abandoned and underutilized industrial properties.

For the San Francisco Public Utilities Commission, she evaluated impacts to land use, agriculture, recreational resources, population, employment, and housing associated with the Water System Improvement Project.

For the City of Emeryville and Sherwin-Williams Paint Company, she provided community outreach and risk communication services to inform artists in a live-work loft development, as well as other nearby residents, about very high levels of arsenic and lead found adjacent to their homes and gardens. At City Council's request, a voluntary blood and urine sampling program for adults and children was conducted to test for potential human exposure to lead and arsenic.

For the East Bay Municipal Utility District, she provided community outreach consulting services for a major construction program involving disruption to a neighborhood park and adjacent school and residences for over 2 years. This project involves preparing a series of flyers to keep the public informed about site activities, as well as coordinating a children's mural project and media relations.

On behalf of major landowners in American Canyon, she participated in a community outreach process aimed at determining whether or not the city should delineate certain areas as Redevelopment Project Areas.

For Caltrans and the Duffey Company, she completed the socioeconomic and land use impact analyses, as well as the conceptual relocation plan, for site selection of the proposed CalTrain Peninsula Commute Service Rail Maintenance facility. Four potential sites were evaluated--in Brisbane, Santa Clara, San Jose and Gilroy.

For the U.S. Navy and the City of San Francisco, Ms. Feeney was responsible for analyzing the social and economic impacts associated with the proposed reuse alternatives being considered for both the Hunters Point Shipyard and Treasure Island.

For the Port of Oakland, she completed socioeconomic, land use and growth inducement analyses for the proposed 42-foot deep dredging project aimed at keeping the Port of Oakland competitive in international container shipping.

For more than fifty private Responding Parties, she revised and assisted with

the implementation of the Public Participation Plan for remediation of the Bay Area Drum State Superfund Site, located in the Bayview-Hunters Point community of San Francisco.

For Catellus Development Corporation, Ms. Feeney has provided consultant services in the preparation of a Public Participation Plan for the Mission Bay project, as well as outreach services to the environmental community. She has drafted fact sheets about site investigation and remediation activities for the Mission Bay property, and has arranged several informal meetings with affected community groups.

For Southern Pacific Transportation Company, she developed and implemented a Community Relations Plan required by a DHS Consent Order for the remedial investigation of an abandoned rail yard in Brisbane. She conducted interviews and held community meetings in the Visitacion Valley and Little Hollywood neighborhoods of San Francisco, since these were the closest residences to the site.

For the U.S. Navy, she completed a detailed housing market analysis in Monterey County, in order to evaluate the ability of private sector resources within commute distance of the Monterey Peninsula to meet the housing needs of those attending the U.S. Navy Postgraduate School.

For Caltrans and the Fresno County Transportation Authority, she completed socioeconomic and land use impact analyses for construction of State Route 168 through urban neighborhoods in Fresno, California. She also completed relocation impact reports for the project, which would displace over 900 households.

For the Bay Area Rapid Transit District, she analyzed the potential land use and socioeconomic impacts associated with the proposed heavy rail extension to Dublin and Pleasanton.

For Caltrans and the Fresno County Transportation Authority, she was responsible for socioeconomic impact analysis, farmland impact rating and relocation studies for proposed improvements to State Route 180 east of the city of Fresno.

In Cortez, Colorado, she mediated a conflict between Shell Oil Company and local human services agencies concerning community impacts that might result from a proposed CO² wellfield development, then facilitated local acceptance of an appropriate mitigation package.

For Pacific Gas & Electric Company, she was community relations consultant for two site remediation projects affecting portions of Daly City and Brisbane, as well as the Visitacion Valley neighborhood of San Francisco. Carcinogenic manufactured gas plant residues were found in soils adjacent to a public park, a daycare center and a public housing project with minority residents.

For West County Landfill, Inc., she revised and is helping DTSC to implement

the Public Participation Plan for RCRA closure of the Hazardous Waste Management Facility at the West County Landfill located in North Richmond, California. She was invited to be an Expert Witness in CERCLA and RCRA public participation requirements for the cost recovery suit associated with closure of this hazardous waste landfill.

For Caltrans and the Duffey Company, she completed the land use and socioeconomic analysis for proposed widening of State Highway 156 through the community of San Juan Bautista in San Benito County.

For the State of California Department of Health Services and Brown and Caldwell Engineers, she was community relations consultant for the Hillview-Porter Regional Site, where groundwater underlying a residential neighborhood is contaminated with volatile organic compounds.

For the U.S. Navy, she completed housing market analyses for facilities and personnel stationed at Naval Air Station Moffett Field and at a Naval Air Station located in Fallon, Nevada. The purpose of the studies was to determine whether or not private real estate market resources could meet the housing needs of Navy personnel stationed at these facilities.

For American High Speed Rail and Woodward-Clyde Consultants, she prepared a workplan for analysis of socioeconomic and land use impacts associated with the proposed Los Angeles to San Diego "bullet train."

For the California Regional Water Quality Control Board and Rhone-Poulenc Inc., she developed and implemented a Community Relations Plan for the investigation and remediation of an arsenic-contaminated site in East Palo Alto, California.

For Del Norte County, California, she provided advice on the development and implementation of a public outreach program to enhance citizen involvement in assessing the potential environmental effects of a controversial nickel mine.

For the Sander Resource Recovery Facility in San Diego County, she provided demographic projections vital to the health risk assessment prepared for the local Air Pollution Control District.

For the Bureau of Land Management New Mexico State Office, she completed the land use and socioeconomic analysis for the San Juan Basin Cumulative Overview, which assessed the cumulative effects of leasing five major coal tracts in northwestern New Mexico.

For the Bureau of Land Management Montana State Office, she designed and conducted an economic survey of Crow and Northern Cheyenne Reservation households and businesses to obtain primary data for use in the BLM's regional input-output model used to predict the socioeconomic effects of regional coal mining.

For the Bureau of Land Management Montana State Office, she completed an extensive study of the social and economic effects of Federal coal leasing on members of the Northern Cheyenne Tribe in southeastern Montana.

For the Bureau of Land Management and Exxon Company USA, she was Task Leader for the assessment of potential socioeconomic impacts resulting from construction of a gas processing facility in the Overthrust area of Wyoming.

For Homestake Mining Company, she designed a public liaison program as part of an environmental impact mitigation program for a silver mine in a remote Colorado community.

AFFILIATIONS

Association of Environmental Professionals

International Association for Impact Assessment

International Association for Public Participation

San Francisco Planning and Urban Research Association

Resume of

Dr. LANNY H. FISK, PhD, PG

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Experience Summary

Over 25 years experience as a professional geologist/paleontologist and 20 years as a paleontological consultant doing paleontological resource impact assessments and surveys, preparing CEQA and NEPA environmental documents and mitigation measures, managing environmental compliance monitoring programs, and coordinating and consulting with city, county, state, and federal resource agencies to resolve environmental concerns regarding paleontological resources. Supervised paleontological resource impact mitigation programs requiring monitoring of major earth-moving projects, recovery and collection of fossil remains and fossiliferous rock samples, supervision of field personnel, and preparation of progress and final reports. Projects involved extensive coordination and consultation with project sponsors, other consulting firms, and permitting agencies; adherence to strict delivery schedules; and completion within specified budget limits. Supervised paleontological monitoring and salvaging of fossils, evaluated fossiliferous rock samples to determine need for microfossil processing, and identified fossil remains as part of paleontological monitoring and resource recovery programs for such major projects as the Cominco American Resources Buckhorn Mine; Pacific Gas and Electric Company-Pacific Gas Transmission Company Pipeline Expansion Project from Alberta, Canada, to Southern California; Chemical Waste Management of the Northwest Landfill; 360networks Northern California Fiber Optic Cable Project; Los Angeles Metro Rail Project; Eastern Transportation Corridor Tollway Project; Foothills Transportation Corridor Oso Tollway Project; Prima Deshecha Landfill; Kettleman Hills Landfill; Sutter Energy Center Project; Newark Power Plant Project; Delta Energy Center Project; Los Medanos Energy Center Project; Blythe Energy Project; Gilroy Energy Center; Metcalf Energy Center; King City Energy Center; Pastoria Energy Facility; Otay Mesa Generating Project; Contra Costa Power Plant; Woodland Generating Station; Granite-Fox Power Plant; Caltrans Highway 41 Reef Ridge Project; and Caltrans Highway 50 Sacramento Project. Extensive research in paleobotany, palynology, paleornithology, biostratigraphy, and paleoecology of Cretaceous, Tertiary, and Quaternary formations of the western United States, including research in eight national parks and monuments. Research interests in and numerous scientific publications on fossil floras of the Western U. S. and Mexico. Developed laboratory research facilities at two universities for studying fossil floras, processing fossiliferous rock samples to recover plant microfossils, and interpreting age and paleoenvironment.

Experience Record

- 1982-present Paleontological and Geological Consultant. F & F GeoResource Associates, Inc., dba PaleoResource Consultants, Sacramento, CA. Conducted geological investigations, natural resource assessments, and paleontological resource impact assessments and surveys for environmental, engineering, petroleum, mining, and manufacturing firms, and government agencies. Prepared and supervised paleontological monitoring and mitigation programs for such large projects as the Delta Energy Center, Los Medanos Energy Center, King City Energy Center, Gilroy Energy Center, Magnolia Power Project, Metcalf Energy Center, Pastoria Energy Facility, Otay Mesa Generating Project, Blythe Energy Project, Woodland Generating Station, Kettleman Hills Landfill, and 360networks Fiber Optic Cable Project. Identified fossils (including microfossils) and provided age and paleoenvironmental interpretations for Los Angeles Metro Rail Project, Los Angeles Metropolitan Water District Project, Santiago Canyon Estates Project, and Puente Landfill Project.
- 1997-present Adjunct Professor. Department of Earth Sciences, American River College, Sacramento, CA. Taught undergraduate courses in physical and historical geology, marine environment, and physical science.
- 1991-1999 Senior Paleontologist, Field Supervisor, and Project Paleontologist. Paleo Environmental Associates, Inc., Altadena, CA. Supervised paleontological monitoring, salvaging of fossils, and processing of rock samples; identified plant fossil remains, including plant microfossils and provided paleoenvironmental analyses and age interpretations; prepared stratigraphic columns of fossil-bearing strata, and prepared monthly and final reports as part of the paleontological impact mitigation programs for the PG&E-PGT Pipeline Expansion Project, Los Angeles Metro Rail Project, Eastern Transportation Corridor Tollway Project, Sutter Power Plant Project, Texaco Sunrise Cogeneration and Power Project, Prima Deshecha Landfill Project, Elk Hills Power Plant Project, Eagle Glen Development Project, and Amerige Heights Development Project.
- 1979-1989 Associate Professor. Department of Geological Sciences, Loma Linda University, Loma Linda, California. Taught both undergraduate and graduate courses in paleontology, geology, and philosophy of science; directed undergraduate and graduate student research and theses; conducted research in paleobotany, paleopalynology, and stratigraphy and presented and published the results; administered the department (1980-1986), and served as president of the faculty (1987-1988).
- 1973-1979 Assistant to Associate Professor. Department of Biological Sciences and School of Engineering, Walla Walla College, College Place, Washington. Taught both undergraduate and graduate courses in paleontology, physical and historical geology, environmental science, ecology, and philosophy of science; directed undergraduate and graduate student research and theses; conducted research in paleobotany, paleopalynology, and stratigraphy and presented and published the results. Also Visiting Professor 1996-97 and 2003 teaching engineering geology, paleobotany, and environmental science.
- 1967-1969 U. S. Army Medical Specialist. Pentagon, Washington, DC. Performed medical testing and administered medical services to White House and Pentagon staffs and visiting foreign dignitaries.

Education

B.A. with Honors, Biology, 1971, Andrews University, Berrien Springs, Michigan

Ph.D., Paleobiology, 1976, Loma Linda University, Loma Linda, California

Post-Doctoral Research and ABD in Geology, 1979-1986, Michigan State University, East Lansing, Michigan

Professional Registrations

Certified Professional Paleontologist, Orange County, California

Professional Geologist #6985, State of California

Registered Geologist #G1390, State of Oregon

Selected Professional Organizations

Paleontological Society

Society of Vertebrate Paleontology

Western Association of Vertebrate Paleontologists

Paleontological Research Institute

Society of Economic Paleontologists and Mineralogists (Rocky Mountain Section session chairman 1985)

Paleobotanical Section of the Botanical Society of America (convention session chairman 1981)

International Organisation of Palaeobotanists

American Association of Stratigraphic Palynologists (symposium organizer 1983; North American Paleontological Convention Committee 1986)

National Association of Geology Teachers

National Association of State Boards of Geology (National Examination Committee 1994-1999)

Geological Society of America (Central Oregon representative 1990-1995; Partners for Excellence 1992-1998)

American Association of Petroleum Geologists (Rocky Mountain Section field trip leader 1987, member of the House of Delegates 1990-1996)

Association of Environmental Professionals

Southern California Academy of Sciences

Professional Activities

1994-1999 National Examination Committee, National Association of State Boards of Geology

1993-1998 Member and Vice Chairman, Oregon State Board of Geologist Examiners

1992-1999 Oregon State Geologic Mapping Advisory Committee

1990-1991 President, Northwest Energy Association

1983 Convener, Chairman, and Editor, Harry D. MacGinitie Symposium on Palynology of Tertiary Fossil Floras

1983-1985 Founding Member, Program Chairman, and Vice President, Inland Geological Society

1986 Representative to the Organizing Committee for North American Paleontological Convention IV

Selected Publications

Fisk, L. H., 1976, Paleocological investigations of the Eocene Fossil Forest, pp. 436-437, *in*: Annual Report of the Chief Scientist of the National Park Service, CY 1975. U. S. Department of Interior, National Park Service, Washington, D.C., 556 p.

Fisk, L. H., 1976, The Gallatin "Petrified Forest": a Review, pp. 53-72, *in*: Montana Bureau of Mines and Geology Special Publication 73, Butte, Montana, 165 p.

Fisk, L. H., 1976, Palynology of the Amethyst Mountain "Fossil Forest", Yellowstone National Park, Wyoming: unpublished doctoral dissertation, Loma Linda University, Loma Linda, California, 340 p.

Fisk, L. H., 1976, Paleoenvironmental interpretations of the Eocene "Fossil Forest", Yellowstone National Park, Montana and Wyoming, 25th International Geological Congress, Abstracts, vol. 1, p.303.

Fritz, W. J., and Fisk, L. H., 1976, Paleocology of petrified woods from Amethyst Mountain "Fossil Forest", Yellowstone National Park, Wyoming, First Conference on Scientific Research in the National Parks, Abstracts Volume, p. 92.

Fisk, L. H., and Fritz, W. J., 1976, Reinvestigations of the Petrified Forest of Yellowstone National Park, Wyoming and Montana, First Conference on Scientific Research in the National Parks, Abstracts Volume, p. 93.

Fisk, L. H., 1976, Palynology and paleoecology of the Eocene "Fossil Forest" of Yellowstone National Park, Wyoming, U.S.A., Fourth International Palynological Conference, Abstracts, p. 52-53.

Fisk, L. H., Christenson, M., and Biaggi, R. E., 1976, Pollen and spore distribution in the nearshore environment of Puget Sound, Washington, U.S.A., Fourth International Palynological Conference, Abstracts, p. 53-54.

Biaggi, R., Fisk, L. H., and Martinez-Hernandez, E., 1977, Palinologia y paleoecologia de sedimentos de la Formacion La Quinta (Oligo-Mioceno), Chiapas, Mexico, III Coloquio sobre Paleobotanica y Palinologia, Programa y Resumenes, Museo Nacional de Antropologia, Chapultepec, Mexico, D.F., p. 19.

Selected Publications (continued)

- Fritz, W. J., and Fisk, L. H., 1978, Eocene petrified woods from one unit of the Amethyst Mountain "Fossil Forest", Northwest Geology 7:10-19.
- Fritz, W. J., and Fisk, L. H., 1979, Paleoecology of petrified woods from Amethyst Mountain "Fossil Forest", Yellowstone National Park, Wyoming, pp. 743-749 in: Proceedings of the First Conference on Scientific Research in the National Parks, Vol. II, U.S. Department of Interior, National Park Service Transactions and Proceedings Series, no. 5, 1325 p.
- Barnett, J., and Fisk, L. H., 1980, Palynology and paleoecology of a sedimentary interbed in the Yakima Basalt (Miocene), Palouse Falls, Washington, Northwest Science 54(4):259-278.
- Fisk, L. H., 1983, A survey of fossil plant biology: a review of Paleobotany--an Introduction to Fossil Plant Biology, American Association of Stratigraphic Palynologists Newsletter 15(3):4.
- Fisk, L. H. (Editor), 1983, Palynology of Tertiary Floras of Western North America -- Harry D. MacGinitie Symposium, American Association of Stratigraphic Palynologists, 16th Annual Meeting, Program with Abstracts, 21 p.
- Fisk, L. H., and Fritz, W. J., 1984, Pseudoborings in petrified wood from the Yellowstone "Fossil Forests": Journal of Paleontology 58:58-62.
- Gilliland, D. S., and Fisk, L. H., 1986, Paleoethnobotany of the Tell Hesbon, Jordan: p. 286-297 in Hesban 2: Environmental Foundations, Andrews University Press, Berrien Springs, Michigan, 538 p.
- Fisk, L. H., and Fritts, S. G., 1987, Field guide and roadlog to the geology and petroleum potential of north-central Oregon: Northwest Geology 16:105-125.
- Fisk, L. H., Spencer, L. A., Lander, E. B., Gustafson, E. P., and Wagner, H. M., 1994, Beneficial impacts of large construction projects on paleontologic resources -- results from construction of the PGT-PG&E Pipeline Expansion Project, WA-OR-CA: in Proceedings of the Fourth Conference on Fossil Resources, "Partners in Paleontology: Protecting Our Fossil Heritage", Colorado Springs, CO, 276 p.
- Fisk, L. H., and Spencer, L. A., 1994, Highway construction projects have legal mandates requiring protection of paleontologic resources (fossils): p. 213-225, in Proceedings of the 45th Highway Geology Symposium, Portland, Oregon, 258 p.
- Fisk, L. H., Lander, E. B., Alderson, J. M., Anderson, E. S., Walker, S. I., Anderson, C. B., and Whistler, D. P., 2001, Late Oligocene and Early to Middle(?) Miocene land plants, upper Piuma Member, Sespe Formation, and Fernwood Member, Topanga Canyon Formation, central Santa Monica Mountains, Los Angeles County, California: Geological Society of America 2001 Abstracts with Programs, vol. 33, no. 3, p. 43.
- Fisk, L. H., and Peck, P. R., 2004, A large fossil flora from the Pleistocene older alluvium, Triple M Ranch, Corona, California: Southern California Academy of Sciences Annual Meeting Abstracts, p 20-21.
- Fisk, L. H., 2004, [Review of the book] In Quest of Great Lakes Ice Age Vertebrates: American Association of Stratigraphic Palynologists Newsletter, vol. 37, no. 4, p. 7-9.
- Fisk, L. H., 2005, Paleoclimate and vegetation record in the Late Pleistocene Palos Verdes Formation ("Older Alluvium") in the San Fernando Valley, southern, California: Southern California Academy of Sciences Abstracts of Papers, vol. 104, Supplement to no. 2, p. 29.
- Fisk, L. H., 2005, An unusual vegetation record in the Late Pleistocene Palos Verdes Formation ("Older Alluvium") at Burbank in the San Fernando Valley, southern California, USA: Palynology, in press.
- Fisk, L. H., 2005, [Review of the book] History of Life: American Association of Stratigraphic Palynologists Newsletter, vol. 38, no. 4, p. 6-7.
- Erwin, D. M., Schorn, H. E., Myers, J., Thompson, A., Kouwenberg, L., and Fisk, L. H., 2006, Flora of the northern Sierra Nevada -- past and present: [Field trip guidebook for] Centennial Celebration of the Botanical Society of America, Chico, CA, 44 p.
- Wagner, H. M., and Fisk, L. H., 2007, Revised temporal resolution of the late Irvingtonian age Fairmead Landfill fauna, Madera County, California: Southern California Academy of Sciences Bulletin, vol. 106, no. 2, p. 141-142.
- Fisk, L. H., and Roeder, M. A., 2007, Paleoenvironmental interpretations of Pleistocene deposits at the Pacific City Project site in Huntington Beach, southern California: Southern California Academy of Sciences Bulletin, vol. 106, no. 2, p. 143-144.
- Fisk, L. H., 2008, [Review of the book] Fossil legends of the first Americans: American Association of Stratigraphic Palynologists Newsletter, in press.

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- Fisk, L. H., and Fritz, W. J., 1977, Paleocological investigations of the Eocene Fossil Forest: *in* Annual Report of the Chief Scientist of the National Park Service, U. S. Department of Interior, National Park Service, Washington, D. C., 580 p.
- Fisk, L. H., 1989, Report on the age of lacustrine rocks near Carlin, Nevada: report to Cominco American Resources, Carlin, Nevada, by F & F GeoResource Associates, Inc., Bend, OR, 10 p.
- Spencer, L. A., and Fisk, L. H., 1991, Paleontologic resource assessment/mitigation program, PGT-PG&E Pipeline Expansion Project, Volume I: PGT Section, Oregon, Washington, and Idaho: Report prepared for Federal Energy Regulatory Commission, Pacific Gas Transmission Company, and Bechtel Corporation by Paleo Environmental Associates, Inc., Alta Dena, CA, 102 p.
- Fisk, L. H., Spencer, L. A., and Whistler, D. P., 1994, Paleontologic resource impact mitigation on the PGT-PG&E Pipeline Expansion Project, Volume I: Idaho, Washington, and Oregon: Report prepared for Federal Energy Regulatory Commission, Pacific Gas Transmission Company, and Bechtel Corporation by Paleo Environmental Associates, Inc., Alta Dena, CA, 102 p.
- Fisk, L. H., Spencer, L. A., and Whistler, D. P., 1994, Paleontologic resource impact mitigation on the PGT-PG&E Pipeline Expansion Project, Volume II: California: Report prepared for Federal Energy Regulatory Commission, California Public Utilities Commission, Pacific Gas and Electric Company, and Bechtel Corporation by Paleo Environmental Associates, Inc., Alta Dena, CA, 123 p.
- Fisk, L. H., Spencer, L. A., and Whistler, D. P., 1994, Paleontologic resource impact mitigation on the PGT-PG&E Pipeline Expansion Project, Volume III: Maps of Fossil Sites: Report prepared for the Federal Energy Regulatory Commission, California Public Utilities Commission, Pacific Gas and Electric Company, and Bechtel Corporation, 22 p.
- Fisk, L. H., and Roeder, M. A., 1996, Paleontologic resource impact mitigation program for the Prima Deshecha Landfill, Orange County, California: Report prepared for the County of Orange, Orange, CA, 12 p.
- Fisk, L. H., and Roeder, M. A., 1996, Paleontologic resource impact mitigation program: Results of pregrading survey and recommendations for monitoring of grading, Foothill Transportation Corridor, Oso Segment, Orange County, California: Report prepared for the County of Orange and Raytheon Engineering Corporation, 11 p.
- Fisk, L. H., and Lander, E. B. 1999, Sutter Power Plant Project Worker/Employee Environmental Awareness Training Program for Paleontologic Resources: Report prepared for the California Energy Commission, Calpine Corporation, and Bechtel Enterprises, by Paleo Environmental Associates, Inc., Altadena, CA, 10 p.
- Fisk, L. H., 1999, Paleontologic resource section of the Newark Energy Center Application for Certification: Report prepared for the California Energy Commission, Foster Wheeler Environmental Corporation, Calpine Corporation, and Bechtel Enterprises, by PaleoResource Consultants, Sacramento, CA, 25 p.
- Fisk, L. H., 1999, Paleontological resource survey and impact assessment on portions of the Pacific Fiber Link Project in northern California: Report prepared for the California Public Utilities Commission, Foster Wheeler Environmental Corporation, and Worldwide Fiber Networks, by PaleoResource Consultants, Sacramento, CA, 34 p.
- Fisk, L. H., 2000, Paleontological resource impact assessment of the Pacific Gas & Electric Pipeline Project in Riverside and Imperial Counties, Southern California: Report prepared for Foster Wheeler Environmental Corporation and PG&E Corporation, by PaleoResource Consultants, Sacramento, CA, 28 p.
- Fisk, L. H., 2000, East Altamont Energy Center Application for Certification Paleontological Resource Section: Report prepared for the California Energy Commission, CH2M Hill Corporation, and Calpine Corporation, by PaleoResource Consultants, Sacramento, CA, 23 p.
- Fisk, L. H., 2000, Final Report on the Paleontological Resource Impact Mitigation Program for the Sacramento Municipal Utility District Sacramento Cogeneration Authority Peaker Project: Report prepared for the California Energy Commission and Sacramento Municipal Utility District, by PaleoResource Consultants, Sacramento, CA, 40 p.
- Fisk, L. H., 2001, Cosumnes Power Plant Project Application for Certification Paleontological Resource Section: Report prepared for the California Energy Commission, CH2M Hill Corporation, and Sacramento Municipal Utility District, by PaleoResource Consultants, Sacramento, CA, 29 p.
- Fisk, L. H., and Lander, E. B., 2001, Sutter Energy Center Project Final Paleontologic Resources Report on the Results of the Monitoring and Mitigation Program: Report prepared for the California Energy Commission, Calpine Corporation, and Bechtel Enterprises, by Paleo Environmental Associates, Inc., Altadena, CA, 50 p.
- Fisk, L. H., 2001, Paleontological resource assessment of the Big Break Regional Shoreline Preserve: Report prepared for East Bay Regional Park District and Basin Research Associates, by PaleoResource Consultants, Sacramento, CA, 23 p.
- Fisk, L. H., 2001, Central Valley Energy Center Project Application for Certification Paleontological Resource Section: Report prepared for the California Energy Commission, CH2M Hill Corporation, and Calpine Corporation, by PaleoResource Consultants, Sacramento, CA, 30 p.

Selected Reports (continued)

- Fisk, L. H., 2001, Modesto Irrigation District Woodland Generation Station 2 Small Power Plant Exception Application Paleontological Resource Section: Report prepared for the California Energy Commission, CH2M Hill Corporation, and Modesto Irrigation District, by PaleoResource Consultants, Sacramento, CA, 21 p.
- Fisk, L. H., 2002, Paleontological Resource Impact Assessment for Kettleman Hills Landfill Borrow Source Area B-17: Report prepared for the Chemical Waste Management Corporation, by PaleoResource Consultants, Sacramento, CA, 41 p.
- Fisk, L. H., 2002, Salton Sea Geothermal Power Plant Project Application for Certification Paleontological Resource Section: report prepared for the California Energy Commission, URS Corporation, and CalEnergy Corporation, by PaleoResource Consultants, Sacramento, CA, 25 p.
- Fisk, L. H., 2002, A small Middle Miocene fossil flora from the Los Trancos Member of the Topanga Formation salvaged from the Anteater Recreation Center Project on the campus of University of California, Irvine, California: Report prepared for Discovery Works, Long Beach, CA, by PaleoResource Consultants, Sacramento, CA, 8 p.
- Fisk, L. H., 2003, Delta Energy Center project final report on the results of the paleontological resource monitoring and mitigation program: Report prepared for the California Energy Commission and Calpine Corporation, by PaleoResource Consultants, Sacramento, CA, 43 p.
- Fisk, L. H., 2003, Gilroy Energy Center project final report on the results of the paleontological resource monitoring and mitigation program: Report prepared for the California Energy Commission and Calpine Corporation, by PaleoResource Consultants, Sacramento, CA, 35 p.
- Fisk, L. H., 2003, Paleontological resource impact assessment for General Holding, Inc.'s "The Canyons" Subdivision, Northeast Bakersfield, California: Report prepared for the City of Bakersfield, California, by PaleoResource Consultants, Sacramento, CA, 48 p.
- Fisk, L. H., 2003, San Francisco Energy Reliability Project Application for Certification Paleontological Resource Section: Report prepared for CH2M Hill and the San Francisco Public Utilities Commission, by PaleoResource Consultants, Sacramento, CA, 44 p.
- Fisk, L. H., 2003, Blythe Energy Project final report on the results of the paleontological resource monitoring and mitigation program: Report prepared for the California Energy Commission and Blythe Energy LLC, by PaleoResource Consultants, Sacramento, CA, 69 p.
- Fisk, L. H., 2004, Magnolia Power Project final report on the results of the paleontological resource monitoring and mitigation program: Report prepared for the URS Corporation, Southern California Public Power Authority, and California Energy Commission, by PaleoResource Consultants, Sacramento, CA, 70 p.
- Fisk, L. H., and Peck, P. R., 2004, A Middle Miocene fossil flora from the Los Trancos Member of the Topanga Formation salvaged from construction projects on the campus of University of California, Irvine, California: Report prepared for Chambers Group, Irvine, CA, by PaleoResource Consultants, Sacramento, CA, 15 p.
- Fisk, L. H., 2004, A small Pleistocene fossil flora from the Young Homes Cedar Ranch Project, Crestmore, California: Report prepared for Paleo Environmental Associates, Altadena, CA; Michael Brandman Associates, Irvine, CA; and Young Homes, Rancho Cucamonga, CA, by PaleoResource Consultants, Sacramento, CA, 16 p.
- Fisk, L. H., 2004, State Route 16 Excelsior Road Safety Project paleontological evaluation report: Report prepared for California Department of Transportation, District 3, Sacramento, CA, and URS Corporation, Oakland, CA, by PaleoResource Consultants, Sacramento, CA, 20 p.
- Fisk, L. H., 2004, A large Pleistocene fossil flora from the Quaternary Older Alluvium, Triple M at Chase Ranch Project, Corona, California: Report prepared for L & L Environmental, Corona, CA, by PaleoResource Consultants, Sacramento, CA, 15 p.
- Fisk, L. H., 2004, A small fossil flora from the Quaternary Older Alluvium, Amerige Heights Project, Fullerton, California: Report prepared for Paleo Environmental Associates, Altadena, CA, by PaleoResource Consultants, Sacramento, CA, 9 p.
- Fisk, L. H., and Maloney, D. F., 2004, Woodland Generation Station Unit 2 Project final report on the results of the paleontological resource monitoring and mitigation program: Report prepared for the CH2M Hill Corporation, Modesto Irrigation District, and California Energy Commission by PaleoResource Consultants, Sacramento, CA, 112 p.
- Fisk, L. H., 2004, Final report on the results of the paleontological resources mitigation program for the State Route 41 widening project from kilopost 6.8 to 18.5 (post mile 4.2 to 11.5) through Reef Ridge near Kettleman City in southwestern Kings County, California: Report prepared for California Department of Transportation, District 6, Fresno, CA, by PaleoResource Consultants, Sacramento, CA, 137 p.
- Fisk, L. H., 2005, Metcalf Energy Center Project final report on the results of the paleontological resource monitoring and mitigation program: Report prepared for CH2M Hill Corporation, Calpine Corporation, and California Energy Commission, by PaleoResource Consultants, Sacramento, CA, 74 p.
- Fisk, L. H., and Butler, T. M., 2005, Brookwood Subdivision Project paleontological resource impact assessment: Report prepared for ECORP Consulting and Placer County Planning Department, by PaleoResource Consultants, Sacramento, CA, 23 p.
- Fisk, L. H., 2005, Bridgeview Energy Facility application for certification paleontological resource section: Report prepared for URS Corporation and TransCanada Pipeline Company, by PaleoResource Consultants, Sacramento, CA, 41 p.

Selected Reports (continued)

- Fisk, L. H., 2005, Paleontological resource impact assessment of APN 386-030-13 lying westerly of Morning Drive in northeast Bakersfield, California: Report prepared for the City of Bakersfield, California, by PaleoResource Consultants, Sacramento, CA, 52 p.
- Fisk, L. H., 2005, Havre-Rainbow rebuild project paleontological resource impact assessment: Report prepared for the Western Area Power Administration and Golder Associates, Inc., by PaleoResource Consultants, Sacramento, CA, 95 p.
- Fisk, L. H., 2006, Paleontological resource impact assessment of the Niland Gas Turbine Plant Project Report prepared for Imperial Irrigation District, Imperial, CA, and URS Corporation, Denver, CO, by PaleoResource Consultants, Sacramento, CA, 22 p.
- Fisk, L. H., 2006, Paleontological evaluation report for the U. S. Highway 50 High Occupancy Vehicle Lanes and Community Enhancements Project from kilopost 1.4 to 20.6 (post mile 0.9 to 12.8) in Sacramento County, California: Report prepared for California Department of Transportation, District 3, Sacramento, CA, and URS Corporation, Oakland, CA, by PaleoResource Consultants, Sacramento, CA, 30 p.
- Fisk, L. H., 2006, Paleontological resource impact assessment of the El Centro Gas Turbine Plant Project: Report prepared for Imperial Irrigation District, Imperial, CA, and URS Corporation, Denver, CO, by PaleoResource Consultants, Sacramento, CA, 22 p.
- Fisk, L. H., 2006, Paleontological resource impact assessment, Ellis Street Overcrossing Project in the City and County of Madera, California: Report prepared for the City of Madera, CA, and Valley Planning Consultants, Madera, CA, by PaleoResource Consultants, Sacramento, CA, 44 p.
- Fisk, L. H., 2006, A Middle Miocene fossil flora from the Los Trancos Member of the Topanga Formation salvaged from the American Campus Communities Project on the campus of University of California, Irvine, California: Report prepared for Discovery Works, Long Beach, CA, by PaleoResource Consultants, Sacramento, CA, 16 p.
- Fisk, L. H., 2006, Paleontological evaluation report for the West Merced Bear Creek Structures Replacement Project, State Route 99 from post mile 15.8 to 17.3, Merced County, California: Report prepared for California Department of Transportation, District 10, Fresno, CA, and Parsons Transportation Group, Inc., San Francisco, CA, by PaleoResource Consultants, Sacramento, CA, 44 p.
- Fisk, L. H., 2006, Panoche Energy Center application for certification paleontological resource section: Report prepared for URS Corporation, Santa Barbara, CA, and Duke Energy Generation Services, Cincinnati, OH, by PaleoResource Consultants, Sacramento, CA, 37 p.
- Fisk, L. H., 2006, A Middle Miocene fossil flora from the Los Trancos Member of the Topanga Formation salvaged from the Anteater Recreation Center Project on the campus of University of California, Irvine, California: Report prepared for Discovery Works, Long Beach, CA, by PaleoResource Consultants, Sacramento, CA, 11 p.
- Fisk, L. H., 2006, Paleontological evaluation report for the Herndon Auxiliary Lane Project, State Route 41 from post mile 47.5 to 49.1, Fresno County, California: Report prepared for California Department of Transportation, District 06, Fresno, CA, and Parsons Transportation Group, Inc., San Francisco, CA, by PaleoResource Consultants, Sacramento, CA, 42 p.
- Fisk, L. H., 2006, Bullard Energy Center application for certification paleontological resource section: Report prepared for URS Corporation, Santa Barbara, CA, and Duke Energy Generation Services, Cincinnati, OH, by PaleoResource Consultants, Sacramento, CA, 42 p.
- Fisk, L. H., 2006, Starwood Power-Midway, LLC Peaking Project application for certification paleontological resource section: Report prepared for URS Corporation, San Diego, CA, and Starwood Power Corporation, Greenwich, CO, by PaleoResource Consultants, Sacramento, CA, 45 p.
- Fisk, L. H., 2006, St. Joseph Marelllo Parish and Life Center Project paleontological resource impact assessment: Report prepared for Williams + Paddon Architects + Planners Inc., Roseville, CA, 1 p.
- Fisk, L. H., 2006, Paleontological resource impact assessment for General Holding, Inc.'s "The Canyons" Subdivision in northeast Bakersfield, California: Report prepared for the Planning Division, City of Bakersfield, CA, by PaleoResource Consultants, Sacramento, CA, 50 p.
- Fisk, L. H., 2006, Fossil woods from the Los Trancos Member of the Topanga Formation salvaged from the Biological Sciences Unit 3 Project on the Campus of University of California, Irvine, California: Report prepared for Discovery Works, Los Alamitos, CA, by PaleoResource Consultants, Sacramento, CA, 16 p.
- Fisk, L. H., 2006, Palynology report on samples from the Moorpark Mammoth site in the City of Moorpark, Ventura County, California: Report prepared for Paleo Environmental Associates, Inc., Altadena, CA, by PaleoResource Consultants, Sacramento, CA, 2 p.
- Fisk, L. H., 2006, Paleontological evaluation report for the Jackson Valley Roadway Project on State Route 88 from post mile 0.0 to 5.5 in Amador County, California: Report prepared for California Department of Transportation, District 10, Fresno, CA, and Parsons Transportation Group, Inc., San Francisco, CA, by PaleoResource Consultants, Sacramento, CA, 46 p.
- Fisk, L. H., 2006, Paleontological mitigation plan, I-580/I-205 Truck Bypass in Alameda and San Joaquin counties, California: Report prepared for California Department of Transportation, District 10, Fresno, CA, and Parsons Transportation Group, Inc., San Francisco, CA, by PaleoResource Consultants, Sacramento, CA, 44 p.
- Fisk, L. H., 2007, Paleontological resource impact assessment of the Ocotillo Power Plant Project: Report prepared for URS Corporation, Santa Barbara, CA, and Competitive Power Ventures, Palm Springs, CA, by PaleoResource Consultants, Sacramento, CA, 42 p.

Selected Reports (continued)

- Fisk, L. H., 2007, Paleontological resource survey of the northern Smoke Creek Desert, Washoe County, Nevada Report prepared for Bureau of Land Management, Winnemucca, NV, by PaleoResource Consultants, Sacramento, CA, 173 p.
- Fisk, L. H., 2007, Fossil plant remains from the Pliocene Puente Formation, Pine Valley Estates Project, San Bernardino County, California Report prepared for SWCA Environmental Consultants, South Pasadena, CA, by PaleoResource Consultants, Sacramento, CA, 5 p.
- Fisk, L. H., 2007, A Middle Miocene fossil flora from the Los Trancos Member of the Topanga Formation salvaged from the Engineering Parking Structure Project on the Campus of University of California, Irvine, California Report prepared for Discovery Works, Los Alamitos, CA, by PaleoResource Consultants, Sacramento, CA, 17 p.
- Fisk, L. H., 2007, Paleontological resource impact assessment for the Atwater-Merced Expressway Project, Merced County, California: Report prepared for CirclePoint, Merced County Association of Governments, and California Department of Transportation, by PaleoResource Consultants, Sacramento, CA, 49 p.
- Fisk, L. H., 2007, Paleontological evaluation report for the Highway 1 High Occupancy Vehicle Lane Widening Project in Santa Cruz County, California: Report prepared for Parsons Transportation Group, Santa Cruz Regional Transportation Commission, and California Department of Transportation, by PaleoResource Consultants, Sacramento, CA, 45 p.
- Fisk, L. H., Maloney, D. F., and Peck, P. R., 2007, Fossil plant remains from the Mio-Pliocene Capistrano Formation, Prima Deshecha Landfill, Orange County, California: Report prepared for Chambers Group, Inc., by PaleoResource Consultants, Sacramento, CA, 14 p.
- Fisk, L. H., and Blakely, S. J., 2007, Paleontological mitigation plan, Devil's Den Rehab Project: Report prepared for California Department of Transportation, District 06, Fresno, CA, and Parsons Transportation Group, Inc., San Diego, CA, by PaleoResource Consultants, Sacramento, CA, 61 p.
- Fisk, L. H., and Cornelius, A. E., 2007, Sierra Vista Specific Plan: 2005-147 paleontological resource impact assessment: unpublished report prepared for ECORP Consulting, Inc., and City of Roseville, by PaleoResource Consultants, Sacramento, CA, 32 p.
- Fisk, L. H., and Cornelius, A. E., 2007, Paleontological resource impact assessment for San Francisco Public Utilities Commission's Bay Division Pipelines 3 and 4 Crossover Facilities Project unpublished report prepared for Tetra Tech, Inc., by PaleoResource Consultants, Sacramento, CA, 40 p.
- Fisk, L. H., and Cornelius, A. E., 2007, Paleontological resource impact assessment of the Chan property, Placer County, California; unpublished prepared for ECORP Consulting, Inc. and Placer County Planning Department, by PaleoResource Consultants, Sacramento, CA, 40 p.
- Fisk, L. H., and Cornelius, A. E., 2007, Technical Memorandum; paleontological survey South Heart Project: unpublished report prepared for South Heart Coal LLC and Golder Associates, Inc., by PaleoResource Consultants, Sacramento, CA, 35 p.
- Fisk, L. H., and Blakely, S. J., 2007, Austra-Carrizo Solar Farm application for certification paleontological resources section: Report prepared for California Energy Commission and URS Corporation, San Diego, CA, by PaleoResource Consultants, Sacramento, CA, 38 p.
- Fisk, L. H., and Blakely, S. J., 2007, Paleontological mitigation plan Caldecott Improvement Project: Report prepared for California Department of Transportation, District 04, Oakland, CA, and Parsons Transportation Group, Inc., San Diego, CA, by PaleoResource Consultants, Sacramento, CA, 65 p.
- Fisk, L. H., and Blakely, S. J., 2007, Paleontological evaluation report for the 4215/Van Buren Boulevard Interchange Project on Interstate 215 from post mile 32.3 to 35.9 in Riverside County, California: Report prepared for California Department of Transportation, District 08, San Bernardino, CA, and Kimley-Horn and Associates, Inc., San Diego, CA, by PaleoResource Consultants, Sacramento, CA, 33 p.
- Fisk, L. H., and Blakely, S. J., 2007, Paleontological mitigation plan State Route 180 Sequoia Freeway Segment 3 Project: Report prepared for California Department of Transportation, District 06, Fresno, CA, and Parsons Transportation Group, Inc., San Diego, CA, by PaleoResource Consultants, Sacramento, CA, 63 p.
- Fisk, L. H., and Cornelius, A. E., 2007, Paleontological survey of a 40-acre parcel of Bureau of Land Management land in northeast Bakersfield, CA: Report prepared for Canyons LLC, Bakersfield, CA and City of Bakersfield, CA, by PaleoResource Consultants, Sacramento, CA, 30 p.
- Fisk, L. H., 2008, Fossil plant remains from the Pacific City Project, Huntington Beach, California: Report prepared for Professional Archaeological Services, San Diego, CA, 10 p.
- Fisk, L. H., and Blakely, S. J., 2008, Paleontological resource impact assessment, SR198 Hanford: Report prepared for California Department of Transportation, District 06, Fresno, CA, and Parsons Transportation Group, Inc., San Diego, CA, by PaleoResource Consultants, Sacramento, CA, 63 p.
- Fisk, L. H., and Blakely, S. J., 2008, Paleontological resource impact assessment, Highway 1 Soquel-Morrissey Project: Report prepared for California Department of Transportation, District 05, Santa Cruz, CA, and Parsons Transportation Group, Inc., San Diego, CA, by PaleoResource Consultants, Sacramento, CA, 44 p.

Fisk, L. H., and Myers, J. A., 2008, Fossil plant remains from the Antelope Valley Landfill near Palmdale, California Unpublished report prepared for Paleo Environmental Associates, Inc., Altadena, CA, by PaleoResource Consultants, Sacramento, CA, 30 p.

Fisk, L. H., 2008, Palynology report on sediment samples from the Scholle Project in the City of Irvine, Orange County, Southern California: Report prepared for Paleo Environmental Associates, Inc., Altadena, CA, by PaleoResource Consultants, Sacramento, CA, 2 p.

References

Client Name and Title: Mr. Peter Hansen, Regional Paleontology Coordinator
Agency/Organization: California Department of Transportation, Fresno Office
Address: 2015 East Shields Avenue, Suite 100, Fresno, CA 93726
Telephone: 559-243-8229
E-mail: Peter_Hansen@dot.ca.gov

Client Name and Title: Ms. Pat M. Gelb, Vice President and Planning Manager
Agency/Organization: Parsons Transportation Group Inc.
Address: 50 Fremont Street, Suite 1500, San Francisco, CA 94105
Telephone: 415-490-2482
E-mail: Pat.Gelb@parsons.com

Client Name and Title: Dr. E. Bruce Lander, PhD, President
Agency/Organization: Paleo Environmental Associates Inc.
Address: 2248 Winrock Avenue, Altadena, CA 91001
Telephone: 626-797-9895
E-mail: Paleo@earthlink.net

Lisa Griggs, CIH

Environmental Health and Safety Specialist

Areas of Expertise

- Environmental and Safety Compliance Audits
- Environmental Regulatory Compliance
- Environmental Permitting
- Environmental Health & Safety Training
- Safety program development - Project Safety Plans
- Industrial Hygiene
- Emergency Response

PROFESSIONAL REGISTRATIONS

American Board of Industrial Hygiene
CP 9199

Years of Experience

With URS: 8 Years
With Other Firms: 10 Years

Education

B.S. Biological Science / Major
Environmental Biology, Minor
Chemistry / San Jose State University

Contact Information

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Guthrie, OK 73044
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(405) 293-9542 home
(408) 209-8344 cell

Chronology

1999-Present: URS Corporation

Environmental Health and Safety Specialist, San Jose, CA

Provide services to multiple clients as consultant for environmental, health and safety regulations. Representative projects include, but are not limited to the following

- Wrote Spill Prevention Countermeasure and Control Plan (SPCC) for multiple clients including Symantec Corporation, Burke Industries, NVIDIA, City of Mountain View, and Rossi Aircraft.
- Provide training to large variety of clients including Whiting Oil and Gas, Chevron Texaco, Stanford Linear Accelerator, Travis Air Force Base and United States Postal Service.
- Perform environmental and safety compliance audits for clients including the National Parks Service, NASA, Stanford Linear Accelerator, Rockwell, Travis Air Force Base, Elan Pharmaceuticals and United Technologies. Environmental audits are multimedia, including, but not limited to hazardous materials and waste, water quality, wastewater, DOT compliance, POL, air permitting, asbestos and pesticide management. Safety audits have included, but are not limited to OSHA compliance, accident investigation, industrial hygiene monitoring, fall protection, confined space, electrical safety, respiratory protection and medical monitoring. Audits cover federal, state and local regulations in California, Nevada, Arizona, Washington, Oregon and Alaska.
- Work at Chevron Texaco Richmond Refinery as Health and Safety Manager for URS environmental remediation projects. Duties include development of Health and Safety Plans for field projects, act as liaison with client Safety representatives, perform

internal safety audits, track training and manage drug testing program for URS project personnel. 2000-2003

- Serve as Area Environmental Compliance Specialist for Water Quality Management for the United States Postal Service Pacific Area Environmental Unit. This position covers all postal facilities in California, Nevada, Arizona and Hawaii.

**1998-1999: Harding Lawson Associates
Environmental Scientist, San Jose, CA**

Provided services to clients in support of environmental health and safety programs. Duties included training, industrial hygiene support and program review.

**1995-1998: Santa Clara County Fire Marshal's Office
Weed Abatement Supervisor, San Jose, CA**

Managed weed abatement program for Santa Clara County and thirteen contract cities. Program included management of three fire prevention inspectors, weed abatement contractors and budget of over two million dollars. Included significant interaction with city governments, public meetings and county government.

**1994-1999: Emergency Training Services
Instructor, San Jose, CA**

Part time position, held in addition to full time work. Provided emergency response training to fire departments and industrial emergency response teams. Classes included but not limited to 40 hour, 24 hour and 8 hour Hazwoper, respiratory protection, chemical handling. Developed training curriculum and presented course material. Coordinated and participated in drills with fire departments and industrial ERTs.

**1992-1995: United Technologies Chemical Systems Division
Senior Environmental Engineer, San Jose, CA**

Manager of hazardous waste disposal for large manufacturing plant. Supervised three technicians and managed annual budget exceeding one million dollars in waste disposal costs. Projects included environmental remediation waste as well as manufacturing waste. Other duties included assistance with groundwater treatment system monitoring, air permitting and manufacturing project support.

**1989-1992: USPCI
Chemical Profiling Supervisor, San Jose, CA**

Supervised chemical profiling department for hazardous waste treatment, storage and disposal facility. Duties included ordering and interpreting chemical analysis of waste samples, application of DOT and EPA regulations for waste disposal and transportation and final signature authority for waste accepted into treatment plant.

Specialized Training

April 2007/ 8-hour refresher for Title 8 CCR Section 5192 Training (HAZWOPER)

June 2005/ DOT -IATA

May 2003/ OSHA 501 Trainer Course in OSH General Industry

August 2001/ OSHA 30-hour Supervisor

Feb. 2002/ Industrial Hygiene and Health; University of California

1992/ 40-hour Title 8 CCR Section 5192 Training (HAZWOPER)

November 2000/ Incident Command System 200 California State Fire Marshal

July 1999/ American Red Cross CPR and First Aid Instructor

July 1997/ Building Design for Hazardous Materials, University of California, Berkeley

August 1996/ Hazardous Material Technician Seaside Fire, Mission Trails ROP

June 1996/ Fire Instructor 1A, Mission College/State Fire Marshal FSTEP

October 1996/ Fire Prevention 1A/1B, State Fire Marshal FSTEP

June 1995/ Hazardous Material Course/Incident Commander, California specialized Training Institute

July 1994/ Project Management, American Management Association

March 1993/ Management/Supervisory Development Program, University of California, Santa Cruz



Brian Hatoff, R.P.A.

Senior Project Scientist

Areas of Expertise

Cultural Resource Management
Section 106, NHPA Compliance
Prehistoric Archaeology

Years of Experience

With URS: 18 Years
With Other Firms: 16 Years

Education

MA/Anthropology/1974/University of
California, Davis
BA/Anthropology/1971/University of
California, Davis

Registration/Certification

1999/Registered Professional
Archaeologist/California/2008

Overview

Mr. Hatoff has over 30 years of experience in the management of cultural resources with specialized expertise in the prehistoric archaeology and ecology of California and the Great Basin. He held primary responsibility for the management of cultural resources on 5.5 million acres of public lands in western Nevada and eastern California. In this role, he handled a wide array of undertakings including preparation of EIS/EA documentation, Section 106 compliance/evaluation/ review, Native American consultations, cultural resource permitting, contract development and administration, preparation of cultural resource management plans for cultural and paleontological resources, and technical document preparation.

As a Senior Project Archaeologist in URS' cultural resources group Mr. Hatoff routinely manages major cultural resource studies in support of NEPA and CEQA-driven projects. Mr. Hatoff serves as the cultural resources lead for URS FEMA Region IX providing senior Section 106 compliance support for FEMA in California, Nevada, Hawaii and throughout the Pacific Basin. Representative project experience includes the following:

Project Specific Experience

Power Plants and Energy

Cultural Resources Specialist, Panoche Energy Project, Fresno County, CA, Panoche Energy Center, LLC: Directed cultural resources components of California Energy Commission Application for Certification (AFC). Served as designated Cultural Resources Specialist for the compliance phase of the project. Prepared Cultural Resources Mitigation and Monitoring, prepared worker environmental awareness training, provided oversight of cultural for resources monitoring.

Cultural Resources Specialist, Trans Bay Cable Project, Trans Bay Cable, LLC, Contra Costa and San Francisco Counties CA: Directed cultural resources component of CEQA analysis for 55 mile submarine cable in San Francisco bay and construction of converter stations in Pittsburg and San Francisco.

Cultural Resources Specialist, Sunrise II Power Project, Kern County, CA, Chevron-Texaco: Directed cultural and paleontological resources components of California Energy Commission Application for Certification (AFC). Served as designated Cultural Resources Specialist for the compliance phase of the project. Conducted field surveys, testing program and provided oversight for preparation of the cultural resources technical reports and cultural resources and paleontology AFC sections.



Brian Hatoff, R.P.A.

Cultural Resources Specialist, Henrietta Peaker Project, Kings County, CA, GWF Power Systems: Directed cultural and paleontological resources components of California Energy Commission Application for Certification (AFC). Conducted field surveys and prepared cultural resources technical report and cultural resources and paleontology AFC sections. Directed construction compliance phase for cultural resources.

Cultural Resources Specialist, Pittsburg District Energy Facility Project, Pittsburg, CA, Confidential Client: Directed cultural and paleontological resources components of California Energy Commission Application for Certification (AFC). Conducted field surveys and prepared cultural resources technical report and cultural resources and paleontology AFC sections.

Cultural Resources Specialist, La Paloma Generating Project, Buttonwillow, CA, La Paloma Generating Company, LLC: Directed cultural and paleontological resources components of California Energy Commission Application for Certification (AFC). Conducted field surveys and prepared cultural resources technical report and cultural resources and paleontology AFC sections.

Cultural Resources Specialist, Otay Mesa Generating Project, San Diego County, CA, Calpine Corporation: Directed cultural and paleontological resources components of California Energy Commission Application for Certification (AFC). Prepared AFC sections and directed subcontractors on complex, multi-component project.

Water Resources

Cultural Resources Task Manager, Napa Salt Pond Restoration Project, Napa County, CA, California Department of Fish and Game: Cultural resources task manager for salt pond restoration project - directed archaeological survey program and technical report preparation.

Cultural Resources Program Manager, Lower Guadalupe Flood Control Project, Santa Clara County, CA, Santa Clara Valley Water District (SCVWD): Cultural resources program manager for levee enhancement project; directed archaeological survey program and identified testing requirements for project.

Project Manager, Littlerock Dam and Reservoir Restoration Project, Los Angeles County, CA, Littlerock Irrigation District: EIS/EIR interim project manager, cultural resources task manager - responsible for all environmental permitting aspects of project including coordination of Section 404 requirements.

Cultural Resources Specialist, Los Vaqueros Reservoir Project, Contra Costa County, CA, Contra Costa County Water District (CCWD): Special assistant to prime contractor, J.M. Montgomery Engineers. Assisted in successful preparation of multi-component document submitted to SHPO containing research design, site evaluations and findings of effect, and provide client technical guidance with Section 106 compliance issues.



Brian Hatoff, R.P.A.

Linear Facilities – Pipelines, Transmission Lines, Transportation Projects

Cultural Resources Task Manager, San Ardo Pipeline Project, Monterey and Fresno Counties, CA, Chevron Pipeline: Directed cultural resources technical studies and Native American consultation in support of a fuel pipeline project in Monterey and Fresno Counties.

Cultural Resources Task Manager, Jameson Canyon (Highway 12) Improvement Project, Bay Area, CA, Caltrans District 4: Directed cultural resources studies (ASR, HRER, HPSR) in support of a highway improvement project in Solano and Napa Counties.

Cultural Resources Task Manager, Route 4/I-680 Interchange Project, Contra Costa County, CA, Contra Costa Transportation Agency (CCTA): Directed cultural resources studies (ASR, HRER, HPSR) in support of a highway improvement project in Contra Costa County.

Cultural Resources Task Manager, Campus Parkway Project, Merced County, CA, Merced County Department of Public Works: Directed cultural resources studies (ASR, HASR, HPSR) in support of a proposed road construction project in Merced County, CA under the aegis of Caltrans' Local Assistance Program.

Cultural Resources Specialist, Tasman Light Rail Corridor Project, Santa Clara County, CA, Santa Clara Valley Transportation Authority (VTA): Directed archaeological excavations at archaeological site SCL-12; wrote 66 page interpretive book on archaeology and ethnohistory in Santa Clara County; direct archaeological monitoring program during Tasman Corridor construction.

Cultural Resources Specialist, Malin, Oregon to Round Mountain California Transmission Line and Access Road Maintenance Program - Western Area Power Administration (Western) Northeastern CA: Directed cultural resources program for comprehensive Class I overview and Class III survey for over 100 miles of western-maintained facilities to ensure Section 106 compliance.

Cultural Resources Specialist, West Kern Water District Pipeline Projects, Kern County CA, West Kern Water District: Co-directed cultural resources surveys of proposed pipeline routes near Taft, CA. Provided oversight for preparation of the cultural resources technical reports.

Cultural Resources Asst. Task Manager, Mojave Pipeline Northward Expansion, Multiple Locations, CA, Mojave Pipeline Company, CA: Comprehensive Class I Cultural Resources Overview for proposed 560-mile natural gas pipeline (documents prepared for FERC, BLM, and responsible for preparation and implementation of Class III technical report, California State Lands Commission, and California OHP).

Cultural Resources Asst. Task Manager, Topock Interconnect, Topock, AZ, Enron Corporation: Preparation (and successful implementation) of Treatment and Monitoring Program for natural gas



Brian Hatoff, R.P.A.

pipeline pursuant to FERC, BLM and Arizona SHPO requirements; Native American consultation with Colorado River Indian Tribes and Fort Mohave Indian Tribe.

Cultural Resources Task Leader, Alturas Transmission Line Project - CPUC and BLM, Various Locations, Northeastern CA and Western NV, California Public Utilities Commission: Cultural resources task leader for Class III surveys of 270 miles of transmission line ROW in northeastern California and western Nevada and preparation of cultural resource sections of CEQA/NEPA documents.

Telecommunications

Cultural Resources Task Manager, Cell Towers, Multiple Cities and Counties, CA and NV, Verizon Communications: Directed cultural resources studies and preparation of technical and compliance documents in support of cell tower construction throughout California and southern Nevada. Section 106 compliance documents prepared in accordance with Programmatic Agreements in effect between the FCC and SHPO.

Federal Agencies

Cultural Resources Task Leader, Multiple Projects, Multiple Locations including California, Nevada, Hawaii, Guam, Federal States of Micronesia and American Samoa, Federal Emergency Management Agency (FEMA): Responsible for Section 106 compliance activities for hazard mitigation and technical assistance projects throughout California, Nevada and Pacific Basin including projects in Hawaii, American Samoa, Guam, Commonwealth of the Northern Mariana Islands and the Federated States of Micronesia.

Cultural Resources Task Leader, Federal Aviation Administration; San Francisco Airport Runway Expansion Project, San Francisco, CA, Federal Aviation Administration (FAA): Responsible for Section 106 and CEQA compliance activities in support of a joint EIS/EIR for the SFO Runway Expansion project. Cultural resources component included a major marine survey of San Francisco Bay as well as upland areas at SFO and surrounding area.

Cultural Resources Asst. Task Leader, Archaeological Monitoring Program, Presidio of San Francisco, CA, U.S. Army Corps of Engineers (USACE) and National Park Service (NPS): Implementation of comprehensive archaeological monitoring program in hazmat setting, exploratory archaeological excavations in conjunction with a ground-penetrating-radar study, extensive on-going agency consultation/coordination.

Cultural Resources Asst. Task Manager, McClellan AFB National Register District Revision, Sacramento, CA, U.S. Army Corps of Engineers (USACE), Sacramento District: Provided technical oversight and coordination for review of McClellan AFB to incorporate WW II-era structures into a revised Historic District. Effort culminated in Final Report with recommendations to USACE.



Brian Hatoff, R.P.A.

Cultural Resources Task Manager, Project Archaeologist, Fallon NAS Cultural Resource Management Plan, Department of the Navy: Provided oversight for preparation of cultural resources management plan for Fallon NAS to guide their inventory and Section 106 compliance procedures.

Professional Societies/Affiliates

Register of Professional Archaeologists

Awards

2006/Special Recognition as a member of the NISTAC (consultants to FEMA) team for efforts related to Hurricanes of 2005.

1988/National Award for Volunteer Services Related to the Public Lands/Bureau of Land Management

Languages

French

Specialized Training

40 Hour Health and Safety Trained – Current

Security Clearance

[Click [here](#) and type Security Clearance Level]

Publications

Figures for Explanation: Scratched Petroglyphs at the Pistone Site in Western Nevada, with Eric. W. Ritter, In Archives of Great Basin Prehistory, No. 1, 1998. Coyote Press, Salinas, CA.

Archaeology and Ethnohistory in Santa Clara County, California: Cultural Resources Mitigation for the Tasman Corridor Light Rail Project, with Sally S. Morgan. Prepared for Santa Clara Valley Transportation Authority. 1998.

Book Review, Protecting the Past. George S. Smith and John Ehrenhard editors. CRC Press, Boca Raton, Florida, 1991. In, American Antiquity, Vol. 59, No. 2, 1994.

Archaeology and the Public: Future Directions, In Journal of California and Great Basin Anthropology, Vol. 14, No. 1, 1992.

A Prehistoric Bighorn Sheep Drive Complex, Clan Alpine Mountains, Central Nevada, with Kelly R. McGuire, In Journal of California and Great Basin Anthropology, Vol. 13, No. 1, 1991.

Archaeological Research in Churchill County. A Tale of Changing Perspectives, In Focus Vol. 1, No. 1. Churchill County Museum, Fallon. 1987.

The People of the Past/The Hidden Cave Experience with David Hurst Thomas, in Native American Annual, Vol. 1, No. 1. 1985a.



Brian Hatoff, R.P.A.

Management Objectives of the Hidden Cave Project, In Anthropological Papers of the American Museum of Natural History, Vol. 60. 1985b.

The Hidden Cave Archaeological Project: A Case Study in Creative Funding, In Contract Abstracts and CRM Archaeology, Vol. 2, No. 3. 1982.

Cultural Resources Management and the Public: A Case History, In American Society for Conservation Archaeology Report, Vol. 8, Nos. 5 and 6. 1981.

Sedimentological Analysis, In Guitarrero Cave, ed. Thomas Lynch, Academic Press, London, New York, San Francisco. 1980.

Cultural Resource Management at Grimes Point, in Nevada Archaeological Survey Reporter, Vol. 10, No. 2. 1977.

Late Pleistocene Pollen and Sediments: An Analysis of a Central California Locality, with Eric W. Ritter in The Texas Journal of Science, Vol. XXIX, Nos. 3 and 4.

The Mateo Ridge Site, with David Hurst Thomas, In Anthropological Papers of the America Museum of Natural History, Vol. 53, Part 3. 1976.

Chronological Placement of the Farmington Complex in Central California, with Eric W. Ritter and Louis A. Payen, In American Antiquity, Vol. 41, No. 3.

Archaeological Investigations in the BLM Battle Mountain District, in Nevada Archaeological Survey Reporter, Vol. 8, No. 1. 1975.

Geomorphology and Archaeology, with Eric W. Ritter, In Center for Archaeological Research at Davis Publication No. 4. 1974.

Chronology

02/91 – Present: URS Corporation, Senior Project Scientist, Oakland, CA
08/75 – 01/91: U.S. Department of Interior, Bureau of Land Management, District Archaeologist, Las Vegas and Carson City, Nevada

Contact Information

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1333 Broadway, Suite 800
Oakland, CA 94612-1924
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Direct: 510.874.3195
Fax: 510.874.3268
brian_hatoff@urscorp.com

KRIS HELM

4218 Ben Avenue
Studio City, CA 91604
(818) 468-3022
fax (818) 505-1879

SUMMARY:

Mr. Helm is a senior Water Resources Consultant with more than 25 years' experience. Mr. Helm's consulting practice is built upon extensive management experience in water operations, water recycling and desalination, and a proven record in policy development, financial management, and strategic planning. Mr. Helm's recent practice has included providing program management services to municipal clients and developing water resources solutions for large-scale power generation projects. He has unique experience in the negotiation of water service contracts between public agencies and between public agencies and private entities. Mr. Helm worked ten years for the Metropolitan Water District of Southern California, ultimately serving as a Branch Manager within the Water Resources Division as Groundwater Resources Specialist. Mr. Helm was the Manager of Planning and Operations at the West Basin Municipal Water District from 1992-1997. Mr. Helm has been a private consultant since 1997.

RELEVANT EXPERIENCE:

- While at Metropolitan, Mr. Helm developed numerous projects for groundwater management in Southern California. He was the principal architect of the Seasonal Storage Service program. He administered the Metropolitan/ Desert Water Agency Exchange agreements to enable service to DWA for Groundwater Replenishment in the Upper Coachella Valley.
- Mr. Helm served as Manager of Planning and Operations for the West and Central Basin Municipal Water Districts. In that capacity he oversaw the negotiation of water supply agreements and the conversion of over 100 sites to recycled water use. As part of that work, Mr. Helm served as lead negotiator for the development of satellite treatment plants to serve three major oil refineries including a wastewater desalination facility at the Mobil Oil Torrance Refinery which provided the first use in California of treated wastewater for high-pressure boiler makeup.
- On Behalf of Calpine Corporation, Mr. Helm served as the lead for the preparation and defense of an Application for Certification for the Russell City Energy Center (Hayward, CA, 2002), East Altamont Energy Center (Byron, CA, 2003) and Inland Empire Energy Center (Menifee, CA 2003).
- On Behalf of Calpine Corporation, Mr. Helm served as the lead negotiator for the acquisition of water supply for the Metcalf Energy Center (San Jose, CA, 2001),

Russell City Energy Center (Hayward, CA, 2002), Central Valley Energy Center, (San Joaquin, CA 2002) Inland Empire Energy Center (Menifee, CA 2003) and East Altamont Energy Center (Byron, CA, 2003).

- On Behalf of Calpine Corporation Mr. Helm provided due diligence for the acquisition of the Pastoria Energy Center. Mr. Helm provided modeling and analyses of water supply for the project and assisted in the management of water supply agreements for the project. (Tejon, CA, 2002)
- On behalf of the Turlock Irrigation District, Mr. Helm led the preparation and defense of the Application for Certification of the Walnut Energy Center. In addition Mr. Helm served as the lead negotiator for the acquisition of water supply, permit acquisition and compliance. (Turlock, CA 2004-2005)
- Mr. Helm has provided expert testimony before the California Energy Commission, (2001-2004) and has assisted in the preparation of testimony by public agencies in support of applications before the energy commission including the Byron Bethany Irrigation District, Eastern Municipal Water District, City of Hayward and the Santa Clara Valley Water District.(2001-2004)
- Mr. Helm has negotiated numerous water exchange and water wheeling agreements between public agencies including agreements between the Metropolitan Water District of Southern California and the Castaic Lake Water Agency..(Los Angeles, CA 1992)

EDUCATION:

UNIVERSITY OF CALIFORNIA, Berkeley, California, August, 1980
Bachelor of Arts, Economics

RAND F. HERBERT**Principal, JRP Historical Consulting, LLC**

Mr. Herbert's academic fields of specialization were in California and Western United States history. For more than twenty-five years, Mr. Herbert has worked as a consulting historian on a wide variety of historical research and cultural resources management projects, as a researcher, writer, and project manager. He has managed, written, or worked on building inventory and evaluation projects for a variety of government agencies such as Caltrans and the Department of Defense. He has given numerous lectures on the topics of public history and has provided expert witness services and testimony in more than a dozen cases or administrative proceedings. Based on his level of education and experience, Mr. Herbert qualifies as a historian/architectural historian under the United States Secretary of the Interior's Professional Qualification Standards (as defined in 36 CFR Part 61).

Professional Background

Mr. Herbert has taught history at community colleges in Sacramento and Solano counties and regularly teaches a graduate seminar in public history at California State University, Sacramento (2001–present). In 1990, he was elected chairman of the California Council for the Promotion of History (CCPH) and served a two-year term. He served as one of CCPH's representatives on California Resources Secretary Douglas Wheeler's Historic Preservation Task Force (1992–1994); and on the National Cultural Alliance's Cultural Awareness Campaign, California Steering Committee. Mr. Herbert is a Registered Professional Historian (#508) with CCPH and a member of the National Council on Public History, California Historical Society, Ninth Circuit Court Historical Society. Mr. Herbert earned his MAT in History for the University of California Davis and his BA in History from the University of California, Berkeley.

Relevant Experience

- Historic Properties Inventory and Evaluation Report for KRCD Powerplant AFC. Prepared for Navigant Consultants, 2007-2008
- Ball Mansion, Alamo, Contra Costa County, California. Prepared for ECORP Consultants, Inc. 2008.
- Historic Properties Inventory and Evaluation Report for Dumbarton Rail Corridor. Prepared for Parsons. 2008–In Progress.
- City and County of San Francisco Water System Improvement Program Projects - Extension of Planning Department Major Environmental Analysis Staff for Reviewing Historic Resource Studies. Prepared for URS Corporation. 2007–In Progress.
- Historic Properties Inventory and Evaluation Report for CVP Sentinel (Ocotillo) AFC. Prepared for URS Corporation. 2007–In Progress.
- Historic Resources Survey and Eligibility Investigations for Thirteen Buildings at Naval Air Station, North Island, San Diego, California. Prepared for SWCA Environmental. 2007–In Progress.
- Historic Resources Inventory and Evaluation Report: Las Gallinas Chlorine Contact Basin and Clear Well Project. Prepared for URS Corporation. 2007.

- Historic Resources Evaluation Report for City of Oakland on Six Bridges. Prepared for URS Corporation and the City of Oakland, reviewed by Caltrans District 4. 2007–2008.
- Pt. Hueneme Historic Survey MILCON. Prepared for SWCA Environmental / Naval Facilities Engineering Command Southwest. 2007–In Progress.
- Historic Documentation for Quarters A and B at Naval Coal Depot (Fleet Industrial and Supply Center, Quarters A), Naval Base Point Loma, San Diego, California. Prepared with SWCA Environmental for SWCA Environmental / Naval Facilities Engineering Command Southwest. 2007–2008.
- Historical Resources Evaluation Report for the Highway 101 Greenbrae Corridor Improvement Project, Marin County, California. Prepared for Carter & Burgess. 2006–In Progress.
- Historic Resources Inventory and Evaluation Report, Placer Ranch Offsite Road and Utility Corridors, Placer County, California. Prepared for URS Corporation. 2006.
- Historic Properties Inventory and Evaluation Report for Colusa Generation Station AFC, Colusa County, California. Prepared for URS Corporation. 2006–2007.
- Finding of Effects for Caltrain San José Diridon Train Station Offices Improvement Project, San Jose, California. Prepared for VBN. 2006.
- Historic Resources Inventory and Evaluation for the Sacramento International Airport. Prepared for URS Corporation. 2006–2007.
- Historic Properties Inventory and Evaluation Report for Panoche Energy Center AFC, Panoche, California. Prepared for URS Corporation. 2006–2007.
- Historical Resources Inventory and Evaluation Report: Sierra Vista Project, Placer County, California. Prepared for URS Corporation. 2006–2007.
- Monitoring of the San Mateo 1903 Underpasses for the Caltrain San Mateo Crash Beams Project, San Mateo, California. Prepared for Parsons. 2006–2007.
- Historic Resources Inventory and Evaluation Report of the Fresno/Yosemite International Airport, Fresno County, California. Prepared for URS Corporation. 2006–2007.
- Finding of Effect for the Demolition of Two Residences at the Lava Cap Mine, Nevada County, California. Prepared for CH2M HILL, Inc. 2006.
- Historic Resources Report, Santa Clara Valley Water District Dams. Prepared for MHA/SCVWD. 2006.
- SACOG Initial Alternatives Reconnaissance Survey. Prepared for URS Corporation. 2006.
- Historic Resources Inventory and Evaluation: Unlined Portions of Turlock Irrigation District Main Canal and Cross Ditch #1, Stanislaus County, California. Prepared for URS Corporation. 2006.
- Historical Resources Evaluation Report, Placer Parkway Corridor Preservation Tier 1 EIS/Program EIR, Placer and Sutter Counties, California. Prepared for URS Corporation. 2006.

- Inventory and Evaluation Report and CEQA Impacts Analysis Report for 1938 Broadway Project, Oakland, Alameda County, California. Prepared for URS Corporation. 2005–In Progress.
- Trans Bay Cable Project, Historical Resources Study, Contra Costa County and San Francisco County, California. Prepared for URS Corporation. 2005–In Progress.
- Southwest Div. On-Call Cultural Resources Consulting Contract. Prepared for Navy: Southwest Division NAVFACENG COM, San Diego. 2005–In Progress.
- Historic Resources Inventory and Evaluation Report, Napa Salt Marsh Restoration Area, Napa County, California. Prepared for URS Corporation. 2005–In Progress.
- Historic Resources Inventory and Evaluation for Riolo Vineyard Specific Plan EIR. Prepared for URS Corporation. 2005–In Progress.
- Naval Air Station, Fallon Integrated Cultural Resources Management Plan. Prepared with Far Western Anthropological Research Group for NAS Fallon and the Southwest Division, Naval Facilities Engineering Command. 2005–2007.
- Me ID Transmission Lines. Prepared for Russell Associates and Merced Irrigation District. 2005–2006.
- Historic Properties Survey Report for the D Street Bridge Rehabilitation Project, Petaluma, Sonoma County, California. Prepared with URS Corporation for Caltrans District 4. 2005–2006.
- Contra Costa Canal Inventory and Recordation. Prepared for Contra Costa Water District. 2005–2006.
- Historic Inventory and Evaluation Report and Finding of Effect Report for the Peninsula Joint Powers Board South San Francisco Station and Track Work Project, San Mateo County, California, Caltrain Mileposts 06.10 to 10.60. Prepared for Parsons Transportation Group. 2005–2006.
- Inventory and Evaluation of High Water Bridge at Camp Roberts, Monterey County, California. Prepared with Tetra Tech for US Army National Guard Reserve. 2005–2006.
- Historic Resources Evaluation Report: Buckhorn Grade Improvement Project, Shasta and Trinity Counties, California. Prepared for URS Corporation. 2005–2006.
- Lava Cap Mine Historical Resource Inventory and Evaluation, Nevada County, California. Prepared for CH2MHill. 2005–2006.
- Yosemite Village (Fresno) Building Inventories. Prepared for URS Corporation. 2005.
- Emeryville Park Avenue Initial Study. Prepared for URS Corporation. 2005.
- Historic Resource Evaluation Report: Rumrill Boulevard Bridge Replacement Project, San Pablo, Contra Costa County, California. Prepared for California Department of Transportation, District 4. 2005.
- Historic Resource Inventory and Evaluation: Eastern Sierra Regional Airport, Inyo, California. Prepared for URS Corporation. 2005.

- Historic American Buildings Survey, Signal Corps Radar (S.C.R) 296 Station 5 Transmitter Building Foundation and Fort Barry Bonita Ridge Access Retaining Wall. Prepared for Associated Cultural Resource Experts, LLC. 2005.
- Historic Resources Evaluation Report and Finding of Effect for SR 152/156 Interchange Project, Santa Clara and San Benito Counties, California. Prepared for Santa Clara Valley Transit Authority. 2005.
- McClellan Business Park Historic American Buildings Survey Building 231. Prepared for McClellan Business Park. 2005.
- Historic Context Report and DPR 523 Form, Lauer Dam. Prepared for Far Western Anthropological Research Group. 2005.
- Edwards AFB Phase II. Prepared for Tetra Tech. 2004–On Going.
- Historic Properties Inventory and Evaluation: AC Transit East Bay Bus Rapid Transit Project. Prepared for Parsons Transportation Group. 2004–2006.
- Historical Resources Inventory and Evaluation Report of the Adams Auxiliary and Adams Main Powerhouses, Owens River Gorge, Mono County, California. Prepared for City of Los Angeles Department of Water and Power. 2004–2005.
- Historic Resources Evaluation Report: The Lewelling Boulevard/East Lewelling Boulevard Improvement From Hesperian Boulevard to Mission Boulevard (SR-185) Eden Township, Alameda County, California. Prepared for URS Corporation. 2004–2005.
- Historical Resources Evaluation Report, Finding of Effect Report, Historic American Engineering Record Documentation: Replacement of the Somersville Road Bridge over Contra Costa Canal (28C0201) City of Antioch, Contra Costa County, California. Prepared for T.Y. Lin International and City of Antioch. 2004–2005.
- Historic Resources Inventory and Evaluation Report for Placer Ranch, Roseville, California. Prepared for URS Corporation. 2004.
- Historic Resources Report: Lower Owens River Channel Obstruction Survey, Owens Valley, California. Prepared for Montgomery Watson Harza and Far Western Anthropological Research Group. 2004.
- Marin Rod and Gun Club Pier. Prepared for URS Corporation. 2004.
- Historic Resources Evaluation Report for Commerce Avenue Extension Project, Concord, California. Prepared for HDR Engineering. 2004.
- Historic Property Survey Report for Bridge 23C183 on Abernathy Road at Ledgewood Creek, Solano County, California. Prepared for Far Western Anthropological Research Group. 2004.
- National Register of Historic Places Nomination and Historic American Buildings Survey for Senior Officer's Quarters District, Yerba Buena Island, and Buildings 1, 2, and 3, Treasure Island, San Francisco. Prepared for US Navy. 2003–On Going.

- Historic Resources Evaluation Report for the State Route 1 Widening Project, Santa Cruz, California. Prepared with Parsons Transportation for Nolte Engineering and Santa Cruz Transportation Commission. 2003–In Progress.
- Phase II Cultural Resources Evaluation of Selected World War II and Cold War Era Buildings and Structures, Edwards Air Force Base, California. Submitted to U. S. Army Corps of Engineers, Sacramento District. Prepared with TetraTech, Inc. for Air Force Flight Test Center, Base Historic Preservation Office, Edwards Air Force Base, California. 2003–2006.
- NAWS China Lake Mining Sites Preliminary Survey, Twenty Mule Team Route, and New York Mine, and 69 mines at China Lake. Prepared for Epsilon Systems Inc. 2003–2006.
- Historic Resources Evaluation Report: Highway 101 HOV Lane Widening and Improvements Project, Steele Lane in Santa Rosa to Windsor River Road in Windsor, Sonoma County. Prepared with Caltrans, District 4 for Parsons Transportation Group. 2003–2005.
- Historic Resources Evaluation Report: Highway 101 HOV Lane Widening and Improvements Project, Old Redwood Highway, Petaluma to Rohnert Park Expressway, Rohnert Park, Sonoma County, California. Prepared for Parsons Transportation Group, Caltrans. 2003–2005.
- Design Guidelines and Project Considerations Regarding Santa Clara Depot and San Jose Diridon Station as Historic Properties for the Peninsula Corridor Joint Powers Board Caltrain Santa Clara to San Jose Corridor Improvement Project. Prepared for HNTB Corporation. 2003–2004.
- California Park Hill Railroad Tunnel Project Historical Resources Inventory and Evaluation Report. Prepared for URS Corporation and Marin County. 2003–2004.
- Historic Resources Evaluation Report: Waterfront Drive Extension Project, Eureka, Humboldt County, California. Prepared with North State Resources, Inc. for City of Eureka and California Department of Transportation. 2003–2004.
- Historic Properties Survey, AFC, City of San Francisco Potrero Energy Facility. Prepared for CH2M Hill Corporation. 2003–2004.
- Historic Resources Evaluation Reports for Bridge Replacement Project of Picachio Road Bridge in Cayucos, San Luis Obispo County, California. Prepared for T.Y. Lin International. 2003–2004.
- Historic Resources Inventory and Evaluation, Oroville Division of State Water Project. Prepared for California Department of Water Resources and Sonoma State University Anthropology Center. 2003–2004.
- Historic Resources Evaluation Report for Bridge Replacement Project of Main Street Cambria Bridge in San Luis Obispo County, California. Prepared for T.Y. Lin International. 2003–2004.

- Historic Resources Inventory and Evaluation Report of Sacramento Regional Transit Folsom Boulevard Rail Maintenance Facility Project City of Sacramento, Sacramento County, California. Prepared for EIP Associates. 2003–2004.
- Historical Resources Inventory and Evaluation Report for Enloe Medical Center Master Plan Environmental Impact Report, Chico, California. Prepared for Pacific Municipal Consultants. 2003–2004.
- Historic Resources Evaluation Report. Lagoon Valley Project, Vacaville, California. Prepared for EIP Associates. 2003–2004.
- Historic Resources Evaluation Report for Bridge Replacement Project of Moonstone Beach Drive in San Luis Obispo County, California. Prepared for T.Y. Lin International. 2003–2004.
- Placerville Waste Treatment Preliminary Assessment. Prepared for Robertson-Bryan, Inc. 2003.
- Historical Resources Evaluation Report, Stone Coal Road Bridge (03C0092) Over the Pit River in Modoc County. Prepared for North State Resources, Caltrans. 2003.
- Via Marisol Bridge Replacement and Rehabilitation Bridge 53C-0053, Via Marisol, Los Angeles County, California. Prepared for Parsons Transportation Group. 2003.
- Historic Resources Evaluation Report: Spreckels Boulevard Bike Path Project, Monterey, California. Prepared for Denise Duffy and Associates. 2003.
- Letter Report Regarding Historic Architectural Resources in Area of Potential Effects for Proposed Sacramento Regional Transit Bus Maintenance Facility McClellan Park, Sacramento, California. Prepared with EIP Associates for Sacramento Regional Transit. 2003.
- Letter Report Regarding Federal Communications Commission Section 106 Compliance for Verizon Wireless' Antenna Projects at 11 Grove Street, Watsonville, California. Prepared for URS Corporation. 2003.
- Historic Property Survey Report, Historic Resources Evaluation Report, and Finding of Effect, Elk Grove Boulevard Improvement Project, City of Elk Grove, Sacramento County, California. Prepared for City of Elk Grove. 2003.
- Mitigation, Camellia Cottage, University California Davis Medical Center, Sacramento. Prepared with William B. Dewey for EIP Associates. 2003.
- Historic Resources Inventory & Evaluation Report: Reclamation District 348 Levee Rehabilitation Project, San Joaquin County, California. Prepared for Hanson Engineering. 2003.
- Historic Property Survey Report and Historic Resources Evaluation Report and Finding of Effect for Beverly Boulevard Over Glendale Boulevard Project, Bridge 53C0045, Los Angeles, California. Prepared for CH2M Hill for City of Los Angeles. 2002–2006.

- Historic Resources Evaluation Report for Proposed Improvements to Interstate 680 - State Route 4 Interchange, Contra Costa County, California. Prepared for URS Corporation. 2002–2004.
- Historic Resources Evaluation Report, Historic Property Survey Report and Finding of Effect, Glendale-Hyperion Bridge, Los Angeles, California. Prepared for CH2M Hill. 2002–2004.
- Historic Context Report, Roadway Bridges in California, 1936 to 1959, and Statewide Inventory and Evaluation of all pre-1960 Metal Truss, Movable, and Steel Arch Bridges. Prepared with Pacific Legacy for Caltrans. 2002–2004.
- Statewide Historic Context and Inventory and Evaluation of all pre-1960 Concrete Arch, Timber Truss, Concrete Truss, and Suspension Bridges and Evaluation of Los Angeles Monumental Bridges. Prepared with Far Western Anthropological Research Group for Caltrans. 2002–2004.
- Historical Resources Evaluation Report: I-580 Eastbound HOV Lane Project Hacienda Drive to East of Greenville Road, Alameda County, California. Prepared with Parsons Transportation Group for Alameda County Transit Authority. 2002–2003.
- Historic Resources Evaluation Report for USBR's Friant-Kern Canal. Prepared for URS Corporation. 2002–2003.
- Commodore Schulyer F. Heim Memorial Bridge Project. Prepared for CH2M Hill, Inc. for the Port of Los Angeles. 2002–2003.
- Historic Resources Evaluation Report and Finding of Effect, First Street Bridge and Street Widening Bridge 53C-1166, Los Angeles. Prepared for Parsons Transportation, Inc. 2002–2003.
- Historic American Buildings Survey of Four Buildings, China Lake Propulsion Laboratory, NAWC China Lake. Prepared with Epsilon Systems, Inc. for Navy. 2002–2003.
- Historic Resources Evaluation Report for Proposed Improvements to Highway 12 Between Interstate 80 and Napa Junction, Solano County, California. Prepared for Caltrans. 2002–2003.
- Historic Resources Evaluation Report for the Proposed Improvements to Highway 101 Between Eureka and Arcata, California. Prepared for URS Corporation. 2002–2003.
- Historic Resources Evaluation Report for USBR Resources within the Millerton Recreation Management Plan. Prepared for URS Corporation. 2002–2003.
- Historic Properties Survey, AFC, Salton Sea Geothermal Project. Prepared for CH2M Hill Corporation. 2002–2003.
- Historic Property Survey and Evaluation for the Humboldt Road at Bruce Avenue Improvements Project, Chico, California. Prepared for City of Chico. 2002–2003.
- Historical Resources Evaluation Report, Circle Bridge, Mosquito Ridge Road, California Forest Highway 96, Tahoe National Forest. Prepared for Department of Agriculture, US Forest Service. 2002.

- Historic Architectural Survey and Evaluation Report for the Mossdale Landing Urban Design Concept and Gold Rush Boulevard Project. Prepared for EDAW, Inc. and Pacific Union Homes. 2002.
- DPR 523 Primary Form for Historic Buildings and Structures in the Study Area for Silicon Valley Power's Pico Power Project in Santa Clara, California. Prepared for Foster Wheeler Environmental. 2002.
- Preliminary Assessment of Historic Significance of Twenty-one Buildings in the Vicinity of the Exxon Mobile Refinery Cogeneration Project, Torrance, California. Prepared for URS Corporation. 2002.
- Historic Resources Evaluation Report of Shinn Road Bridge, Los Angeles County, California. Prepared with Parsons State and Municipal Division, for County of Los Angeles Department of Public Works. 2002.
- Historical Resources Evaluation Report, Hayfork Creek Bridge, 5C0183, Hayfork, Trinity County, California. Prepared for Hughes Environmental Consultants. 2002.
- Historic Resources Evaluation Report: Congress Avenue Curb and Gutter, Sidewalk Improvement Project, Monterey County, California. Prepared for Caltrans and City of Pacific Grove. 2002.
- Historic Resources Inventory and Evaluation, University of California Davis Medical Center: Sacramento County Hospital Buildings. Prepared for EIP Associates. 2002.
- Historic Architectural Inventory and Evaluation Report on US395 Clear Acre Lane/Sutro Street Interchange Complex, Reno, Nevada. Prepared for CH2MHill. 2002.
- Evaluation of 25-Mile Segments of the Union Pacific and Southern Pacific Railroads in Los Angeles County, California. Prepared for Alameda Corridor East Authority. 2002.
- Historical Resources Evaluation Report South Midtown Area Revitalization and Transportation Plan (SMART). Prepared for EIP Associates. 2002.
- Historic Architectural Survey Report for Conversion of a 2-Lane Highway to a 4-Lane Expressway on State Route 119 Between Cherry Avenue and Tupman Road, Kern County. Prepared with Far Western Anthropological Research Group for Caltrans. 2002.
- Consultation to Caltrans District 4 for Section 106 Mitigation Measures, Carquinez Bridge Replacement Project. Prepared with Parsons Transportation Group for Caltrans. 2001–2004.
- Historic Architectural Survey Report for Highway 4 Widening Project, Contra Costa County. Prepared for Parsons Transportation Group. 2001–2004.
- Historic Architectural Survey Report and Finding of Effect, Larkin Street Bridge Earthquake Retrofitting Project, Monterey, California. Prepared for Boyle Engineering and Denise Duffy & Associates. 2001–2004.
- Historic Resources Evaluation Report, Silicon Valley Rapid Transit Corridor EIS/EIR Alternatives. Prepared for Earthtech. 2001–2003.

- Historic Resources Evaluation Report, NID Lower Cascade Canal-Banner/ Cascade Pipeline Project, Nevada County, California. Prepared with Stantec Consulting for Nevada Irrigation District. 2001–2003.
- Nomination to the National Register of Historic Places, Jackson Fay Brown House, Dixon, California. Prepared for Parsons Transportation Group. 2001–2002.
- Historic Architectural Survey Report and Finding of Effect, Caltrain Extension to Transbay Terminal Joint Development Project. Prepared for DeLeuw Cather Inc. 2001–2002.
- National Register of Historic Places Inventory and Evaluation of Previously Unevaluated World War II and Cold War Era Buildings, Parks Reserve Forces Training Area, Alameda and Contra Costa Counties. Prepared for Parks Reserve Forces Training Area. 2001–2002.
- Historic Architectural Survey Report, Jellys Ferry Road Bridge Project (8C0043), Tehama County, California. Prepared for Hughes Environmental Consultants. 2001–2002.
- Historic Properties Survey, AFC Enron Roseville Energy Facility. Prepared for URS Corporation. 2001–2002.
- Historic Resources Evaluation Report, North Spring Street Bridge, Los Angeles, California. Prepared for URS Corporation. 2001–2002.
- Consultation to URS Corporation and the City of San Francisco for EIS/EIR for Development of Treasure Island and Yerba Buena Island. Prepared for URS Corporation and City of San Francisco. 2001–2002.
- Historic Resources Inventory and Evaluation Report for the Proposed Veterans Administration National Cemetery Southwest of Dixon, Solano County, California. Prepared for URS Corporation. 2001.
- Historic Resources Inventory and Evaluation Report of the Cal-Ore Telephone Company Fiber Optics Project, Klamath County, Oregon and Siskiyou County, California. Prepared for Far Western Anthropological Research Group. 2001.
- Historic Properties Report Western Area Power Administration Transmission Line Corridors: Sacramento County, California. Prepared for Far Western Anthropological Research Group. 2001.
- Bridge Evaluation of Hayfork Nine Mile Bridge (5C0067) Hyampom Road, Trinity County, California. Prepared for North State Resources on behalf of Trinity County. 2001.
- Supplemental Historic Architectural Survey and Evaluation Report for Oakland Army Base. Prepared with URS Corporation for City of Oakland. 2001.
- Historic Resources Evaluation Report, Modesto Irrigation District, Main Canal, Riverbank, California. Prepared for City of Riverbank. 2001.
- Inventory and Evaluation of Previously Unevaluated Buildings at Tooele Army Depot. Prepared with CH2MHill for Sacramento District, Corps of Engineers. 2001.
- Cosumnes Power Plant Pipeline AFC. Prepared for CH2M Hill Corporation. 2001.
- Inventory and Evaluation: National Register of Historic Places Eligibility of the Montague Depot Museum, Montague, California. Prepared for City of Montague. 2001.

- National Register of Historic Places Inventory and Evaluation of Fifteen World War II and Cold War Era Buildings and Structures at Tooele Army Depot, Tooele County, Utah. Prepared with CH2MHill for Sacramento District, Corps of Engineers. 2001.
- Historic Resources Evaluation Report of the Morrill Road Bridge Replacement Project, Riverbank, California. Prepared for City of Riverbank. 2001.
- Historic Architectural Survey Reports for the Cordelia Road Bridge (23C0037) Replacement and the Gordon Valley Road Bridge (23C0165) Replacement, Solano County. Prepared for Solano County Transportation Department. 2001.
- Historic Resources Evaluation Report of the Gunn Street Bridge Replacement Project, Kelseyville, California. Prepared for Lake County. 2001.
- Inventory and Evaluation of Historic Resources, Caltrain Electrification Project, San Francisco to Gilroy (MP 0.0 to 77.4). Prepared for Parsons Transportation Group. 2000–2002.
- Historic Resources Inventory and Evaluation, Spring Valley Water Company's Alameda Creek System, Alameda County. Prepared for San Francisco Public Utilities Commission. 2000–2002.
- Alameda County Transit M.I.S. Phase I Historic Building Survey. Prepared for Parsons Transportation Group. 2000–2001.
- San Francisco Airport Expansion-Supplementary Historic Resources Evaluations of Runway Structures. Prepared for URS Corporation. 2000–2001.
- Historic Resources Evaluation Report. Olive Trees on East Gibson Road and Bourn Drive/Court, Woodland, California. Prepared for EIP Associates. 2000.
- Historic Resources Inventory and Evaluation Report, Transmission Lines in the Stanislaus Corridor, Alameda County, California. Prepared for California Public Utilities Commission. 2000.
- Historic Architectural Survey Report. Highway Improvements State Route 65 in Lincoln, California. Prepared with EIP Associates for Caltrans. 2000.
- Historic Architectural Survey and Evaluation of Mirrassou Residences, Los Gatos, California. Prepared for Pinn Brothers Construction, Inc. 2000.
- Historic Architectural Survey Report for Grade Separations within the Alameda Corridor-East Project, Los Angeles County, California. Prepared for DeLeuw, Cather Inc. 1999–2001.
- Southeast Area Traffic System (SEATS) Project, Sacramento, California. Prepared with EIP Associates for City of Sacramento. 1999–2000.
- Highway 25 By Pass Project, Hollister, San Benito County, California. Prepared with DeLeuw Cather, Inc for Caltrans. 1998–2000.
- Historic Resources Inventory and Evaluation Report for the Sacramento-Folsom Light Rail Extension Corridor Project. Prepared for DeLeuw Cather Inc. 1998–2000.

- Historic Resource Evaluation Report: California Southern Railroad Line, San Diego, California. Prepared for Parsons Transportation Group. 1998.
- Inventory and Evaluation Projects for US Marine Corps in California (Camp Pendleton, MGACC Twentynine Palms, Marine Corps Recruit Depot). Prepared with Foster Wheeler Environmental Corporation for Marine Corp. 1997–2000.
- Historic Resource Evaluation of the Old Moccasin Powerhouse. Prepared for San Francisco Public Utilities Commission, Hetch Hetchy Water and Power. 1997–1998.
- Historic Resources Evaluation of the Naval Radio Receiving Station, Imperial Beach, San Diego County. Prepared with KEA Environmental for SWDIV. 1996–1997.
- Evaluation of National Register of Historic Places Eligibility, Rio Vista Army Reserve Center, Rio Vista, Solano County, California. Prepared for US Army Corps of Engineers, Sacramento District. 1996–1997.
- Inventory and Evaluation of the Indian Ditch System, Rush Creek, California. Prepared for Los Angeles Department of Water and Power. 1996.
- Inventory and Evaluation of Water Diversion Facilities, Los Angeles Aqueduct, Mono Extension. Prepared for Los Angeles Department of Water. 1996.
- Water Conveyance Systems in California: Historic Context Development and Evaluation Procedures, 1997-2000. Prepared for California Department of Transportation, Environmental Program/Cultural Studies Office. 1995–2000.
- Historic Architectural Survey, Sacramento Light Rail Southern Extension Project, Sacramento, California. Prepared for Sacramento Regional Transit District. 1995.
- National Register Evaluation, Sacramento Air Depot River Docks Complex. Prepared for Army Corps of Engineers, Sacramento District. 1995.
- National Register Evaluation of Mare Island Naval Shipyard. Prepared for Tetra Tech, Inc., San Francisco. 1995.
- Historic American Engineering Record, Pardee Dam Complex. Prepared with Field Documentation Services (photography) and Woodward-Clyde Consultants, Inc for East Bay Municipal Utility District. 1995.
- National Register Evaluation of World War II Buildings and Sites at McClellan Air Force Base, Sacramento County. Prepared for Woodward-Clyde Consultants, Inc. 1995.
- Evaluation of Historic Significance Under CEQA (National Register Eligibility), Nishi Farm Complex, Davis, California. Prepared for City of Davis. 1995.
- Historic Resources Evaluation Report on the Western Pacific Railroad, Sutter and Yuba Counties, California. Prepared with Woodward-Clyde Consultants for Caltrans. 1994.
- Proposed Toll Highway 125, San Diego County. Included Evaluation of Piper Ranch Irrigation Features. Prepared for Caltrans. 1994.
- Historic Architectural Resources Survey for Highway 70 Corridor Alternatives, Sutter and Yuba Counties, California. Prepared with Woodward-Clyde Consultants for Caltrans. 1993.

- Highway 58 Tier 1 Route Assessment, Kern County, California. Prepared for DeLeuw Cather. 1992–1995.
- Evaluation of Historical Cultural Resources, El Dorado Canal System. Prepared for Pacific Gas & Electric Co. 1991.
- Historic Land Use of Properties Adjacent to the Union Pacific Yards, Sacramento, California. Prepared for Dames & Moore. 1991.
- Historic Architectural Resources Survey for Highway 180 Corridor Alternatives (Rural), Fresno County, California. Prepared with Far Western Anthropological Research Group for Parsons Transportation Group. 1991.
- Fort Huachuca, Arizona: A Century of Development and Changing Missions, 1877-1977. Prepared for US Army Garrison, Fort Huachuca. 1990.
- Cultural Resources Evaluation of the Natoma Station Ground Sluice Mining Site, Folsom, California. Prepared for Folsom Historical Society and River West Development. 1989.
- Historical Overview of Land Exchange Area and the Northern Mojave Region in Cultural Resources Overview for the Fort Irwin National Training Center Expansion, San Bernardino County, California. Prepared with Far Western Anthropological Research Group for U.S. Army Engineers, Los Angeles District. 1988.
- History and Cultural Resources Study of the Sacramento San Joaquin Delta. Prepared for California State Lands Commission. 1978.
- History of California Water Resources Development and the Drought of 1975-1977. Prepared for Teknekron, Inc. 1977.

Robert R. Hren

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October 14, 2008

Summary: Over 36 years experience in the engineering, development, and construction of new power generation and other large industrial facilities, from inception through construction. Recent experience in leading and managing all aspects of new generation projects in the California regulatory environment including leading and directing a diverse team of technical, legal, environmental and commercial specialists.

Experience:

2002-Present Consultant-Project Manager

2007 and 2008: Consultant to Competitive Power Ventures for the 800 megawatt Sentinel peaking power project, focusing on water supply, related engineering oversight, permitting, contract negotiations and coordination of environmental assessments related to groundwater modeling and water supply. Performed and directed cost estimates related to water supply alternatives.

2002 through 2006: Consultant to the City of Roseville as the project manager for the development, permitting, equipment purchases, contracting and construction oversight for the Roseville Energy Park, a 160 megawatt combined cycle power facility. Directed the conceptual design, permit application and licensing efforts, major equipment purchases, ERC purchase negotiations, EPC contract negotiations, and the owner's project management oversight activities during construction. Evaluated cost and schedule claims and negotiated settlements.

1999-2002 Vice President, Development, InterGen North America

Established a new InterGen office in Houston, TX. Led the successful development and financing of the 900 megawatt Magnolia gas-fired combined cycle power plant in Mississippi. Coordinated the development activities of InterGen in the California power market, including key elements of the 220 megawatt Wildflower peaking power project. Initiated and led the development of the 900 megawatt Ocotillo power project, including negotiation of an innovative water supply agreement with the Desert Water Agency. Led the permitting, local public relations, interfaces with key local governments, regulatory agencies and the media. Established the InterGen North American office in Sacramento, CA.

- 1995-1999 Vice President, Development, InterGen (Latin America)
 Led InterGen's electric power generation development efforts in Brazil and later in Mexico. Led the successful competitive bidding for the development of both gas and coal fueled power projects in Brazil, established the InterGen Rio de Janeiro office, and interfaced with local partners, government officials and industry leaders. Led the competitive bidding by InterGen in Mexico for new power generation facilities.
- 1989-1995 Manager of Development, Bechtel enterprises, Inc.
 Participated in key roles in the development of several US private power projects, from grass-roots development through financial closing. Power projects included gas, coal and waste coal facilities located in three different states. Participated in the multi-company joint team that successfully bid for and completed the Samalayuca project, the first privately-financed power generation facility in Mexico. Led the expansion of Bechtel's power generation development into Brazil. Left this position to join InterGen.
- 1972-1989 Engineer, Contract Manager and Project Manager, Bechtel
 Power generation engineering and industrial project engineering, progressing through a series of progressively more responsible assignments on several major US and international projects.
- 1970-1972 Mechanical Engineer, Michaud, Cooley, Hallberg, Ericson & Assoc.
 Engineering and design of mechanical systems for commercial and industrial facilities.

Education:

- 1979 JD, Golden Gate University. Graduated With Honors.
- 1970 Bachelor of Mechanical Engineering, University of Minnesota. Graduated With Distinction.



Syed Tariq Hussain

Environmental/Chemical Engineer

Areas of Expertise

Risk Management Plans, Process Safety Management, PSM/RMP Audits, Process Engineering, Storm water Pollution Prevention Plans, Spill Prevention and Countermeasures Plans, OPA-90 Plans, Spill Training, TableTop Spill Exercises, Risk of Upset Studies, Engineering Evaluation and Cost Analysis, Water Wastewater Treatment Technologies, Waste Minimization Plans, Waste Water Studies, Water Chemistry Analysis and Treatment, Engineering Evaluation/Cost Analysis (EE/CA), and Project Management.

Years of Experience

With URS: 18 Years

With Other Firms: 6 Years

Education

MS/1987/Chemical Engineering/University of Kansas, Lawrence KS

MS/1981/Petroleum Refining and Petrochemical Engineering/Institute of Petroleum and Gas, Ploiesti, Romania

Registration/Certification

1994/Registered Environmental Assessor/California

Overview

Mr. Hussain is a chemical engineer with over 24 years of experience specializing in process risk analysis and hazardous chemical handling. His experience in heavy industries includes regulatory compliance projects for the oil, power, water and food sectors. His experience in the field of process engineering is expansive and diverse and includes projects such as estimating the risk of upset conditions in a power plant, a high pressure nitrogen plant and from the refrigeration process involving anhydrous ammonia.

Project Specific Experience

Senior Consultant, RMP Review, Multiple Locations, for the Marine Corp Station in Camp Pendleton.

MCB Camp Pendleton operates multiple water waste water treatment plants at the base in California. Each of the nine plants was equipped to handle Chlorine injection for disinfection, both 155 pound and 1 ton chlorine cylinders were used. The quantity of chlorine stored at each site exceeded the threshold for both federal and State risk management programs (RMP/CalARP). The existing RMP program required a five year review that was the focus of the project. Tasks completed included an audit of the program, some revisions in the Process Hazard Analysis (PHA), a review of the Off-site Consequence Analysis (OCA) and a Seismic Evaluation. Significant changes in the treatment process required the update and review of the safety plans.

Project Manager and Lead Auditor, RMP/PSM Review/audit, Multiple Locations, for Ralphs Distribution Centers in California.

OSHA Instruction CPL 2-2.45A guidance was used for performing the PSM compliance audit and the EPA document 550-B99-008: Guidance for Auditing Risk Management Plans/Programs under Clean Air Act Section 112(r) was used for the RMP portion of the audit. The completed compliance audit checklists are incorporated as appendices to a summary report. The compliance audit reviewed each of the elements of the PSM and RMP programs in place at the Ralph's Compton Distribution Center. Prior to starting the audit for 2006, the team reviewed the findings of the previous audit (2003) and the status of implementation of the previous audit findings.

Lead Consultant, RMP/CalARP for Aqueous Ammonia, Magnolia Power Project, Burbank, California. A new Power unit was being added on to the existing plant at the Magnolia Power Plant located in Burbank California. Aqueous ammonia was required for emission control



from the turbine. Tasks included a PHA, OCA and a seismic evaluation. The RMP was approved before the deadline for project startup.

Lead Consultant/Section Writer for Power Plant AFC. Prepared sections for power plant AFCs including hazardous waste, hazardous chemicals, worker health and safety, and acutely hazardous chemicals risk analysis. Power plants included, Magnolia, Panoche, Bullard, Larkspur, Indigo, Niland, HECA, CPP in Anaheim, Colton and others. The sections were prepared in strict compliance with California Energy Commissions guidelines and was carried through to certification of the application.

Project Manager for several RMP projects for new power plants. Wildflower Energy LP installed several peaked units in San Diego County and Riverside. All the plants used aqueous ammonia for emission controls. As part of the permitting program the RMP/CalARP had to be completed prior to the issuance of the permit to operate. URS successfully managed this task and the RMP was completed and approved in record time.

Lead Consultant for an RMPP project for Rohm & Haas. The study included evaluation of risk posed by the use of vinyl acetate within the facility. Project included a Hazard and Operability study (HazOp), off-site consequence analysis and seismic study of the equipment handling the vinyl acetate

Project manager for several RMP and Process Safety Management programs for multiple food sector clients, including Sunkist Growers, Likes Pasco, Albertson's, and American Stores. All RMPs were related to anhydrous ammonia used in refrigeration and chlorine used in water treatment. Process risk evaluation and PHAs were the major component of both regulatory driven programs. A what-if analysis designed by the IIAR was used to develop release scenarios and suggest improvement in process safety for the ammonia process. A HazOp was used for the PHA for other chemicals involved in the study including chlorine.

Risk Analysis for an Operating Refinery: Evaluated the environmental risks presented by an operating oil refinery located in Long Beach California for an insurance underwriter. A separate study included the environmental risk evaluation for a pipeline used in the transfer of petroleum products from the refinery to a marine terminal. This evaluation included a study of past problems, existing concerns and an evaluation of future risk based on these evaluations. Consideration of age of equipment safety measures, operating and maintenance procedures was required for the study.

Lead Consultant for a RMP/PSM project for sixteen distribution centers for Albertson's. These distribution centers are located throughout the United States. The grocery distribution centers used an ammonia refrigeration system that required the RMP and PSM. The project included a detailed Process Hazard Analysis (PHA) for the ammonia system. The PHAs were based on a What-if Analysis recommended by the International Institute of Ammonia Refrigeration (IIAR).



Lead Consultant for a hazardous waste minimization study and audit for SDG&E facilities in San Diego, California. Installation included power plants, gas pipeline booster stations, service centers, and vehicle maintenance shops. Evaluating SDG&E's compliance with California's SB-14 regulation was also a part of this project. The Project led to a comprehensive understanding of the SD&G operations.

RMP Task Manager\Process engineering support for multiple wastewater treatment plants operated by the Chino Basin Municipal Water District. The Hazop study conducted for facilities using chlorine and sulfur dioxide was part of the RMPP and PSM studies for the wastewater treatment plants.

Hazop study Task Manger for various bulk oil handling facilities operated by Pennzoil. The plants were located both in southern and in northern California. The completed Hazop study was included in the OPA-90 oil spill plans.

Project Manager for an RMPP project involving the handling and storage of ammonia, chlorine, sulfuric acid, nitric acid, and TDI. The administrative agency was San Bernardino County Health Department. A Hazop study was conducted for the equipment forming part of each chemical operation. In addition a Fault Tree Analysis was conducted using a maximum of two successive faults that could lead to a release from the facility. The scenarios selected for off site consequence analysis were derived from the Fault Tree Analysis.

HazOp Team Leader for various Unocal facilities in California and Washington. These facilities included bulk oil storage, lube oil blending, and product storage and distribution centers. Some of the facilities involved off shore loading/unloading of petroleum products. The Hazop study was included in the OPA-90 and other oil spill plans for the individual facilities.

Hazop Team Leader for an RMPP project for AMVAC Chemicals in Los Angeles, California. Apart from chlorine the study included various pesticides being manufactured at the facility. The administrative agency involved in the project was the L.A. County Fire Department.

Program Manager for multi-disciplinary projects for the Naval Air Weapons Station at Point Mug, California. Projects include risk analysis for handling hazards chemicals on site, groundwater remediation system's efficiency enhancement, AB2588 modeling and risk analysis, replacement studies for Halon 1301 fixed fire extinguishing system, spill prevention plans, and pollution prevention plans.

Project Manager, FAA Water Treatment Study, Multiple Locations, for Jacobs Engineering. URS under contract to Jacobs Engineering (Jacobs) completed a review of the existing water based heating and cooling system at two ARTCC sites. As part of the review the URS/Jacobs team inspected the equipment, reviewed the chemical treatment of the water systems and reviewed the historical data on operation and maintenance issues. Water quality and water treatment issues plays an important role in water based climate control systems



therefore the review of the two sites focused on water treatment contractors their methodology, and occurrence of systemic problems manifested by uncontrolled release of water from the pipes and equipment breakdowns. Typical operations and maintenance problems developing in such water based systems include equipment and piping corrosion, biofouling and scaling. All these problems lead to loss of system efficiency and system breakdown and damage. URS presented a report of findings including recommendations for corrective action and a standardized protocol for water treatment.

Project Manager, Navy Southwest Division, CLEAN Contract. Project manager on the Navy's first Comprehensive Long-term Environmental Action Navy (CLEAN) program, which started in the early nineties. This program was one of the largest DoD hazardous waste management contracts at that time. The contract covered most of the Naval and Marine Corp bases between Los Angeles and San Diego to the south, and the New Mexico border to the east. Projects include water, wastewater studies and design of water treatment technologies. Technologies included soil vapor extraction, in-situ chemical treatment, UVB well installation and issues related to screen clogging and scaling. Tested various technologies for mechanical and chemical treatment for proper well functioning.

Program manger for Naval Base Ventura County at Point Mugu and Port Hueneme, California. This multi-year, multi-million dollar program has been managed by Mr. Hussain for the past 8 years under a GSA contract. Projects include: Revision of the SPCC plan, Facility audit of SPCC related covered processes, updating the OPA-90 plan, conducting spill drills and tabletop exercises, drinking water studies, sewer hydrogen sulfide generation issues and operation and maintenance of waste water and drainage systems. Evaluating treatment technologies for water and wastewater treatment. For the NEX remediation system horizontal wells were installed for multiphase extraction. After one year of operation the well were silted and the screens clogged. Designed various treatment options to correct the problem, including chemical treatment, mechanical cleaning, and prevention of microbiological fouling.

Project Manager for Wastewater discharge Issue, Carlsbad, California. Assisted Invitrogen, a pharmaceutical company in Carlsbad, California in obtaining their wastewater discharge permit from Encina Wastewater Treatment Facility (Encina). The plant was being moved from Maryland and Encina had imposed strict conditions on establishing discharge parameters prior to issuing a discharge permit. We used data from the Maryland plant and completed a completed chemical mass balance analysis and formulated a model to demonstrate discharge ranges for Encina, which issue the permit on the basis of our analysis.

Project Manager, UOP in Orange County, California. The facility was having difficulty in demonstrating to the Orange County Sanitation District that slugs of certain chemicals were not being discharged from the facility. URS conducted a mass balance analysis of the facility operations and formulated a model to demonstrate compliance. In phase



II of the project evaluated treatment technologies for water treatment to meet stricter limits on chemical concentrations.

Project Manager, Various Industries: Water Treatment Design and Implementation. Designed and implemented environmental compliance protocol for heavy industry for water treatment and discharge. Industries include Ralphs Distribution Centers, Tidelands Oil Production Company, Santa Anita Enterprises, GE Jet Engine Services, San Diego Gas & Electric and others. These protocols included compliance with wastewater discharge into the sanitary sewers.

Project manager: Commercial Racetracks. Managed wastewater and stormwater compliance issues arising from large racetrack operations. These included an evaluation of storm water and wastewater discharge issue from Hollywood Park, Santa Anita and Del Mar. Evaluation of complex stormwater issues and negotiations with RWQCB on implementing BMPs for stormwater pollution control for Santa Anita racetracks. These two projects and other smaller projects attacked the heart of the problem surrounding the implementation of stormwater pollution prevention issue for farms and agricultural sites.

Project Manager, Removal Action Santa Ana, California. Managed a turnkey Removal Action project in Santa Ana, California. Since the site was involved in litigation, National Contingency Plan (NCP) requirements were followed to prepare for and execute the Removal Action. This included the preparation and regulatory approval of an EE/CA prior to implementation. The Removal Action involved the excavation, removal and disposal of heavily contaminated soil from the site. The Removal Action became necessary because the concentrations of halogenated solvents in a portion of the site were posing an imminent threat to groundwater.

Expert Witness, McColl Site, Fullerton CA, Multiple Oil Companies. Served as an expert witness on the McColl superfund site in California for two major oil companies. The opinions formed were regarding the origins of the McColl waste and the various chemical reactions taking in the pits, where refinery wastes were deposited over forty year ago. We took what was the chemical composition of the original waste and compared with what existed today. Modeled the chemical reactions taking place over 40 years and their interaction with soil conditions and came to the present day chemical compositions. This analysis confirmed what was discharged from the refineries and traced their origin. For another oil company conducted research on the possible chemical reactions taking place in the waste material deposited at the McColl Superfund site in California. The waste deposited in the pits originated from refinery operations during the second world war. Research was based on the type of refinery operations from which the waste could have originated and the nature of chemical reaction that could have taken place in the pits over a span of forty years. Other factors contributing to the nature and types of reactions were also considered.

Feasibility Study Project Manager, Shell Oil. Feasibility Study Project Manager of a Federal Superfund Site in Southern California. Project



includes extensive treatability studies for waste, soil, groundwater and NAPL. The feasibility of excavating soil impacted with high concentrations of VOCs was also evaluated for the site.

Project Manager, GE Jet Engines, Ontario, California. Project manager for a large remediation project in Ontario, California. Successfully piloted the project through the regulatory process and obtained approval of the Feasibility Study (FS), Remedial Action Plan (RAP) and Remedial Design. The RAP, as approved by the Department of Toxic Substances Control (DTSC) recommended soil vapor extraction as the remedy for impacted soil. After a detailed pilot test to obtain physical and operating parameters for the site a full-scale soil vapor extraction system was installed at the site. The installed system has been successfully operated for over one year and is meeting or exceeding all project objectives.

Engineering Manager, HP Site in Palo Alto, California. Engineering manager for a multimillion dollar RI/FS project in Northern California. Duties include coordination of all engineering activities, preparation of a feasibility study for site cleanup, design, installation, operation and maintenance of Interim Remedial Measures which includes soil vapor extraction, treatment systems and groundwater pump and treat systems.

Technical Expert, Hollywood Park, Los Angeles, California. Recent projects included an evaluation of storm water and wastewater discharge issue from racetracks for Hollywood Park. Evaluation of complex stormwater issues and negotiations with RWQCB on implementing BMPs for stormwater pollution control for Santa Anita racetracks. These two projects and other smaller projects attacked the heart of the problem surrounding the implementation of stormwater pollution prevention issue for farms and agricultural sites.

Professional Societies/Affiliates

American Institute of Chemical Engineers

American Geophysical Union

Institute of Petroleum, London, England

Publications

Hussain, S. Tariq and Vitthal S. Hosangadi, Exploiting Natural Processes for the Enhancement of Remediation. Presented at The International Symposium on Energy and Environmental Management & Technology. Newport Beach, California, December 1996.

V. Guvanasen and S. Tariq Hussain, Modeling As A Design Tool for Remediation Environmental Protection, December 1993.

V. Guvanasen and S. Tariq Hussain, Modeling - a tool for the design of Remediation Schemes. Presented at the 85th Annual Meeting and Exhibition of the Air & Waste Management Association. Kansas City, Missouri, June 21-26, 1992.



Hussain, S. Tariq, Optimal management of large stream-aquifer systems. Presented at the Spring 1987 meeting of the American Geophysical Union in Baltimore, MD. Transactions, AGU Vol. 68, No. 16, April 1987.

Hussain, S. Tariq, M. Heidari and T. McLain, Calibration of ground water flow model for N.W. Kansas for KGS open-file report.

Shaukat, Nadeem, T. McLain, S. Tariq Hussain, and Y. Tan, Saturated thickness decline map in N.W. Kansas for the GMD#4. KGS open-file report #87-19.

Hussain, S. Tariq, Kinetic study of the CO-NO reaction system. M.S. Thesis, University of Kansas, Lawrence, KS.

Hussain, S. Tariq, Design of a Catalytic Reforming Unit. M.S. Thesis, Institute of Petroleum and Gas, Ploesti, Romania.

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2020 East First Street, Suite 400

Santa Ana, CA 92705



David A. Kisner

Project Biologist

Areas of Expertise

- Birds of the Western United States
- Site Assessment and Monitoring of Endangered Birds of California
- Habitat Assessment
- Wildlife Survey
- Botanical Assessment
- Permit Compliance
- Construction Monitoring

Years of Experience

With URS: 4 Years

With Other Firms: 12 Years

Education

MS/Ecology/2004/San Diego State University

BA/Biology, Evolution, & Ecology/1994/University of California, Santa Barbara

Specialized Training

- OSHA 40-Hour HAZWOPER

Overview

Mr. Kisner is a wildlife biologist with extensive experience working with threatened and endangered birds within southern California coastal and riparian areas. David completed his Master's in Ecology through San Diego State University looking at the impact of the non-native Giant Reed (*Arundo donax*) on the riparian bird community. While in San Diego, David worked with the U.S. Geologic Survey for four years conducting presence/absence and nest monitoring surveys for Least Bell's Vireos and Southwestern Willow Flycatchers. David has a broad background in biology and has also worked for Santa Barbara County Planning and Development as a Biologist and Planner. David is currently involved with a large-scale soil remediation and restoration project and managing the environmental documents associated with power development projects in Southern California.

Project Specific Experience

Project Management

- Wildlife Task Manager for the Chevron Guadalupe Restoration Project – Organize, coordinate, and oversee wildlife monitoring and permit compliance of 2,700 acre soil remediation site. Communicate with On-site Environmental Coordinator regarding restoration, monitoring, coordinate operations with wildlife monitors, and reporting of sensitive species found on site. Oversee monitoring efforts for Western Snowy Plovers, California Red-legged Frogs, and numerous sensitive species. February 2006 to present.
- Biology Task Lead for Hydrogen Energy California, Kern County – Managed and authored section for environmental document assessing biological impacts associated with 315 acre power plant and associated linears. March 2008 to present.
- Biology Task Lead for Sentinel Energy Project, Riverside County – Managed and co-authored section for environmental document assessing biological impacts associated with 37 acre power plant and associated linears. January 2007 to present.
- Biology Task Lead for San Gabriel Generating Station, San Bernardino County - Managed and co-authored section for environmental document assessing biological impacts associated with 17 acre power plant and associated linears. February 2005 to present.
- Delhi Sands Restoration for SCE - Organized and oversaw restoration of a half-acre site for the endangered Delhi Sands Flower-loving Fly. April 2006 to present.
- West Figueroa Bird Usage Study for the City of Santa Barbara – Conduct winter, spring, and breeding bird surveys to determine



species usage and habitat values prior to proposed creek enhancement and native plant restoration efforts. January 2006 to July 2006.

- Designated Biologist for SCE Mountainview Power Project – Organized and oversaw biological monitoring of 18 mile gas line and power plant construction site. Ensured construction was conducted according to permit conditions and worked with client and regulatory agencies to address biological concerns. April 2004 to April 2006.
- Project Manager and Lead Biologist for CalTrans SR 118/23 Widening Project – surveyed 5 miles of riparian habitat for Least Bell's Vireo and Willow Flycatchers. Managed project, contract biologist, and report production. 2004.

Sensitive Species Survey Experience

Least Bell's Vireo (*Vireo bellii pusillus*)

Over 350 positive contact hours

- Santa Clara and Ventura Rivers, Ventura County – Conducted presence/absence surveys for vireos and mapped territories. 2004 and 2005.
- San Timeteo River, Riverside County - Conducted presence/absence surveys for vireos and mapped territories. 2005.
- San Luis Rey River, San Diego County – Conducted area searches for Least Bell's Vireos. Monitored nest for fledging success, predation, and parasitism by Brown-headed Cowbirds. Banded nestlings with color bands. 2000 to 2003.
- Santa Barbara, Ventura, and Los Angeles Counties - Conducted focused surveys for Least Bell's Vireos. 1998 and 1999.

Southwestern Willow Flycatcher (*Empidonax traillii extimus*)

Over 175 positive contact hours

- San Timeteo River – Riverside County - Conducted presence/absence surveys for vireos and mapped territories. 2005.
- Camp Pendleton, San Diego County – conducted area censuses for Willow Flycatchers and followed individuals and pairs through the breeding season. 2000 and 2001.
- Santa Barbara, Ventura, and Los Angeles Counties - conducted focused surveys for Willow Flycatchers. 1999.
- Vandenberg Air Force Base, Santa Barbara County – conducted surveys for Willow Flycatchers and monitored nest for success, predation, and parasitism by Brown-headed Cowbirds. 1998.

Belding's Savannah Sparrow (*Passerculus sandwichensis beldingi*)

Over 50 positive contact hours

- Tijuana River Estuary, San Diego – conducted passive surveys in the Tijuana River Valley in conjunction with sound study. 2002.
- Goleta Slough, Santa Barbara – conducted passive surveys in and around Goleta Slough to determine habitat usage. 1998 and 1999.

- Goleta Slough, Santa Barbara – assessed population dynamics and habitat selection of the Belding's Savannah Sparrows. 1993 and 1994.

Western Snowy Plover (*Charadrius alexandrinus nivosus*)

Over 130 positive contact hours

- Guadalupe Dunes, San Luis Obispo County – Assisted with nest searching and monitoring. July 2006.
- Coal Oil Point, Santa Barbara County –monitored Snowy Plovers, educated the public, and enforced beach use regulations. Recorded human, dogs, and other wildlife's affects on the plovers. November 2005 to February 2006.
- Guadalupe UNOCAL Oil Field Response Monitoring, Santa Barbara and San Luis Obispo Counties – searched for and monitored Snowy Plover nests. 1994 and 1995.
- McGrath Beach Natural Resource Damage Assessment, Ventura County – searched for and monitored Snowy Plover nests. Recorded the number, behavior, and localities of wintering Snowy Plovers. 1994.

California Least Tern (*Sterna antillarum browni*)

Over 30 positive contact hours

- Mission Bay Bird Usage Study, San Diego County – passive observation of Least Terns foraging and breeding within the study area. 2000 to 2002.
- McGrath Beach Natural Resource Damage Assessment, Ventura County – searched for and monitored Least Tern nests. Surveyed the beach, river mouth, and coastal dune pond for birds and signs of habitat damage. 1994.

California Red-legged Frog (*Rana aurora draytonii*)

Over 20 positive contact hours

- Guadalupe Restoration Project, San Luis Obispo County – assisted with quarterly eye-shine surveys, egg mass surveys, tadpole sampling, and day-time work zone clearances; adults, yearlings, tadpoles, and egg masses seen. March 2006 to present.
- *Rana* Capture and PIT Tag Training from Dr. Galen Rathbun. Training involved approximately 30 minutes of lecture followed by over 3 hours of field work, where participants practiced finding and capturing bullfrogs by hand, taking basic metrics (sex, age-class, total length, weight), toe-clipping, and PIT tagging. October 2006.
- Ventura River, Ventura County – assisted with USFWS protocol CRLF Surveys along the Ventura River. Captured numerous Bullfrogs located with the main Ventura River channel. 2004.
- Gaviota State Beach, Santa Barbara County – day time habitat assessment; adults and egg mass seen. 2004.

Desert Tortoise (*Gopherus agassizii*)

2 positive contact hours



- Johnson Valley Energy Project – Conducted protocol surveys on portions of 8,000 acre project site looking for desert tortoise, sign, tracks, scat, and burrows. Collectively, crew found five individuals; each was passively measured and burrows were assessed.

General Bird Surveys, Wildlife Surveys, and Habitat Assessment

- Santa Barbara Airport Bird Usage Studies – Conducted regimented observations of bird usage of control and experimental tidal basins to determine potential strike hazards, assessed breeding bird habitat and directed vegetation removal to minimize nesting within certain areas, located and monitored nests within study areas in order to ensure there were no “take” under the Migratory Bird Treaty Act, and conducted Belding’s Savannah Sparrow and general bird observations in and around construction to ensure there were no impacts. 2004 to present.
- Lake Casitas Waterfowl and Bird Usage Study – conducted year round surveys of Lake Casitas for ducks, grebes, and other “aquatic” bird species. Surveys required determining the number, species, and location of all individuals. Fall 2004 to Winter 2005.
- Oxnard Plain Groundwater Recharge Project EIS/EIR – conducted surveys for Least Bell’s Vireo and general wildlife within the project site. Compiled historic data, recent survey results, and third party observations and assessed potential impacts to the biologic resources by proposed project activities. Made suggestions for avoidance and mitigation measure to negate and/or minimize impacts. 2005
- National Forest Avian Point Count Assessment, Santa Barbara, Ventura, Los Angeles, and San Diego Counties – conducted point counts within four Southern California National Forests; coordinated field crew and access logistics. 2003
- Camp Pendleton MAPS sites, San Diego County – captured, measured, and banded riparian birds to determine productivity and survivorship. Supervised field crew in 2003. 2000 to 2003.
- Point Loma Breeding Bird Assessment, San Diego County – conducted point counts to determine habitat usage and breeding bird composition. 2000 to 2003
- Upper Tijuana Estuary Bird Usage Study, San Diego County – conducted seasonal surveys of U.S. Navy lands within the Tijuana River Valley to determine species composition and abundance. 2002.
- Mission Bay Bird Usage Study, San Diego County – conducted monthly surveys of the basins and wetlands to determine bird species composition and abundance. 2000 to 2002.

- Santa Barbara Municipal Airport Wetland Mitigation Feasibility Study, Santa Barbara – conducted surveys of bird usage of wetland basins within Goleta Slough to predict possible outcome of restoration efforts on bird-plane interactions. 1998 to 1999.
- Summerland Greenwell Park, Santa Barbara County – developed restoration plan using native plants to restore and enhance riparian and coastal scrub communities for new wildlife preserve. 1998.
- Golden Gate National Recreation Area Brown-headed Cowbird Census, Marin County - censused 5 locations using point count survey method for birds and searched riparian areas for nests. Monitored nests for parasitism (by Brown-head Cowbirds), predation, and fledging success. Trained volunteers in nest search methodology and directed their search efforts, and resolved logistical problems. 1996.

Botanical Experience

Course work:

- CNPS Vegetation Mapping and Classification Workshop, August 2005. Participated in the rapid habitat assessments and mapped vegetation according to the Sawyer and Keeler-Wolf classification method.
- Flora of California - UC Santa Barbara, 1993 Quarter long course with laboratory and field trips covering the plant families of California taught by Dr. Bob Haller. Focus of course involved keying plants to species using A Flora of California by Philip Munz (1974).
- Flora of California - Santa Barbara City College, 1998. Quarter long course with laboratory covering the plant families of California taught by Mr. Al Flinck. Focus of course was to key plants to species using The Jepson Manual, Higher Plants of California (1993).

Field Experience:

- Johnson Valley Energy Project – Conducted botanical surveys on portions of 8,000 acre project site looking for rare and sensitive plant species.
- Guadalupe Restoration Project – Conduct active and passive restoration assessments and assist with population censuses for State Threatened surf thistle and beach spectaclepod, and Federally Endangered and State Threatened La Graciosa thistle. Over see construction activity to ensure minimization of impact and avoidance of sensitive species. February 2006 to present.
- Santa Clara River Habitat Mapping - Conducted several rapid assessments and mapped vegetation according to the Sawyer and Keeler-Wolf classification method along the Santa Clara River from



the estuary to Newhall Ranch, including the Piru Creek tributary in Fall 2005.

- Mountainview Power Project – Conducted regular surveys within and near work zones to ensure no sensitive plants were present. Restored project area after disturbance; collected quantitative data on restoration success. April 2004 to April 2006.
- Santa Barbara Airport / Goleta Slough quantitative restoration monitoring –Assisted with quantitative data collection on restoration transects through out the salt marsh and transition habitats. Spring 2004 and 2005.
- L.A. Metropolitan Water District HCP site assessment. March 2004 and 2005. Surveyed large parcels within the northern Mojave Desert for rare and sensitive plant species.
- USGS – 2000 to 2004 – conducted habitat/vegetation assessments of sensitive species breeding areas /territory. Conducted “stacked cube” qualitative vegetation assessment of restoration site.
- Santa Barbara County Planning and Development – Conducted baseline surveys of proposed project sites to determine habitat function and value. November 1996 to August 1999.
- Northeastern Washington Timber Management Project – Conducted line transects through pine woodlands and mountain riparian zones in conjunction to avian survey routes. 1995.

Environmental Permitting and Regulations

- Contract Biologist/Planner, Santa Barbara County Planning and Development – processed development projects in Santa Barbara County under applicable local, state, and federal environmental and planning regulations and laws. Assessed impacts to Biologic Resources and reviewed environmental documents. March 1998 to August 1999.
- Permit Compliance, Santa Barbara County Planning and Development – ensured compliance with Conditions of Approval connected to discretionary projects. Assessed success of mitigation measures, environmental protection plans, and restoration efforts. Responded to public inquiries, complaints, and concerns. August 1997 to January 1998.
- Biologist/Planner, Santa Barbara County Planning and Development – processed development projects in Santa Barbara County under applicable local, state, and federal environmental and planning regulations and laws. Assessed impacts to Biologic Resources and reviewed environmental documents. November 1996 to August 1997.



Specialized Training

- OSHA 40-Hour HAZWOPER
December 2004
HAZWOPER annual refresher
February 2008
- Smith Systems Driver Training
September 2006
- OSHA 8-Hour Supervisor HAZWOPER Training
April 2005
- *Rana* Capture and PIT Tag Training with Dr. Rathbun
October 2006
- Loss Prevention System
March 2006
- Red Cross First Aide, CPR, & AED
July 2006
- CNPS Vegetation Mapping and Classification Workshop
August 2005

Contact Information

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James G. Kritikson
Kritikson and Associates, Inc
1997 Via Arroyo
La Verne, CA 91750

Profession

Electricity Industry Consultant

Nationality

U.S.

Key Qualifications:

- Over 30 years of experience in the electric utility industry. Responsible for corporate strategic planning and policy development, facilities expansion planning and the engineering, design and construction of utility electric facilities.
 - Significant role in the design and implementation of the California electricity market
 - Successful start-up of the California Power Exchange
 - Depositions and testimony as an expert witness on technical and policy issues in regulatory proceedings and civil proceedings.
 - Represented Southern California Edison at national, regional and state technical organizations and advanced the policies of SCE in various public arenas.
 - Familiar with regulatory rules and procedures applicable to the electricity industry, utility planning and operations and the economics of electrical utilities and electricity markets.
-

Education:

B.S.E.E., Power Major - Highest Honors
Drexel University, Philadelphia, Pennsylvania

MBA, California State Polytechnic University

Post MBA studies at P.F. Drucker Graduate Management School, Claremont Graduate School, Claremont Ca.

Mr Kritikson has held variety of management and supervisory positions at engineering-construction firms, an electric utility, and consulting firms. He has been involved in the design and construction of a variety of power plants, transmission system planning, and corporate strategic planning. He played a significant role in the start up of a large business, the California Power Exchange, has been involved in the competitive electricity market in California from it inception to present and has been successfully self employed as a consultant to a major power marketer, and an independent generation developers for the past eight years.

Employment Record:

7/96 – Present

Kritikson & Associates, Inc (In abeyance while with PHB and CalPX.)

Strategy and technical consulting in electricity market restructuring.

- Draft original CAISO and PX tariffs and operating protocols
- Draft technical-economic arguments for cost allocation FERC filings
- Expert witness testimony at CPUC
- Contract negotiations with US and foreign utilities
- Assist new generators with strategy development

7/97 – 6/2000

California Power Exchange, Pasadena, CA.

Sr. Director of Business and Regulatory Affairs

Direct CalPX rate and operating Tariff and Protocols revisions and restructuring. Policy witness for CalPX in FERC, CPUC, and CA Assembly Energy Committee proceedings related to electricity market structure.

Monitor and undertake market structure initiatives and report to CEO and/or Board of Governors.

Direct activities of outside counsel working on CalPX Tariffs and Protocols.

Director of Scheduling

Responsible for CalPX start-up activities including operating problem disposition and building and training staff and market participants with focus on scheduling.

8/96-3/97

Putnam-Hayes and Bartlett, Cambridge, MA.

Sr. Consultant

Technical consulting for proposed mergers involving east coast utilities.

8/84-7/96

Southern California Edison Company, Rosemead, CA

Manager, Transmission Planning (8 years)

Planning management and supervision responsibilities included Corporate Strategic Planning; Corporate Transmission Access Policy; Merger Operating and Planning Benefits; Development of Planning Reliability Criteria; Long range and intermediate range transmission plans; planning and licensing major interstate transmission lines and several intra-state transmission lines.

Supervisor Transmission Planning

Expansion planning of transmission systems.

Supervising Construction Design Engineer

San Onofre I Nuclear Generating Station - retro-fit design upgrade of a twenty-year old plant to meet safety requirements for return to service after an extended outage of over eighteen months.

3/78 - 8/84

C.F. Braun & Co., Alhambra, CA

Supervising Electrical Engineer TVA Hartsville-Phipps Bend Nuclear power plants

DRAFT 20081013

3/77 - 3/78	Teknekron Energy Resource Analysts Inc., Berkeley, CA <u>Senior Project Engineer</u> developed nuclear power plant security system business
3/76 - 3/77	Burns and Roe Inc., Oradell, NJ <u>Manager, Electrical, Instrumentation and Control (EI&C), Breeder Reactor Division</u>
2/75 - 3/76	Ralph M. Parsons Company, Pasadena, CA <u>Supervising Electrical Engineer</u>
9/64 - 2/75	United Engineers and Constructors, Inc., Philadelphia, PA <u>Supervising Electrical Engineer</u>

Languages:

English (speaking, reading, writing)	Excellent	Excellent	Excellent
Spanish (speaking, reading, writing)	Good	Good	Fair
Greek (speaking, reading, writing)	some		



John S. Lague

Senior Air Quality Consultant

Overview

Mr. Lague has worked continuously in the air quality consulting field since 1971. He is responsible for technical oversight of URS' air quality work and management of major projects. Mr. Lague's technical specialties include permitting and compliance support for government and industrial facilities, air quality impact assessments, air toxics evaluations, air quality and meteorological monitoring, and applied research programs.

Throughout his career, Mr. Lague has been involved primarily in permitting and compliance work for industrial facilities in the US and abroad. A large number of these projects have been conducted on behalf of the oil and gas, pulp and paper, mining and electric power generation industries. The principal elements of most permitting and compliance efforts have typically included: development of permitting strategies consistent with client objectives and regulatory constraints, negotiations with responsible regulatory agencies, participation in project design to identify opportunities to minimize pollutant emissions, preparation of permit applications and supporting technical materials, operation of pre-construction and post-permit monitoring and compliance programs, and presentation of expert witness testimony at hearings, workshops, legal proceedings and public information meetings.

Areas of Expertise

Industrial Air Quality
Permitting/Compliance
Greenhouse Gas Studies
Applied Research and Policy Development
International Consulting
Ambient Monitoring
Meteorological Analysis
Air Quality Impact and Health Risk Assessment
Air Quality and Meteorological Measurements

Education

MS/1973/Meteorology/Massachusetts Institute of Technology, Cambridge, Massachusetts
BS/1970/Physical Sciences/University of California, Davis, California

Project Experience

Power Plant Licensing and Permitting

Managed preparation of air quality permitting materials in support of the Units 3 and 4 Retool project at the Huntington Beach Generating Station operated by AES. This project involved the refurbishment of two previously retired 250 MW boiler generating units to provide critical electric power during the energy crisis of 2000/2001 in California. Because the permits for the units had been allowed to expire by the previous plant owner, refurbishment of the boilers was treated by regulatory agencies as a new source subject to New Source Review, BACT and emissions offset requirements. 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.

Managed air quality permitting activities associated with two new generating facilities proposed by InterGen North America near Palm Springs, California. Fast-track licensing by the California Energy Commission and permitting by the South Coast Air Quality Management District were required in each case. The first project was a 135 MW peaking plant based on simple cycle General Electric LM6000 turbines. The second development project would occur in two phases and would include three GE Frame 7AF turbines, first in simple cycle mode to provide 456 MW of short-term power, and then in combined cycle mode with duct burning to provide nearly 900 MW. Principal issues



included compliance with very stringent SCQAMD significant impact threshold concentrations and air quality related values (particularly visibility impacts) in four nearby Class I areas. The peaker project involved execution of Level 1 and Level 2 plume visibility screening analyses for Class I areas closer than 50 kilometers and CALPUFF modeling for the Class I areas farther than 50 kilometers from the project site.

Served as an air quality and hazardous materials consultant for a series of licensing and permitting projects conducted for Southern Energy International (now Mirant Corporation) at three large utility power plants recently purchased from Pacific Gas & Electric Co.

The projects include licensing of 500 MW combined cycle gas turbine generating systems at two of the newly acquired plants, as well as NO_x emission control retrofit projects that are being implemented at the Pittsburg and Contra Costa plants pursuant to regulations of the Bay Area Air Quality Management District. The latter project includes installation of low-NO_x burners on three large utility boilers and SCR technology on five units. Specific activities have included air quality impact assessments, accidental release modeling to evaluate risks associated with ammonia handling and storage facilities, assistance in development of project emissions offsets, preparation of Authority to Construct applications for each of the NO_x retrofit projects and Risk Management Plans for the aqueous ammonia storage and handling systems at two Mirant plants.

Managed the air quality and public health analyses for a new combined cycle power plant. Prepared the Application for Certification to the California Energy Commission (CEC) and the Permit to Construct/Permit to Operate application to the South Coast Air Quality Management District for the San Gabriel Generating Station, a 696 combined cycle addition to the existing Etiwanda Generating Station in Rancho Cucamonga, California.

Managed the air quality and public health analyses for two new natural gas-fired power plants. Prepared Air Quality and Public Health Sections for two Applications for Certification to the California Energy Commission (CEC) and managed air quality permitting activities (South Coast Air Quality Management District) associated with two new generating facilities proposed by InterGen North America near Palm Springs, California. These projects included a 135 MW peaking plant based on simple cycle General Electric LM6000 turbines and a second facility comprising three GE Frame 7AF turbines, first in simple cycle mode to provide 456 MW of short-term power, and later in combined cycle mode with duct burning to provide nearly 900 MW.

Managed the air quality and public health analyses for a geothermal power plant. For CalEnergy, provided oversight for staff conducting air toxics health risk assessment for the license application to the California Energy Commission for the proposed Salton Sea Unit 6 Geothermal Project in Imperial County, California.

Managed the air quality and public health analyses for a new power plant. On behalf of Competitive Power Ventures, currently managed



preparation of the Air Quality and Public Health Sections for an Applications for Certification to the California Energy Commission (CEC) and Permit to Construct/Permit to Operate application to South Coast Air Quality Management District in support of an 815 MW (8 x GE LMS100 CTG) peaker project near Palm Springs California

Managed the air quality and public health analyses for a new power plant. For the Imperial Irrigation District, prepared the Air Quality, Public Health and Hazardous Materials Management analyses in support of a Small Power Plant Exemption to the California Energy Commission (CEC) and prepared the air quality permit application to the Imperial County Air Pollution Control District for a new 90 MW peaking generating station in Niland, California.

Managed the air quality and public health analyses for a new power plant. For the Imperial Irrigation District, prepared the Air Quality, Public Health and Hazardous Materials Management analyses in support of a Small Power Plant Exemption to the California Energy Commission (CEC) and prepared the air quality permit application to the Imperial County Air Pollution Control District for the Unit 3 Repower project at the El Centro Generating Station in El Centro, California.

Managed hazardous materials analysis for a new combined cycle power plant in Northern California. Prepared hazardous materials handling section of the Application for Certification for the Colusa Generating Station, a 600 MW combined cycle gas turbine power plant proposed by Competitive Power Ventures in Colusa County California.

Managed the air quality and public health analyses for a new peaking power plant. For EIF, prepared the Air Quality and Public Health analyses in support of an Application for Certification to the California Energy Commission (CEC) 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.

Managed the air quality and public health analyses for a new peaking power plant. For EIF, prepared the Air Quality and Public Health analyses in support of an Application for Certification to the California Energy Commission (CEC) 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.

Managed the air quality, public health and hazardous materials analyses for a new peaking power plant. For Starwood Energy, prepared the Air Quality, Public Health and Hazardous Materials Handling analyses in support of an Application for Certification to the California Energy Commission (CEC) and prepared the air quality permit application to the San Joaquin Valley Air Pollution Control District for the Starwood Midway Project, a new 120 MW peaking generating station near Firebaugh, California.



Managed air quality permitting for a combined cycle power plant in Nevada. This project was the 900 MW Meadow Valley Project proposed by PG&E Generating Company combined cycle power generation project north of Las Vegas, Nevada.

Managed air quality permitting for a proposed 685 MW combined cycle power plant in San Bernardino County, California. For Reliant Energy, prepared the required Air Quality and Public Health analyses in support of an Application for Certification to the California Energy Commission (CEC) and prepared the air quality permit application to the South Coast Air Quality Management District for the San Gabriel Generating Station a new baseload generating unit on the site of the current Etiwanda Power Plant in Rancho Cucamonga, California.

Managed air quality permitting for a proposed 800 MW simple cycle gas turbine power plant in Riverside County, California. For Competitive Power Ventures, prepared the required Air Quality and Public Health analyses in support of an Application for Certification to the California Energy Commission (CEC) and prepared the air quality permit application to the South Coast Air Quality Management District for the CPV Sentinel Energy Project, a peaking plant on the site near Palm Springs, California.

Managed air quality permitting for a proposed 200 MW simple cycle gas turbine power plant in Orange County, California. For the City of Anaheim and the Southern California Power Public Power Authority, prepared the required Air Quality and Public Health analyses in support of an Application for Certification to the California Energy Commission (CEC) and prepared the air quality permit application to the South Coast Air Quality Management District for the Canyon Power Plant in Anaheim, California.

Industrial Air Quality Permitting and Compliance Support

For over eight years, managed all aspects of air quality permitting for a major gas pipeline development project in Alaska. The project consists of a gas conditioning plant on the North Slope, an 800-mile buried and chilled natural gas pipeline with up to 10 large compressor stations along the route, and a LNG production facility and marine terminal near Valdez. Permitting activities for this development included consulting support and quality assurance audits for a system of multiple meteorological towers along the pipeline route, analysis of meteorological data to provide design conditions for project facilities, preparation of BACT analyses, air quality impact modeling analyses, and preparation of a successful PSD permit application for the proposed 15-million-metric-ton-per-year Anderson Bay natural gas liquefaction plant and marine terminal in Port Valdez. Other tasks included negotiations with regulatory agency staff, including U.S. EPA Region X, the Alaska Department of Environmental Conservation and the Federal Energy Regulatory Commission.

Under contract to ARCO Qatar Inc. conducted a dispersion modeling study to determine design characteristics for a proposed

natural gas processing plant adjacent to the Persian Gulf at Ras Laffan, Qatar. The principal objective of the study was to determine the level of sulfur recovery the plant would be required to achieve to avoid exceedances of the applicable ambient standards for sulfur dioxide resulting from emissions from two tail gas incinerators. Potential odor impacts associated with facility operations were also addressed. The project involved working with the project design engineering firm to develop emission parameters for all plant pollutant sources for different assumed feed gas compositions and sulfur removal efficiency scenarios.

On behalf of ARCO China Inc., conducted an air quality impact study to determine the compliance with local air quality standards for a new natural gas processing plant and marine terminal on Hainan Island in the Peoples' Republic of China. The facility was designed to receive gas and condensate from platforms in the South China Sea that are being operated jointly by ARCO and the Chinese government. Emissions data for all facility sources, including fugitives, were developed and an appropriate dispersion model was executed to determine reasonable maximum concentrations of sulfur dioxide, nitrogen dioxide, particulate matter and carbon monoxide for comparison with the applicable ambient standards. A key air quality issue was the project's ability to comply with the stringent ambient air quality standards that are applicable to a nearby recreation area being developed for tourism.

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. The permitting process included all contemporaneous emission increases and decreases at the refinery per Clean Air Act requirements, as well as quantification of project emissions, dispersion modeling and identification of all applicable regulatory requirements.

For Chevron Overseas Petroleum Inc., managed the air quality program for a joint venture with the government of the former Soviet Republic of Kazakhstan to develop a major oilfield adjacent to the northeastern Caspian Sea. The project involved evaluation of existing air quality data, researching the air quality regulations of the Republic of Kazakhstan and those of the former Soviet Union, and design of air quality monitoring and compliance programs for the partnership's ongoing development activities. Other specific activities included an evaluation and quality assurance audit for a 33-station air monitoring network, development of an emissions inventory for an entire oil field and processing complex, and preparation of a proposal to the Ministry of Ecology and Bioresources for new emissions standards for the project's pollutant sources. Also participated in analyses of a new demercaptanization project to remove odorous compounds from crude oil shipped to receiving refineries.

For NRG Energy Systems, managed preparation of Risk Management Plans for the new ammonia storage and handling systems required in support of Selective Catalytic Reduction retrofit



projects for control of NO_x emissions from utility boilers at the Encina Power Station in Carlsbad, California and the El Segundo Generating Station in El Segundo, California.

Managed air quality permitting in support of a NO_x retrofit project to install Selective Catalytic Reduction (SCR) on two 750-MW utility boilers at the Moss Landing Power Plant operated by Duke Power north of Monterey California. This project required preparation of an Authority to Construct permit for installation of the Selective Catalytic Reduction systems, as well as a risk evaluation for the onsite handling of aqueous ammonia used in large quantities for the SCR reagent and a transportation risk assessment for the transport of ammonia to the facility for this purpose.

Prepared an Authority to Construct application for a proposed new 25 MW combined cycle cogeneration plant to be located at the existing Central Utilities Plant on the campus of the University of California, San Diego. The proposed facilities included two Solar Titan 130S gas turbines with a combined net output power of 25.7 MW and two “Module” Style heat recovery steam generators. Emissions of criteria pollutants from the two turbine heat recovery steam generator trains will be reduced by the SCONOX/SCOSOX catalyst-based control system developed by Goal Line Environmental Technologies LLC. The Authority to Construct permit for the project was granted by the San Diego Air Pollution Control District.

Greenhouse Gas Studies

In response to World Bank environmental review requirements, managed the preparation of greenhouse gas emissions inventories for two proposed ExxonMobil development projects in Chad. These included (1) the large new Doba oilfield and processing center with a 1,050-kilometer crude oil pipeline to an export terminal in Cameroon; and (2) a new pipeline to bring oil from an existing oilfield in Northern Chad to a new refinery in the capital city of N’Djaména for the production of fuels for local consumption. Emissions from all aspects of the subject facilities’ operations, including post-project combustion of the resulting products, were included in the carbon dioxide and methane inventories prepared for each project, and a report documenting the methodology and results of the study was submitted as an addendum to the project Environmental Assessment.

Provided technical support in a project for an American Petroleum Institute project to evaluate the available protocols for developing greenhouse gas emissions estimates for facilities in the oil and gas industry. Various inventory development methods used by individual companies and by international government agencies were examined and compared for each source type, and recommendations regarding the most technically defensible emission factors and assumptions were developed. The resulting information was used to prepare emissions data for various model facilities in the exploration and production, refining and transportation sectors. The ultimate product of the study was an API



Compendium that provides detailed guidance for oil and gas industry facility operators preparing greenhouse gas emission inventories.

Prepared a Project Design Document (PDD) for a flare reduction project in Nigeria. On behalf of a major international petroleum company, developed an application to the CDM Executive Board to register as a Clean Development Mechanism a project to recover and utilize previously-flared streams of associated gas produced at offshore oil production platforms near Escravos, Nigeria.

Developed voluntary World Bank Gas Flaring and Venting Reduction Standard. In 2003-2004, served as a key staff member under contract to the World Bank to develop a voluntary global flaring and venting standard for associated gas. The project has involved consultations with virtually all of the major international oil and gas companies, including ChevronTexaco, and with the petroleum ministries of many nations where flaring occurs, including Angola. The standard was developed as a voluntary guideline focusing primarily on large flared and vented streams of associated gas and, after adoption, will reduce emissions of greenhouse gases and promote increased conservation and commercialization of associated gas worldwide.

Conducted a study to evaluate a combined cycle gas turbine power project in Thailand as a candidate Clean Development Mechanism pursuant to Article 12 of the 1997 Kyoto Protocol. Work for ChevronTexaco involved an assessment of the project's attributes versus the current thinking regarding CDM certification criteria and estimation of alternative baseline emissions scenarios to determine the project's potential for emission credit generation. The latter task required travel to Thailand and interviews with government agencies involved in overseeing the electrical generation sector in that country, as well as Thai agencies responsible for the country's climate change programs. An emissions baseline was determined by developing an estimate of the emissions (tonnes CO₂ equivalent per MW-hr) for other new energy projects in Thailand during the same general period. The result was compared with the emissions from the new combined cycle facility to determine potential emission reduction credits that could be earned by the project.

Developed greenhouse gas and pollutant emissions data for the West Africa Gas Pipeline project proposed by Chevron Overseas Petroleum, Inc. The project would involve processing and pipeline transport of natural gas recovered at crude oil production sites offshore Nigeria. The gas is currently flared due a lack of local markets and infrastructure, but the proposed project would result in its use by existing and planned power plants and industrial facilities in Togo, Benin and Ghana. The differences between future regional emissions with and without the West Africa Gas Pipeline project were calculated and used as a portion of the argument for certifying the proposed project as a Clean Development Mechanism project, as defined by the Kyoto Protocol of 1997.

Developed annual emissions inventories of greenhouse gases from Unocal facilities worldwide. Questionnaires to elicit the required



information from individual business units were developed and refined for ease of use, based on feedback from selected business units. Next, each operation completed the questionnaire, including calculation of the previous year's greenhouse gas emissions, according to a specified protocol. Finally, URS compiled the data into a Unocal-wide inventory for 1999. Based on this experience, the process was refined for the 2000 inventory, with the questionnaire revised to emphasize reporting of facility activity data, which was then used by URS to calculate GHG emissions according to a common approach for internal consistency. The questionnaire was subsequently refined further.

Served on a team composed of URS and KPMG technical staff to audit greenhouse gas emissions reporting for Chevron and Texaco facilities worldwide. As part of this project, personally conducted facility audits for petroleum refineries in Northern California, Mississippi, Washington and Thailand. The resulting data from all facility audits was compiled to create an audit opinion on the accuracy of the reported emission totals corporation-wide.

Applied Research and Policy Studies

Served as Project Manager for a study conducted on behalf of the State of Hawaii Department of Health and an Air Quality Advisory Task Force to evaluate alternative air pollution control strategies to preserve air quality and accommodate future growth in the Campbell Industrial Park/Kahe area of Oahu. The Task Force included representatives from the State Legislature, government agencies, industry and local neighborhood groups. Principal elements of the study included review of current air quality conditions in the Campbell Industrial Park/Kahe area, projection of future land use patterns, economic conditions and emissions, review of recent dispersion modeling results, and evaluation/ranking of nine different pollution control regulatory strategies that might be implemented to ensure opportunities for future industrial growth.

Directed a research project funded by the American Petroleum Institute and Chemical Manufacturers Association to evaluate area source and volume source dispersion models currently used to address air toxic impacts of industrial sources. Major project elements included identification and testing of available models in terms of the reasonableness of their simulation of basic physical processes, identification of candidate field tracer program data sets for use in a model performance evaluation study, and execution of the performance evaluation to develop statistics for the comparison between measured and predicted tracer concentrations.

Air Quality Impact and Health Risk Assessment Studies

Managed an air toxics health risk assessment to estimate community exposure levels and health risks resulting from atmospheric emissions associated with the proposed Gregory Canyon municipal solid waste disposal facility in northern San Diego County, California. The study addressed impacts from emissions

from all facets of the proposed landfill's operations, including landfill gas generation and flaring, as well as toxic contaminants in vehicle and equipment exhaust and in dust created by site operations. The ACE2588 risk quantification model was used in conjunction with dispersion modeling results for several different scenarios representing maximum emissions for different source categories. The risk assessment was conducted as a separate technical study in support of the project Environmental Impact Report.

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.

Managed air quality impact and health risk assessments for Environmental Impact Reports on several municipal solid waste landfill expansion projects in California, including the Chiquita Canyon Landfill in Los Angeles County, the Cold Canyon Landfill in San Luis Obispo, the El Dorado County Union Mine Landfill in El Dorado, County and the Otay Landfill in San Diego County. Each of these projects entailed development of emissions estimates for landfill gas generation, landfill gas collection system flares, fugitive dust generation resulting from landfill earth-moving activities and vehicular traffic emissions. Public exposure to toxic air contaminant emissions from landfill sources was evaluated by means of a combination of dispersion modeling and a health risk assessment program based on the modeling results.

Managed an air toxics health risk assessment for an aircraft parts plant operated by Aerochem Inc. in Orange, California to determine whether maximum offsite impacts of perchloroethylene emissions would exceed public notification thresholds pursuant to Proposition 65 requirements. Emission sources associated with coating operations in the facility's spray booths and dip facilities were addressed. Maximum computed concentrations and carcinogenic risk estimates were used to generate isopleths to determine the neighboring areas where public notification would be required.

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.



Served as Project Manager for preparation of an air quality emissions inventory and impact assessment for the Chad Export Project, a proposed oil field development and crude oil pipeline connecting the oil field in Chad to a marine loading terminal in Cameroon. The focus of this work was to satisfy requirements of the World Bank and other international lending institutions that emissions associated with the operational oil field operations center and the intermediate pump stations along the pipeline route will be controlled in accordance with applicable World Bank and other international emission limits, and that predicted impacts on ambient pollutant concentrations will be below accepted health-based standards.

Managed an air dispersion modeling study to evaluate compliance with applicable air quality standards and Prevention of Significant Deterioration increments for expansion and consolidation of aggregate materials mining and processing facilities as well as hazardous and non-hazardous waste disposal facilities within the Apex Regional Waste Management Center near Las Vegas, Nevada. The modeling study evaluated criteria pollutant emissions from the various paving and construction materials facilities, in addition to future emissions of hazardous pollutants from the new municipal landfill and landfill gas collection system.

Directed an applied research program to develop a site-specific air quality dispersion model for an 800-megawatt generating station operated by Hawaiian Electric Company. The intent was to incorporate the effects that local conditions at the plant's coastal location have on the atmospheric dispersion of the power plant's stack plumes. In particular, standardized methods for characterizing atmospheric stability and, hence, turbulent mixing rates, were found to apply poorly at the facility site. The model developed was validated with extensive air monitoring data to demonstrate its superior performance for this site relative to EPA-approved models.

Responsible for preparation of air quality impact analyses in the context of environmental impact studies/reports for a large number of proposed industrial and institutional development projects throughout the western U.S. Such studies have typically involved a description of existing conditions and regulatory setting, evaluation of projected impacts (usually by means of dispersion modeling) and recommendations of mitigation measures, as required to achieve compliance with applicable rules, regulations, and standards. Examples of projects for which Mr. Lague has conducted such analyses include: municipal landfills, hazardous waste disposal facilities, cogeneration plants, airport expansion projects, roadway developments, offshore oil and gas exploration and production activities, biomass-fired power plants, prisons, light rail transportation systems and commercial developments.



Air Quality Impact and Meteorological Measurement and Data Analysis Projects

Managed numerous meteorological monitoring projects to obtain information on local conditions for facility design purposes and/or to supply required input data for use in air quality dispersion modeling analyses. The durations of the monitoring efforts have varied from a few weeks to several years and have entailed equipment ranging from a single portable station operating on battery or solar power to multiple towers instrumented for remote operation and data acquisition functions. These projects have typically included tasks to analyze the resulting measurement data for improved understanding of particular weather characteristics or to determine the applicability of data from other nearby sites with longer measurement records to represent conditions at a client's site. In many cases, the monitoring work represented a single task of a larger permitting and/or air quality regulatory compliance program.

Oversaw numerous air toxics sampling and analysis programs that have been conducted to provide information on potential offsite transport of hazardous substances or to help “back out” source emission strengths of such compounds from contaminated sites.

Measurement methods used in these studies have included stainless steel canisters, Tedlar bags, polyurethane foam samplers and Hi-Vol filter samplers. These projects have typically involved coordination with the in-house or contracted laboratories responsible for analysis of the collected samples. These projects have frequently been conducted in the context of larger air quality or overall environmental compliance programs.

Directed air quality monitoring programs of at least one year's duration for numerous different oil companies with proposed development projects in the Santa Barbara Channel. These projects, which involved installation, operation, and reporting for one to three monitoring stations, were conducted for numerous international petroleum companies.

Professional Societies/Affiliates

Air and Waste Management Association



Julie A. Mitchell

Air Quality Scientist

Overview

Ms. Mitchell has worked in the air quality consulting field since 1994. Her technical specialties include operation and assessment of air dispersion models, air quality impact assessments, meteorological data analysis, air quality and meteorological monitoring, and computer programming to process data or modify air dispersion models.

Areas of Expertise

Air Quality Modeling
Air Quality Impact
Health Risk Assessment
Hazardous Materials Risk Analysis
Meteorological Analysis
Visibility Modeling
Computer Programming

Years of Experience

With URS: 10 Years
With Other Firms: 6 Years

Education

Course, HARP Modeling,
DSE/Bluescape, 2004

Course, AERMOD Modeling,
AWMA, 2003

Course, CALPUFF Modeling,
Earth Tech Inc., 2001

Course, Datalogger Programming
Course, Campbell Scientific, 1995

BSc/Atmospheric Sciences/
University of British Columbia/
1994

BSc/Mathematics and Computer
Science/McGill University/ 1993

Project Specific Experience

Air Quality Impact and Health Risk Assessment Studies:

- Prepared the air technical report for an EIR for the Mt Signal Solar and Biomass Power Station, near El Centro, California. 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.
- Analyzed the air quality and public health 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.
- 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 public health and air quality sections of the Application for Certification for the Sentinel Energy Project (850 MW peaker plant) near Palm Desert, California. 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.
- 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 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.
- 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.
- 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 and CO hotspot model, CALINE4.
- 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. Also assisted in assessing greenhouse gas emissions and emissions savings associated with the WAGP project.
- 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.

- 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.
- 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.
- Assisted in preparing 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. It also involved assessing the possible impacts from an accidental release of LNG, using the dense gas model CHARM. 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 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 Interger North America. The air quality impact analysis examined the impacts from PM₁₀, NO₂, SO₂ 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.
- 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).

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.

Meteorological Analysis

- Created AERMOD ready meteorological data files for numerous facilities in California and Hawaii, using AERMET and AERSURFACE.
- Created ISCST3 ready meteorological input files for two facilities in Mexico, the Cantarell Nitrogen Plant Expansion in Campeche, and the Valladolid III Power Plant in Yucatan, from nearby Servicio Meteorologico Nacional stations. This required writing 2 Fortran programs 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.

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

- Estimated the greenhouse gas emissions and reductions associated with the Mt Signal Solar and Biomass Power Station, near El Centro, California using CCAR protocols.
- 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 a spreadsheet-based system to calculate annual greenhouse gases emissions inventories for Unocal worldwide facilities. 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 have continued for a number of years.

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

Contact Information

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San Diego, CA 92108

619.294.9400 x 1103

Julie_Mitchell@urscorp.com



Giorgio Molinario, REA

Senior Environmental Chemist / Project Manager

Overview

Mr. Molinario has extensive environmental due diligence experience, particularly with projects associated with mergers and acquisitions, property transactions, and proposed power plant sites. Mr. Molinario has managed and performed field sampling, remediation, and regulatory negotiation activities on numerous contaminated soil, surface water, and groundwater sites. He managed complex multi-site projects, supervised field teams and subcontractors, authored reports, and constructively interacted with a diverse range of agencies and stakeholders.

Areas of Expertise

Environmental Due Diligence
Site Investigations and Remediation
Regulatory Compliance

Education

M.A. (Thesis Pending)/
Environmental Studies/Brown
University
B.Sc./Chemistry/1992/Brown
University

Training

40-Hour OSHA HAZWOPER
8-hour OSHA HAZWOPER
Supervisor
8-hour OSHA HAZWOPER
Refresher (2006)
8-Hour Mine Safety and Health
Administration Miner Safety
Training
5-Day EPA/AHERA Asbestos-
Contractor Supervisor
5-Day EPA/AHERA Asbestos-
Surveyor and Management
Planner
FEMA Incident Command System
Level 200
U.S. EPA Level-A and Readiness
Training (2007)
American Red Cross Adult CPR
and First Aid

Project Experience

Project Manager, Due Diligence and Environmental Site

Assessments (Phase I and II ESAs): Mr. Molinario managed environmental due diligence and Environmental Site Assessments (ESAs) for private and public clients. He conducted assessments for buyer and vendor sides, in the U.S. and abroad, including numerous fast-turnaround multi-site projects. In addition to Phase I ESAs, Mr. Molinario has performed numerous Phase II investigations in the U.S. and abroad, targeting specific issues and working under a variety of regulatory regimes. A brief listing of some representative projects includes:

- Managed numerous multi-site ESAs for acquisition and divestiture of industrial and commercial and industrial property portfolios across the U.S.
- Managed several Phase I and II ESAs of proposed power plant sites in California, incorporating environmental due diligence, lender-specific requirements, and strategic data collection to assist the Application for Certification team.
- Co-authored the internal guidance document for performing HES due diligence assessments associated with a Major Oil Company's global divestiture program. Subsequently managed the pre-divestiture assessment of the company's upstream onshore and offshore oil assets in the Democratic Republic of Congo, and of two asphalt plants in the U.S.
- Client manager and project manager for private equity acquisitions and mergers of companies with portfolios of manufacturing and life sciences companies. Managed due diligence of over 10 multi-site and multi-company deals, including securitized sale-leaseback deals and preparation of probabilistic cost estimates.
- Managed Phase II ESAs of manufacturing plants, chemical plants, warehouses and distribution facilities, landfills, and petroleum storage sites.



Giorgio Molinario

- Managed pre-acquisition Phase I ESAs at two silicon chip manufacturing equipment companies in Israel for a U.S. client.
- Performed due diligence audits at facilities in the U.S., UK, Italy, France, Israel, and Democratic Republic of Congo, and managed due diligence projects executed by local URS staff in Canada, Mexico, Germany, China, and India.

Project Manager, Pre-acquisition due diligence and baseline site investigations of two proposed power plant sites, Confidential Client, California: Conducted environmental due diligence, meeting client and lender standards at these two proposed power plant sites prior to site acquisition. Managed the baseline site investigation, consisting of a soil and groundwater investigation. Integrated data collection with the Application for Certification (AFC) team, including collection of additional surface water and groundwater data, and collaboration with the biological survey teams. Prepared environmental due diligence reports within 30 days, and accelerated baseline investigation activities to meet an extremely aggressive project schedule.

Project Manager, Pre-acquisition due diligence and environmental liability cost estimating for an underwater power cable project, Confidential Client, California: Conducted environmental due diligence on parcels identified for use as AC to DC converter stations at the cable terminus. Prepared standard due diligence reports, as well as a detailed environmental remediation/liability cost estimate for use in planning potential remediation and redevelopment options.

Senior Auditor, Fluoropolymer and Fluorocarbon manufacturer, due diligence and strategic acquisition consulting: Mr. Molinario was a key player in the high-level due diligence and strategic acquisition consulting for the proposed acquisition of a 900 million dollar fluoropolymer and fluorocarbon manufacturing company with facilities in the U.S., Italy, and Germany. This company was up for sale, but its unique portfolio of manufacturing plants and products presented challenges beyond traditional due diligence. Mr. Molinario visited manufacturing plants and interviewed plant management and senior environmental management to identify due diligence issues, potential for catastrophic failures from the storage of hydrofluoric acid, and future regulatory issues with the continued production of CFCs. Potential environmental cost scenarios were prepared with the assistance of CrystalBall™, and an in-depth report was prepared for review by the client and the lending institutions.

Project Manager, Genstar Capital, International Aluminum, due diligence and strategic acquisition consulting. Mr. Molinario was the project manager for the private equity acquisition of this vertically integrated industrial company. He managed resources from multiple URS offices to conduct expedited site visits and environmental due diligence. No Phase II ESAs could be conducted at the sites; therefore, Mr. Molinario prepared environmental liability cost estimates using CrystalBall for use by the client and for the multiple lenders on the deal. He advised



Giorgio Molinario

the client, external counsel, and real estate advisors on selecting a subset of the sites for a securitized leaseback transaction that would require additional due diligence.

Project Manager/Group Manager, U.S. EPA Region IX START.

Managed and performed a range of projects including emergency responses, Brownfields site assessment, and characterization and removal at CERCLA and petroleum sites. Assisted the EPA in preparing exercises for large-scale oil releases, and participated in training exercises and planning for bioterrorism events.

Project Manager/Task Leader, Site Assessment and Remediation Activities, U.S. EPA. Managed and assisted with numerous PA, SI, and ESI reviews; prepared HRS scores; and assisted on an HRS Package, Field Sample Plans, and Quality Assurance Project Plan preparation. Site Leader for federal facility reviews of numerous sites investigated under CERCLA, including mines, landfills, and chemical storage facilities.

Project Manager/Project Chemist, State Superfund Sites, Cal-EPA Department of Toxic Substances Control. Managed and performed a range of sampling, remedial, and report-writing tasks at numerous state Superfund sites ranging from mercury recycling facilities to semiconductor manufacturers. Wrote sampling plans and performed subsurface soil and groundwater sampling projects. Collected samples, reviewed analytical data, and assisted with the preparation of Remedial Action Workplan and Removal Action Plan reports for former battery recycling and metal plating facilities.

Project Auditor, U.S. Postal Service, Environmental Compliance Reviews, Multiple Locations in California: Mr. Molinario was responsible for facility audits at large USPS mail processing plants and vehicle maintenance facilities. These multi-media audits assessed compliance with environmental and other regulations at the federal, state, and local level. Mr. Molinario performed audits, wrote findings, and produced reports documenting findings. He was also responsible for the operation of the findings database (EMIS) used to store and merge findings from multiple facilities.

Project Manager, CPL, PLL, and Preferred Risk Surveys, California, American International Group: Served as the client contact, and performed and supervised projects for several AIG offices. Mr. Molinario conducted Pollution Legal Liability surveys of facilities such as a Hazardous Waste Transfer, Storage, and Disposal Facility, a foundry, and a wastewater treatment plant. Performed Contractor Pollution Liability surveys of contractors that handle hazardous waste, and preferred risk environmental surveys of high-rise buildings for AIG.



George Muehleck, P.G.

Senior Manager / Hydrogeologic Services

Overview

Mr. Muehleck is a group leader in the URS Oakland Office Environmental Services Department and also serves as a senior manager for hydrogeologic services in support of the Oakland and other URS offices. He has over thirty years of experience in soil, surface and ground water projects dealing with water supply; environmental impact analysis; hydrogeologic aspects of construction; leachate containment; fluvial discharge and sediment transport; contaminant extent, fate and transport; site remediation. He has worked in California since 1979 with project experience in nearly every CA geologic province. Much of this work has focused on projects for industry and government. Mr. Muehleck has extensive client and regulatory interactive experience and is familiar with federal, state and local regulatory procedures and requirements. Water supply and Site Investigation/Remediation projects have included ground water modeling components to evaluate safe yield, groundwater/surface water interaction and contaminant fate and transport. Field experience includes a strong emphasis on many aspects of drilling; geophysical logging; production, extraction and monitoring well installations; soil, surface and ground water sampling; geologic mapping; pumping tests (long and short term); cone penetrometer testing; soil gas and ground water probe sampling; and health and safety issues. Recent projects have focused on power plant development (AFC's, water supply and pumping related impacts to aquifers, nearby wells and surface water resources); environmental impact analysis (NEPA/CEQA) related to large scale developments, long-range planning and surface water/groundwater transfers and exchanges in the San Joaquin Valley of CA; feasibility studies associated with desalination projects for public water supply; quarrying and overburden placement operations; and oil refinery waste management and corrective actions. Representative project experience includes the following:

Areas of Expertise

Program/Project Management
Hydrogeology
Water Resources
Solid and Hazardous Waste
CERCLA and RCRA Projects
NEPA/CEQA Projects
Landfill Investigations

Years of Experience

With URS: 12 Years
With Other Firms: 18 Years

Education

BS/Geology/1975/Southampton
College of Long Island University

Registration/Certification

1992/Professional Geologist/ CA/
#5392/ Exp. June 2009

Representative Project Experience

Hydrogeologic Task Manager, Sentinel Energy Project, Power Plant Water Supply Hydrogeologic Evaluation / Well Field Design, Riverside County, California. Responsible for providing hydrogeologic consulting services for the AFC and to evaluate affects of pumping up to 1,100 acre feet per year (afy) of groundwater and recharging the hydrogeologic basin's groundwater system with up to a 2,800 afy. The project has included a background hydrogeologic data review, development of a groundwater flow model to evaluate pumping /recharge effects on the groundwater basin, as well as the design, cost benefit analysis and implementation of a test well program that will be used to develop a full scale well field for use in supplying the power plant with coolant water. The test well program has included development of test well specifications, critical placement of pumping and observation wells to yield optimal hydraulic parameters during a long term pumping test, as



well as permitting and evaluation of infiltration basin designs for use during the long term pumping test. The eventual well field will consist of 3 to 5 production wells to roughly 1,500 feet bgs with associated down hole pumping, well head plumbing and controls and water conveyance systems.

Hydrogeology Task Leader, U.C. Santa Cruz 2005 Long Range Development Plan (LRDP) Environmental Impact Report (EIR), Santa Cruz, California, University of California, 2004. Responsible for managing a team evaluating existing hydrologic (surface water and groundwater) and water quality conditions, assessing the significance of impacts associated with increasing UCSC enrollment and associated infrastructure, and developing appropriate monitoring and mitigation measures under NEPA/CEQA. Proposed long range development plans (buildings, roads, parking, athletic fields and potential groundwater pumping for irrigation purposes) all pose various conditions that require either long-term monitoring or engineering solutions to minimize or eliminate impacts to surface run-off/recharge and groundwater systems on campus and in the surrounding community. Recent project work is focused on additional evaluations on the feasibility and potential impacts of groundwater pumping above that originally planned in the Final 2005 LRDP.

Hydrogeology Task Leader, Delta Risk Management Study – Analysis of Agricultural Use of Groundwater in Delta Export Regions, California Central Valley, Department of Water Resources. Responsible for managing a team evaluating the magnitude, duration and distribution of costs to San Joaquin Valley agriculture in the event of a Delta pumping outage with a main consideration being replacement of the water loss by water district- and area-specific groundwater supplies, as possible, with respect to engineered solutions and hydrogeologic constraints. Components of the groundwater task include: an evaluation of existing and potential pumping capacity; a evaluation of the existing and potential modification of water distribution systems; an evaluation of hydrogeologic capacity and potential long-term effects to area hydrogeologic systems due to potential modifications to groundwater pumping and recharge; an evaluation of the costs of increased groundwater pumping; an evaluation of potential crop yield effects and restrictions; and an analysis of breakpoints within the potential outage that would change the nature of groundwater decisions for agriculture.

Project Manager, Washoe County Nevada Power Plant, Washoe County, Nevada, Duke Energy Washoe LLC. Responsible for evaluating and designing a well field for power plant cooling. Work included hydrogeologic support to successfully obtain water rights fro the project in a hearing before the Nevada State Engineer. Groundwater modeling, aquifer testing and fisheries assessments lead to successful negotiations with the Washoe County Water Resources Department and the U.S. Fish and Wildlife Service on a well field development and monitoring plan and a surface water mitigation plan directed to protect



threatened and endangered species which also serve as an important resource to the adjacent Pyramid Lake Paiute Tribe Indian Reservation. Groundwater modeling work included using an existing groundwater model to simulate pumping effects on the aquifer and adjacent river using various pumping rates (up to 4,000 acre feet/year) and river flow scenarios.

Project Manager, Confidential Client, Hydrogeologic Evaluation / Critical Groundwater Level Assessment, Kern County, California.

Responsible for providing hydrogeologic consulting services to evaluate a Confidential California Central Valley Water District's Critical Water Level (CWL) in association of a pending power plant water supply contract. Hydrogeologic and District pumping/recharge operation data was compiled to develop a dynamic water balance for the study area; initial use of simple numerical equations to calculate time/distance drawdown under various pumping scenarios; and evaluation of previous determinations of a specific CWL. Follow on work included development of a groundwater model (using MODFLOW) to more accurately calculate pumping induced drawdown at different locations while simulating the effects of simultaneous recharge. Technical support led to the recommendation of a revised CWL that would allow for sufficient thickness of saturated more permeable upper zone sediments to remain below the pumping well water levels as well as to allow time for the Power Plant operator to secure alternative sources and/or the Water District time to adjust pumping/recharge operations before negative overdraft impacts become too severe to be quickly mitigated.

Hydrogeologic Consulting, Dana Point Desalination Project, Dana Point, California, Municipal Water District of Orange County.

Member of Technical Advisory Panel (TAP) assisting MWDOC planning and technical evaluations associated with developing a subsurface intake system either from the beach or under the near-shore sediments under the ocean. Phase I Hydrogeology Investigation field work was reviewed and discussed along with the attributes of various alternatives to proceed to pilot test a water intake system. With TAP input the approach to a Phase II Hydrogeology Investigation will be modified from a vertical pilot well to a slant drilled well using horizontal directional drilling methods that would allow pumping of water from formations under the ocean. This work continues to proceed with TAP meetings being held at various project milestones to evaluate effectiveness and viability.

Hydrogeology Task Leader, Quarry and Overburden Expansion Project, San Benito County, California, Confidential Client.

Responsible for managing a team to evaluate the effects of a major quarry expansion and with associated overburden placement on a nearby site. The evaluation included addressing issues during the permitting process and in the EIR under NEPA/CEQA. The evaluation included a comprehensive review of prior reports, boring and hydrogeologic data to determine potential impacts to the watershed (recharge and discharge



effects), local water supply wells and stream flows. Along with engineered design alternatives, monitoring and mitigation plans were developed.

Hydrogeology Task Leader, EIR for Water Transfer, San Joaquin Valley, California, San Joaquin River Exchange Contractors. Responsible for managing a team evaluating surface water and groundwater impacts associated with proposed water transfers originally allocated to the water purveyor under the State Water Project. Environmental significance evaluations included impacts to groundwater levels, groundwater overdrafts, groundwater and surface water quality impacts and impacts to flow in the San Joaquin River River System.

Project Manager, Irrigation Well Installation, Cupertino, California, Hewlett-Packard. Project manager for irrigation well design and installation Hewlett-Packard's Cupertino CA Campus. The well is 8-inch diameter and 560 feet deep and capable of producing 315 gallons per minute (gpm) at 50-PSI pressure throughout irrigation distribution system.

Project Manager, AboveNet Emergency Supply Well, El Segundo, California, Skidmore, Owens and Merrill. Project manager for emergency backup coolant system water supply well design and installation for AboveNet office complex in El Segundo, CA. The well is 8-inch diameter and 360 feet deep with a yield of 100 gpm.

Project Manager, Pelican Bay Prison, Del Norte County, California, Office of State Architect. Project manager for a hydrogeologic feasibility study to evaluate disposal of treated wastewater from the proposed Pelican Bay Prison (in Del Norte County, California) to rapid infiltration basins along the west bank of the Smith River. The study provided the framework to: outline soil and hydrologic factors affecting the location and optimal sizes and operations of the basins; estimate design and infiltration rates; and assess the effects of the proposed basins on the local groundwater system under various river stage and flow conditions. The rapid infiltration basins were eventually constructed following recommendations developed during this project.



William J. O'Braitis, CEG, REA

Hazards and Hazardous Materials

Overview

Mr. O'Braitis has over 22 years of experience and is currently the Manager of Environmental Geosciences for the Inland Empire, responsible for development, organization, technical performance, and management of geological and hazardous material investigation programs. He has served as project manager/principal investigator on projects in support of legal counsel. He is responsible for data and investigation transmittals to the regulatory agencies and utilizes GIS database management technologies to present these data. Mr. O'Braitis has managed and performed geotechnical site investigations, feasibility studies and engineering geology evaluations for development, redevelopment and retrofit projects. Duties included developing approaches to obtain governing agency approval and coordinating with clients, consultants and agencies through completion of site development to meet geotechnical design input needs. Performed geologic field mapping, subsurface exploration, geophysical testing, and as necessary fault activity studies that resulted in optimization of land use and reduced cost of remedial measures.

Areas of Expertise

Geology/Hydrogeology
Project/Program Management
Sustainability/Green Building

Years of Experience

With URS: 3 Years
With Other Firms: 19 Years

Registrations

Geologist/California/No. 6062
Certified Engineering
Geologist/California/No. 2037
Registered Environmental
Assessor/California/No. 8072

Education

B.S./Geology/1985/
Stephen F. Austin State University

Project Specific Experience

Gravity Recovery and Basin Depth Inversion, Mojave Water Agency, San Bernardino County, California.

Mr. O'Braitis was project manager for a multi-phased project for the Mojave Water Agency. URS with its sub-consultant Dr. Shawn Biehler of recovered, assembled, and corrected historic gravity data sets from within 4,000 square-miles of the Mojave Water Agency service area. Data files were recovered and gravity station records were retrieved (2,686 station records). The recovered data were augmented with gravity station data collected by Dr. Biehler and URS, and from approximately 5,400 existing stations. The gravity data set was digitized and GIS map coverage of the complete Bouguer anomalies developed for the project area. The combined data set have provided the Mojave Water Agency with geophysical data coverage of its service area. Utilizing the recovered gravity data, URS developed 2- and 3- dimensional models of the depth to basement within a hydrologic sub-area. The complete Bouguer anomalies data were converted into a regular grid and used with data from an existing seismic refraction model and well logs as control. Models, based on a hyperbolic increase of density with depth were compared to the previous model. The results of this study redefined the sub-area basin geometry and groundwater flow into and out of the fault-controlled groundwater basin systems.

Hydrogeologic Investigation, Construction Dewatering, Mid-Corridor Trench, Alameda Corridor Transportation Project, Los Angeles, County, California.

Senior Geologist to coordinate field soil sampling and testing services for the 10-mile length of the Mid-Corridor Trench section of the Alameda Corridor Transportation Project. The



project included collecting environmental samples from 140 boring locations and 14 groundwater sampling locations. Coordinated and conducted two 24-hour aquifer tests along the corridor and analyzed the results to assess, monitor, and control construction dewatering operations adjacent to petroleum hydrocarbon and chlorinated solvent plume. Completed two soil data analysis reports and two statistical evaluation reports designed to estimate hazardous waste tonnages expected to be encountered in the 5.5 million ton trench excavation.

EIS Geological Hazards and Hazardous Materials, 3RT Cajon Pass, BNSF Railway, San Bernardino County, California. Senior Geologist for EIS evaluation of geological hazards and hazardous materials along 17 mile-3RT railroad route. Prepared Phase I ESA of railroad route to support preparation of EIS. Quantified and categorized potential impacts of known and suspected geotechnical hazards at properties that would be affected by construction along the route.

AFC Hazardous Materials, Seismicity Hazards, Proposed Etiwanda Power Plant Expansion, Etiwanda, California. Senior Geologist for AFC evaluation of hazardous materials and seismicity hazards for proposed expansion of power plant. Oversaw compilation of known and suspected hazardous materials and seismic impacts and development of mitigation measures.

AFC Hazardous Materials, Seismicity Hazards, Proposed CPV Ocotillo Energy Project, North Palm Springs, California. Senior Geologist for AFC evaluation of hazardous materials and seismicity hazards for proposed expansion of power plant. Oversaw compilation of known and suspected hazardous materials and seismic impacts and development of mitigation measures.

Geotechnical and Environmental Investigation, Los Angeles to Pasadena Metro Blue Line, Los Angeles County, California. Project Manager for planning stage evaluation of geotechnical and hazardous materials at properties that would be affected by construction along route of Blue Line transportation corridor construction. Project Manager for expedited environmental and geotechnical soil and groundwater investigation for the aerial segment and of several segments of proposed at-grade construction. The coordinated environmental and geotechnical investigation saved approximately 30% in drilling and traffic control cost and 3 weeks in the overall project schedule.

Construction Dewatering and NPDES Groundwater Discharge Permitting, Los Angeles City Hall, Los Angeles, California. Project geologist responsible for hydrogeologic study of conditions surrounding Los Angeles City Hall. Assessed feasibility of options to discharge groundwater withdrawn during construction dewatering operations for the seismic rehabilitation. Collected groundwater quality and level data, and prepared a technical report containing hydrogeologic findings.



Provided technical assistance to the project coordinators to develop options for the disposal and handling of groundwater during the project.

Hydrogeological Evaluation, San Bernardino City Hall, San Bernardino, California. Senior geologist responsible for hydrogeologic evaluation of conditions surrounding San Bernardino City Hall. Results were used to outline liquefaction and ground shaking hazards for engineering retrofit report.

Environmental and Hydrogeologic Investigation, Former Branford Landfill, Confidential Client, Los Angeles, County, California. Project Manager for pre-development investigation of former Class III waste disposal site. Obtained and reviewed aerial photographs and site drawing to develop site disposal history and waste disposal depth. Coordinated expedited environmental and geotechnical soil, groundwater and methane gas investigation that resulted in the determination of waste disposal boundaries and methane gas mitigation recommendations.

Memberships/Affiliations

Groundwater Resources Association
American Association of Petroleum Geologists
International Right-of-Way Association

Training

40-hour OSHA Hazardous Waste Operator Training (29 CFR 1910.120)
8-hour OSHA Health & Safety Supervisor Training (29 CFR 1910.120)
Environmental Auditing Certification



Ronald E. Reeves

Senior Project Scientist

Areas of Expertise

Airport Environmental Studies
Industrial Noise Assessments
Highway Noise Assessments
FAR Part 150 Noise Land Use
Compatibility Studies
Aircraft Noise Abatement
Procedures Development and
Evaluation

Years of Experience

URS: Two Years

Over 15 Years Aviation Noise
Control Experience With Other
Firms

Education

B.S. Information Systems 1982
Western Carolina University

Designated Naval Aviator 1985
U.S. Naval Air Training Command

Registration/Certification

Licensed Commercial Pilot
Airplane, Single and Multi-Engine
Instrument Rating

Institute of Noise Control
Engineering-Member

Overview

Mr. Reeves has over twenty years of combined transportation and industrial noise control experience. Included in this experience are numerous airport, power generation facility, and industrial community noise exposure studies including the development of noise exposure contours utilizing the Federal Aviation Administration's (FAA) Integrated Noise Model, the U.S. Air Force's NOISEMAP aircraft noise modeling software, and CADNA/A[®] modeling software. Mr. Reeves has managed all facets of these studies including the design and conduct of noise measurement surveys, operational data analysis, spatial data analysis, aircraft ground maintenance run-up analysis, airspace implications on community noise exposure, design of aircraft noise mitigation measures and computer model validation with a particular interest in aircraft performance and operational procedures as they relate to noise control and evaluation of compliance measures for power plants and industrial noise control applications.

Project Specific Experience:

Transportation Noise Exposure:

Highways:

US101/CA-46E Interchange, Paso Robles, CA, Caltrans: This project involved the addition of an auxiliary traffic lane. Conducted long-term and short-term noise monitoring along US101 in proximity to the US101/46E Interchange in Paso Robles, CA. The highway and surface street segments were modeled using FHWA's TNM[®] 2.5 noise model. A CalTrans Noise Study Report was prepared.

US101/McCoy Lane Interchange, Santa Maria, CA, Caltrans: This proved involved the addition of a new interchange. Long-term and short-term noise monitoring was conducted along US101 in proximity to the US101/McCoy Lane Interchange in Santa Maria, CA. The highway and surface street segments were modeled using FHWA's TNM[®] 2.5 noise model. A CalTrans Noise Study Report was prepared.

Avenue Two Realignment, Merced, CA, Caltrans: This project involved the realignment of an existing roadway and construction of a new bridge. Long-term and short-term noise monitoring was conducted along the existing segment. The realignment was modeled using FHWA's TNM[®] 2.5 noise model. A CalTrans Noise Study Report was prepared.



Valley View Grade Separation Project, Santa Fe Springs, California:

This project involved construction activity in the vicinity of a noise and vibration sensitive manufacturing facility. A series of noise and vibration measurements were conducted to document existing levels in the vicinity of the project and specific activities were correlated. This analysis will serve as a baseline for comparison with construction related noise and vibration exposure.

Aviation:

NEPA Analysis

San Antonio International Airport Environmental Assessment, San Antonio, Texas: An Environmental Assessment was prepared to analyze the potential noise impacts of the conversion of an existing general aviation runway to a new air carrier runway. Radar data from the FAA's Standard Terminal Automation Replacement System (STARS) and noise measurement data were incorporated into the INM and used to accurately determine existing noise exposure and develop future noise exposure from the Proposed Project. This detailed analysis resulted in a cost savings as fewer noise sensitive land uses were determined to be impacted than were previously projected.

Aircraft Performance Analysis, Environmental Impact Statement, Palm Beach International Airport, Palm Beach, Florida. An Environmental Impact Statement analyzing impacts of a new air carrier runway was prepared. Detailed analyses of aircraft arrival and departure operations were conducted to accurately model aircraft flight profiles. Flight profiles are a critical component for the accurate evaluation and prediction of aircraft noise exposure. Software was developed to efficiently analyze each flight operation occurring at the airport during an entire calendar year and innovative methods were employed to compare the actual flight profiles obtained from the Airport Noise and Operations Monitoring System (ANOMS) to the aircraft profiles contained in the Integrated Noise Model (INM). This comparison yielded a very accurate noise model and helped to ensure public acceptance of the results. These efforts were recognized by the Federal Aviation Administration's Office of Environment and Energy.

Community Noise Exposure Analysis

John Wayne Airport Departure Noise Demonstration Program, Santa Ana, California: The John Wayne Airport Departure Noise Demonstration Program was developed in response to FAA Advisory Circular (AC) 91-53A. This advisory circular was enacted due to flight safety concerns and limited the variety of noise abatement departure

procedures employed by commercial air carriers. The purpose of the study was to determine which departure procedures provided the greatest noise reduction in noise sensitive communities near the airport. The study was a collaborative effort between the FAA, airport, airlines, pilots, and surrounding communities. As lead project engineer, Mr. Reeves was responsible for data collection, analysis, and computer modeling. Unique in scope, detail, and technical challenge; aircraft weight, takeoff procedural data, noise measurement data, meteorological data, and radar tracking data were used to evaluate variables and develop highly accurate single event noise contours. These contours were used to assess the changes in single event noise exposure at locations within the departure corridor and were essential for the optimization of flight procedures for minimum noise impact in the surrounding communities. The study was highly successful and resulted in a “close-in” noise abatement departure procedure that satisfied the requirements of AC 91-53A and is widely employed to reduce departure noise exposure near airports.

Part 150 Noise Exposure and Land Use Compatibility Studies

New Orleans International Airport FAR Part 150 Noise Exposure and Land Use Compatibility Study Update: Project Manager for the New Orleans International Airport FAR Part 150 Noise Exposure and Land Use Compatibility Study Update for the City of New Orleans. The study included a detailed noise measurement survey, computer modeling, and assessment of various strategies to protect against future noise impacts. The resulting noise abatement program developed for New Orleans was tailored specifically to the needs and problems facing the airport and the surrounding community.

Colorado Springs Airport FAR Part 150 Noise Exposure and Land Use Compatibility Study: Airport operations at Colorado Springs airport dramatically increased as a result of hub operations by a national airline and increased service by major national carriers. A FAR Part 150 Noise Land Use Compatibility Study was initiated to address the need for land use controls in the vicinity of the airport and to address community concerns. A unique aspect of the project was the high density altitude of the airport and associated reduction in aircraft climb performance and increased landing approach speeds and distances. A key feature of the study was emphasis on community involvement and education. The study was successful in implementing land use controls in the airport environs and prescribed a long-term noise measurement program to address community concerns. As a result, airport noise complaints were greatly reduced and the airport currently enjoys a supportive relationship with the surrounding communities.

Runway Alternatives Analysis

San Francisco International Airport Runway Alternatives Analysis: An analysis was conducted by to evaluate the effects of alternative airfield layouts on aircraft altitude profiles and resulting noise exposure in critical



noise sensitive areas of South San Francisco. The study examined several noise abatement departure procedures for key aircraft operating from San Francisco International Airport. Considerations included aircraft performance and airspace interactions. Results of the analysis were used to select the runway layout and operational procedures most advantageous to the surrounding communities.

Continuous Descent Approach Analysis

Port of Oakland, Oakland International Airport, Oakland, California: The feasibility of decreasing noise exposure from aircraft arrival operations through the use of innovative aircraft arrival procedures was investigated using the FAA's Integrated Noise Model. Typical aircraft arrival procedures contain "step-downs," levels segments in the approach used to slow and configure the aircraft for arrival. These segments require higher aircraft power settings and result in greater noise exposure. A continuous descent approach procedure incorporates alternative power/energy management techniques to eliminate or reduce level segments. The study indicated that noise exposure could be decreased through the use of a continuous descent approach.

Airport System Master Plan

El Toro Marine Corps Air Station Airport System Master Plan, Orange County, California: The potential use of MCAS El Toro for civilian aviation was one of the most controversial and divisive issues in Orange County. The intense controversy associated with the reuse of El Toro reinforced the importance of accurate noise studies. The noise analysis component of the El Toro Master Plan Development Program supported the following planning efforts: 1.) Noise analysis of runway layout options, 2.) Noise analysis of operational alternatives (number of operations, time of operations, runway utilization), 3.) Mitigation analysis for alternative airport scenarios, 4.) Presentation materials for public involvement program, and 5.) Technical support for aircraft flyover tests and/or sound level demonstrations. While this study had many components common to a typical Master Plan, the need to be sensitive to environmental issues and the need to potentially consider a two airport system made this study unique. The Master Plan contained components that are typical of a FAR Part 150 and an environmental study. This was consistent with the sponsor's need to consider noise impacts and potential mitigation measures as part of the Master Plan development process.

Base Realignment and Closure (BRAC)

Base Realignment and Closure On-call Noise Analysis: Provided on-call support to the U.S. Air Force Center for Engineering and the Environment (AFCEE) for analysis of aircraft noise exposure resulting from tactical squadron relocations. Several analyses were conducted to evaluate the impacts of relocating the 33rd Fighter Wing at Eglin Air Force



Base under several operational scenarios. These studies were conducted using the U.S. Air Force NOISEMAP computer modeling software.

Airport Noise Assessments

Tainan Airport Noise Assessment, City of Tainan, Republic of China: Tainan Airport, located on the southwestern coast of Taiwan, is a joint-use facility serving domestic commercial air carriers and tactical military aircraft. This study was the first ever noise assessment of the airport. Noise measurement sites were selected and a comprehensive noise measurement survey was conducted. Noise contours, in terms of DNL, were developed using U.S. Air Force NOISEMAP software. The study was used as a platform for training local Chinese engineers in noise measurement and modeling techniques. The contours assisted in the development of nationwide land-use control standards in Taiwan.

Ardmore Aerodrome Noise Assessment, Auckland, New Zealand: Ardmore Aerodrome, located approximately 20 miles southeast of Auckland International Airport, is the largest general aviation airport in New Zealand. The facility serves as a pilot training base for New Zealand and is also home to many vintage warbirds including high performance jet aircraft. Mr. Reeves was asked to provide an independent assessment of the existing DNL contours on behalf of Papakura District Council. Upon review, it was noted that several noise dominant aircraft were incorrectly modeled resulting in inaccurate noise exposure contours. Using detailed aircraft performance data, these aircraft were remodeled and the size of the noise contours was reduced. The resulting contours provided for the long-term viability of the aerodrome and were successful in addressing community concerns regarding noise exposure.

Papakura District Council Noise Mitigation Guidelines, Auckland, New Zealand: Papakura District Council needed a mechanism to mitigate the effects of aircraft noise exposure at residential areas near Ardmore Aerodrome. Aircraft noise exposure from aircraft over flights was assessed in terms cumulative and supplemental noise metrics. Specific residential acoustical insulation guidelines were developed to ensure amenity and quality of life for nearby residents. These guidelines are required standards for new residential construction.**Industrial Noise Exposure:**

Power Generation Facilities

Electric Power Research Institute (EPRI), Quantification of Environmental Impacts Associated With Retrofit of Closed-Cycle Condenser Cooling to Power Plants with Open Cycle Operation: This project involved the analysis of environmental impacts associated with the introduction of cooling towers at facilities currently operated using open cycle cooling technologies. The study encompassed coal fired,



natural gas fired, and nuclear facilities throughout the U.S. Potential noise impacts on humans and wildlife habitats were evaluated.

Reliant Energy San Gabriel Generating Station, Rancho Cucamonga, California: Noise Task Manager for the preparation of the San Gabriel Generating Station Application for Certification. The facility is a natural gas fired combined cycle plant with a nominal power output of 615 megawatts consisting of two Siemens 5000F combustion turbine generators, two supplemental fuel heat recovery steam generators, and one steam turbine generator. The change in the noise environment at sensitive receptor locations was assessed using CADNA/A[®] noise analysis software

Competitive Power Ventures Sentinel Generating Station, Desert Hot Springs, California: Noise Task Manager for the preparation of the Sentinel Generating Station Application for Certification. The facility is a natural gas fired simple cycle plant with a nominal power output of 800 megawatts consisting of eight General Electric LMS-100 combustion turbine generators and ancillary equipment.

E & L Westcoast LLC, Colusa Generating Station, Colusa County, California: Noise Task Manager for the preparation of the Colusa Generating Station Application for Certification. The facility is a natural gas fired plant consisting of two GE 7FA class (PG7241) combustion turbine generators, two triple-pressure heat recovery steam generators, and one reheat condensing steam turbine equipped with an induction pressure stage. The facility is designed for a nominal power output of 660 megawatts.

Mirant Energy Willow Pass Generating Station, Pittsburg, California: Noise Task Manager for the preparation of the Willow Pass Generating Station Application for Certification. The facility is a natural gas fired plant consisting of two combined cycle Siemens Flex Plant 10 units, heat recovery steam generators (HRSGs), two steam generator turbines, air-cooled heat exchangers, and associated auxiliary systems. The facility was required to meet exacting acoustic specifications as the power generation units were located within 750 feet of an established residential area. Innovative acoustic mitigation measures were employed to meet California Energy Commission requirements and to minimize community noise impacts.

Mirant Energy Marsh Landing Generating Station, Antioch, California: Noise Task Manager for the preparation of the Marsh Landing Generating Station Application for Certification. The facility is a natural gas fired plant consisting of two combined cycle Siemens Flex Plant 10 units, heat recovery steam generators (HRSGs), two steam



generator turbines, air-cooled heat exchangers, and associated auxiliary systems.

British Petroleum, Watson Generating Station, Carson, California: Noise Task Manager for the preparation of the Watson Generating Station Application for Certification. The project involved adding generating capacity to an existing facility in order to meet the energy needs of a co-located petroleum refinery. Detailed modeling of a complex acoustical environment was required.

Drilling Operations

Handley Generating Station Drilling Assessment, Fort Worth, Texas: Noise Task Manager for the assessment of noise exposure associated with gas well drilling operations in sensitive residential communities located in the cities of Arlington and Fort Worth. Source noise level data specific to the Caterpillar 398 diesel electric generating set was obtained and modeled. The project included assessment of compliance with local ordinances.

Pile Driving Operations

ThyssenKrupp Facility Construction Analysis, State of Louisiana: Noise Task Manager for the assessment of construction related noise exposure associated with pile driving operations at the proposed Newstar Factory Site. The project involved the placement of over 130,000 piles. Detailed noise modeling analysis was conducted using CADNA/A modeling software to assess potential noise and vibration impacts in the surrounding environs.

Security Clearance

Secret (Not Active)

Chronology

10/06-Present, URS Corporation, Santa Ana, California

3/91-10/06, Mestre Greve Associates, Laguna Niguel, California

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Ron_Reeves@URSCorp.com



Raymond H. Rice, P.G., C.E.G.

Senior Geologist

Overview

Mr. Rice has over 40 years of experience on engineering geology projects and geologic hazard evaluations involving siting studies; landslide investigations, including design and construction of corrective measures; fault hazard assessments; natural and cut slope stability; and construction considerations ranging from construction material availability and suitability to ease of excavation. His experience includes geologic hazards and soils analysis for Applications for Certification for three power plants in northern California. He has also worked on highways, tunnels, dams, high-rise structures, nuclear power plants, and other major engineering projects, including use of geophysical and remote sensing techniques. Mr. Rice is also responsible for Remedial Investigations for contaminated sites. Such investigations include development of work plans, site characterization from a geologic/geohydrologic standpoint, field exploration and laboratory testing programs, and development of conceptual remediation alternatives.

Areas of Expertise

Engineering Geology
Geologic Hazard Assessment
Contamination Assessment
Environmental Impact Analysis

Years of Experience

With URS: 40 Years
With Other Firms: 0 Years

Education

M.A./Geology/1967/Rice
University
A.B./Geology/1964/Lafayette
College
B.S./Civil Engineering/1964/
Lafayette College

Registration/Certification

1970/Professional Geologist/
California/#2039
1970/Certified Engineering
Geologist/California/#631

Project Specific Experience

Surface Transportation

**Task Manager, Elk Grove-Rancho Cordova-El Dorado Connector
Environmental Phase 1, Sacramento, California, Sacramento Area
Council of Governments, Type of Contract, 2005-2006, \$600,000:**

The Sacramento Area Council of Governments has been evaluating the potential for development of a regional transportation facility to accommodate growth in travel demand in southeastern Sacramento County and western El Dorado County. The proposed connector would provide multi-modal linkage among residential areas and employment centers along a 40-mile-long corridor that would connect Elk Grove, Rancho Cordova, Folsom, and western El Dorado County. The connector would help bolster the Agency's efforts to establish and maintain sustainable communities by relieving congestion on three of the region's principal freeways – I-5, State Route 99, and US 50 – by contributing to regional initiatives to preserve open space and wildlife habitat, by improving air quality, and by improving access to employment centers in the region. As a precursor to a formal environmental process, the Phase I work will develop a draft purpose and need statement, prepare functional guidelines for the corridor, develop screening criteria, and perform a fatal flaw environmental analysis of conceptual alternatives, perform transportation and conceptual engineering, assess funding opportunities and define funding strategies, and prepare a report that would set the stage for the next phase in the project. Issues include growth inducement, collaboration among several jurisdictions, and processing of a corridor-level evaluation in the face of aggressive development plans and concurrent processing of individual project components. Project responsibilities include an assessment of existing conditions for soils, geology, and geology hazards.



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Principal Investigator, Route 12 EA/IS, California, Caltrans, Type of Contract, 2004, Cost: Responsible for hazardous materials assessment as well as geology, soils and seismicity portions of the document. Issues involved soft soil conditions along part of the alignment in addition to previous hazardous materials discharges along right-of-way.

Task Manager, Placer Parkway Corridor Preservation Tier 1 EIS/EIR, Placer County, California, Placer County Transportation Agency, Type of Contract, 2003-2006, \$3.5 million: Managing the soils, geology and seismicity, and hazardous materials tasks for the proposed new 17-mile-long transportation facility connecting industrial/commercial areas in SR 65 corridor in Placer County to SR 70/00 in Sutter County. The project entails the development of alternatives, the preparation of an Initial Site Assessment (Caltrans-equivalent to a Phase 1 ESA), and preparation of a Tier 1 EIS/EIR. Also prepared soils and hazardous materials/waste maps for the entire study area.

Principal Investigator, State Route 1 EIS/EIR, California, Caltrans, Type of Contract, 1994, \$1,600: Responsible for hazardous materials and geology, soils and seismicity portions of environmental document. Issues included ground surface displacements, particularly effects of liquefaction associated with the 1989 Loma Prieta Earthquake.

Principal Investigator, Highway 50 Improvements Environmental Study, Placerville, California, City of Placerville, Type of Contract, 1993, Cost: Responsible for hazardous materials, geology, soils and seismicity sections of environmental document. Main issue was related to slope stability and construction methodology for excavation of steep slopes in fractured and weathered metamorphic rocks.

Principal Investigator, Route 41 Tier 1 Route Adoption EIS/EIR and Tier 2 EA/IS, California, Caltrans, Type of Contract, 1991-1995, \$18 million: Managed preparation of the geology, soils and seismicity, as well as hazardous materials portions of environmental document. Issues included presence of hazardous materials due to leaking underground storage tanks and use of pesticides in agricultural activities along project alignment.

Principal Investigator, Benicia-Martinez Bridge EIS/EIR, California, Caltrans, Type of Contract, 1991, 1995, 2000, \$2.173, \$2.428, \$1 million respectively: Evaluated the presence of hazardous materials within the project alignment based on file review and site reconnaissance; reviewed subconsultants' reports of investigations and remedial activities, as well as regulatory agency actions along project right-of-way, and prioritized sites with respect to potential impacts on construction.

Role, Golden Gate Bridge EIR, San Francisco, California, Highway and Transportation District, Type of Contract, Years, Cost: Geologic



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hazards portion of EIR for Golden Gate Bridge. Highway and Transportation District associated with purchase of the Northwestern Pacific Railroad right-of-way, northern California

Task Manager, Engineering Geology Aspects of Pulgas Tunnel Evaluation, San Francisco, San Francisco Public Utilities

Commission, Type of Contract, Years, Cost: Directed geologic reconnaissance, air photo interpretation and review of available documentation relative to the 1920s era Pulgas Tunnel in connection with its possible rehabilitation.

Task Manager, Engineering Geology Aspects of the Review of the Arch Bridge of the Sunol Aqueduct, Fremont, California, San Francisco Public Utilities Commission, Type of Contract, Years,

Cost: Directed engineering geology studies, including geologic mapping and stability analysis of the vicinity of a 1920s era reinforced concrete arch bridge associated with its possible demolition. Evaluated possible effects of demolition on natural slopes and residential area.

Role, Project, Oakland, California, City of Oakland, Department of Public Works, Type of Contract, Years, Cost: Geological Study, Including fault trenching, Golf Links Road.

Industrial and Power Facilities

Principal Investigator, Colusa Power Plant Application for Certification (CEQA Equivalent), Colusa County, California, Reliant Energy, Type of Contract, 2001-2002, \$1.6 million:

Responsible for soils, geology, geologic hazards, and groundwater portions for a proposed grass-roots power plant, including preparation of AFC submittal.

Task Manager, Potrero Power Plant Unit 7 Project Application for Certification, San Francisco, California, Mirant Corporation, Type of Contract, 2000-2003, \$4 million: The project entailed the preparation of an Application for Certification (a CEQA-equivalent document) for a 540 MW natural gas-fired combined-cycle power plant located in the central waterfront area adjacent to San Francisco Bay on the site of an existing power plant. The site will house several generators, including two combustion turbines, one steam turbine, and two heat recovery steam generators equipped with selective catalytic reduction. As current configured, the design of the Unit 7 power plant features once through cooling using water from the Bay. Project responsibilities included preparation of the geologic and soils-related aspects of the environmental document. The major issue was soil and groundwater contamination from previous on-site industrial activities. Included testimony before the California Energy Commission. The application was eventually withdrawn.

Task Manager, Contra Costa Power Plant Proposed Expansion Application for Certification, Contra Costa County, California, Mirant Corporation, Type of Contract, 1999-2001, Cost: The project entailed the preparation of an Application for Certification for a 530 MW



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natural gas-fired combined cycle power plant located on the site of an existing power plant in Antioch. The project site will house several generators, including two combustion, one steam turbine, and two heat recovery steam generators equipped with selective catalytic reduction; a wet cooling tower; and other ancillary facilities. Project responsibilities included preparation of the geologic and soil-related aspects of the environmental document. The major issue was the effects of arsenic-contaminated groundwater on construction. Included testimony before the California Energy Commission.

Role, Project, Matagorda County, Texas, Client, Type of Contract, Years, Cost: Technical Review, geology and seismology, Comanche Peak Nuclear Power Plant, Texas and South Texas Project.

Role, Project, California, Client, Type of Contract, Years, Cost: Geologic studies for siting of the Superconducting Super Collider (SSC) as part of the State of California's proposal.

Principal Investigator, Preliminary Safety Analysis Report (PSAR), Texas, Houston Lighting and Power, Type of Contract, Years, Cost: Regional and site geology/seismology studies, Preliminary Safety Analysis Report (PSAR), proposed Allens' Creek Nuclear Generating Stations (ACNGS), on the Texas Gulf Coast, for Houston Lighting and Power

Role, Morro Bay Power Plant, Morro Bay, California, Pacific Gas and Electric, Type of Contract, Years, Cost: Consultation, landsliding associated with roadway tank farm, Pacific Gas and Electric Company, Morro Bay, California power plant.

Role, Moss Landing Power Plant, Moss Landing, California, Pacific Gas and Electric, Type of Contract, Years, Cost: Groundwater Availability Assessment, including Deep Test Well, Pacific Gas and Electric Company, Moss Landing, California power plant.

Project Manager, Project, San Jose, California, Pacific Gas and Electric, Type of Contract, Years, Cost: Site characterization of a former manufactured gas plant (MGP) site in San Jose, California for Pacific Gas and Electric Company.

Project Manager, Project, XXXX, California, Southern California Edison, Type of Contract, Years, Cost: Technical Feasibility, Carbon Dioxide Sequestration Options, Mohave Generating Station, for Southern California Edison.

Role, Project, Maryland, Potomac Electric Power Company (PEPCO), Type of Contract, Years, Cost: Fault hazard assessment, including trenching, proposed Douglas Point Nuclear Power Plant, Maryland, for Potomac Electric Power Company (PEPCO).



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Oil and Gas

Task Manager, LNG Terminal Adentro de Baja Mexico Environmental Impact Assessment and Eco-Risk Study, Baja, California, ChevronTexaco, Type of Contract, 2002-2004, \$2 million:

The project entailed the preparation of comprehensive environmental documentation for a proposed offshore LNG regasification terminal located 13 kilometers off the coast of Tijuana and an offshore submarine pipeline system. With the capacity to store 250,000 cubic meters of LNG, the terminal will be situated in about 20 meters of water on a fixed concrete structure known as a Gravity Based Structure. As currently configured, the facility features the use of open rack vaporization with submerged combustion vaporization as a back up. Responsibilities included air photo interpretation, geologic reconnaissance, drilling, logging, sampling a series of geotechnical borings, and preparation of preliminary geotechnical recommendations.

Task Manager, Estero Bay Deep Water Terminal and Estero Bay to Richmond Pipeline EIR, Estero Bay, San Luis Obispo County to Richmond, Contra Costa County, California, Standard Oil Company of California, Type of Contract, 1973, \$60,000: Prepared Appendix O, Preliminary Geotechnical Review and Reconnaissance, and Appendix R, Route Alignment Summary Sheets. Project entailed a review of published and unpublished geologic mapping and reports, air photo interpretation, a flyover of the 280-mile-long pipeline alignment, and surface geologic reconnaissance of selected locations. The geologic hazard analysis emphasized static and dynamic slope stability, potential liquefaction, and construction considerations.

Task Manager, Richmond Refinery Site Characterization and Geologic Hazards Assessment Projects, Richmond, California, Chevron, Type of Contract, Years, Cost: Participated on numerous projects at the Richmond Refinery over a 10-year period. Representative projects include site characterization for a refinery-wide groundwater contamination assessment, waste discharge orders for various sites on the refinery, and a groundwater protection system; geologic hazards assessments at tank sites and for roadways on the refinery complex; geotechnical input to several Spill Prevention, Control, and Countermeasure studies, for 13 surface impoundments, and a hazardous waste treatment and storage facility; and slope stability analyses for a quarry and pipeline alignment.

Role, Project, Martinez, California, TOSCO, Type of Contract, Years, Cost: Work Plan, contamination assessment, Avon (Martinez, California) Refinery, for TOSCO.

Role, Hydrological Assessments, Benicia, California, Exxon Corporation, Type of Contract, Years, Cost: Hydrological assessment, wastewater treatment ponds, Benicia, California refinery for Exxon Corporation.



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Role, Crude Oil Pipeline, California, Chevron, Type of Contract, Years, Cost: Geotechnical and geologic hazards studies for an environmental report along proposed crude oil pipeline in central California, for Chevron USA.

Role, West Coast LNG Sites, Location, El Paso Natural Gas, Type of Contract, Years, Cost: Geologic hazards assessments, proposed West Coast LNG terminal sites, for El Paso Natural Gas.

Role, TransEcuadorean Pipeline, Ecuador, Client, Type of Contract, Years, Cost: Post-earthquake studies along TransEcuadorean Pipeline, Ecuador, related to mudflow damage.

Role, Project, Hassi R'Mel, Algeria, SONATRACH, Type of Contract, Years, Cost: Foundation investigation, proposed compressor station sites, Hassi R'Mel, Algeria, for SONATRACH (Algerian National Oil Company).

Role, Project, Gaviota, California, Chevron, Type of Contract, Years, Cost: Geotechnical investigation, proposed onshore oil and gas processing facility, Gaviota, California, for Chevron USA.

Project Manager, J.C. Penney Gasoline Stations, Various Sites, California, J.C. Penney, Type of Contract, Years, Cost: Soil and groundwater contamination studies including design and implementation of remedial activities at former gasoline stations for the J.C. Penney Company at sites in San Jose, Salinas, Cupertino and Concord, California.

Facilities

Principal Investigator, Home Depot DeWitt Center Project EIR, Placer County, California, County of Placer, Type of Contract, 2002-2004, \$500,000: Project entailed the preparation of environmental documentation for development of a very controversial Home Depot store on Placer County property next to the DeWitt Center Government Offices, and adjacent to the crowded SR 49 corridor. Issues included land use compatibility, use of government property for a "big box" development, traffic, health issues related to diesel trucks in close proximity to sensitive receptors, and impacts on local businesses. Project responsibilities included the preparation of an Existing Conditions Report for hazardous materials, geology, soils, and seismicity, and input to the Initial Study.

Role, Manenggon Hills Resort, Guam, USA, MDI Guam, Inc., Type of Contract, 1990-1996, Years, Cost: Geologic hazard and engineering geology studies for a 1,300-acre multi-use development in Guam.

Project Manager, Project, San Ramon, California, Eastman Kodak Facility, Type of Contract, Years, Cost: Investigation of a petroleum hydrocarbon release in soil and groundwater.



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Project Manager, Project, Pittsburg, California, Triangle PWC manufacturing Facility, Type of Contract, Years, Cost: Investigation of heavy metals release and remediation.

Project Manager, Valley Wood Studies, Turlock, California, Central Valley Regional Water Quality Control Board, Type of Contract, Years, Cost: Managed the soil and groundwater contamination studies at the Valley Wood Preserving facility – a state Superfund site in Turlock, California. Project entailed drilling and sampling of test borings as well as analytical testing of soil and groundwater samples.

Principal Investigator, DeWitt Government Center Project EIR, Placer County, California, County of Placer, Type of Contract, Years, Cost: Prepared Existing Conditions Report for hazardous materials, geology, soils, and seismicity for the DeWitt Center, governmental complex. Also provided input to Initial Study for proposed new buildings (Auburn Justice Center and Land Development Building) (in progress).

Principal Investigator, Project, Phoenix, Arizona, Motorola, Inc., Type of Contract, Years, Cost: RI for a solvent release in a fractured bedrock aquifer in the Southwest Parking Lot (SWPL) of a Motorola manufacturing facility.

Role, Recreational Development, California, Client, Type of Contract, Years, Cost: Feasibility and engineering geology studies for housing and recreational developments in northern California.

Role, Project, Oakland, California, Holy Redeemer College, Type of Contract, Years, Cost: Geologic hazard assessment for property along trace of Hayward Fault.

Role, Project, Sonoma County, California, Santa Rosa Memorial Hospital, Type of Contract, Years, Cost: Geologic Hazard Assessments, including trenching across projection of Rodgers Creek Fault.

Role, Project, Subic Bay, Republic of Philippines, Client, Type of Contract, Years, Cost: Geological Hazard Studies for proposed Naval housing at Subic Bay, Republic of Philippines.

Role, Project, Location, California, Client, Type of Contract, Years, Cost: Geologic hazard studies for hospital and school sites in seismically active portions of California.

Principal Investigator, Veronica Meadows EIR, Santa Barbara, California, Veronica Meadows Subdivision, Type of Contract, Years, Cost: Geology portion of Draft Environmental Impact Report for proposed Veronica Meadows subdivision, Santa Barbara. Particular emphasis on existing landslides and their stabilization with respect to the proposed development.



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Consultant, Consultation, Los Angeles, California, Bel Air Bay Club/Edgewater Towers, Type of Contract, Years, Cost: Consultation, Bel Air Bay Club and Edgewater Towers projects, Los Angeles; evaluated stabilization alternatives with emphasis on dewatering systems.

Manager, Project, Palo Alto, California, Hewlett-Packard, Type of Contract, Years, Cost: Remedial Investigation Report, Hewlett-Packard 1501 Page Mill Road facility, Palo Alto, California.

Peer Reviewer, Buck Center Geological Report, XXXXX, California, County of Marin, Type of Contract, Years, Cost: Reviewed geological investigation at site of highly controversial Buck Center for Research. Project involved interpretation of complex geology and potential slope instability associated with major construction project. Appeared before Executive Committee of the Board of Directors of the Buck Fund.

Project manager, Steel Fabricating Facility, San Francisco, California, Client, Type of Contract, Years, Cost: RI for Industrial Indemnity Financial Corporation for a 180-acre former steel fabricating facility on shore of San Francisco Bay.

Role, Project, Location, University of California, Berkeley, Type of Contract, Years, Cost: Peer review, assessment of Louderback Trace of the Hayward Fault for proposed student housing.

Role, Project, Los Gatos, California, Loma Prieta Joint Union Elementary School District, Type of Contract, Years, Cost: Geological studies, including fault trenching, proposed Clarence T. English School.

Role, Project, Reno Nevada, Harrah's, Type of Contract, Years, Cost: Geological Hazards Assessment, including fault trenching, proposed hotel/casino complex.

Geologist, Positron-Electron Project, Palo Alto, California, Energy Research and Development Administration, Type of Contract, Years, Cost: Geotechnical studies for tunneling and earthwork portions at Stanford Linear Accelerator Center.

Landslide/Slope Stabilization

Project Engineering Geologist, Landslide Stabilization, Santa Clara Tunnel Landslide Project, for the Santa Clara Valley Water District, Santa Clara, California, Type of Contract, Years, Cost: Work included review of historic data, subsurface exploration, design and implementation of a landslide stabilization program conducted in an environmentally sensitive area.

Geologist, Ocean Manor Landslide Evaluation, San Diego, California, County of San Diego, Type of Contract, Years, Cost: Conducted forensic evaluation of a major deep landslide at the Oceanside Manor Subdivision. Developed and implemented stabilization system and



Raymond H. Rice, P.G., C.E.G.

dewatering tunnel for homeowners association. Provided expert witness testimony.

Geologist, Ancient Landslide Evaluation, Laguna Niguel, California, County of Orange, Type of Contract, Years, Cost:

Provided geologic expertise during litigation related to damage incurred from two landslides, one at a condominium development and one at an apartment complex. Evaluated ancient landslide and its effects on siting and construction.

Geologist, Sea View Hills Townhouse Landslide Stabilization Project, Ventura, California, County of Ventura, Type of Contract, Years, Cost: Represented the Bank of America in reconstruction and stabilization of property damaged by a landslide. Evaluated landslide mechanism, reconstruction of retaining walls, underground utilities, pavement, landscaping, and long-term monitoring.

Role, Slide Projects, Various Locations, Various Clients, Type of Contract, Years, Cost: Miscellaneous slide projects for Bay Area jurisdictions involving investigation/stabilization, e.g., Chelton Drive slide (City of Oakland); East Avenue slide (Alameda County); San Pablo Dam Road slides (Contra Costa County).

Geologist, On-Call Contract, San Francisco, California, City and County of San Francisco, Department of Public Works, Type of Contract, Years, Cost: Projects ranged from small rockfalls to design and construction of tied back retaining wall and drainage gallery; rock bolting on Telegraph Hill; and expert witness testimony.

Principal Investigator, Via de las Olas Landslide, Pacific Palisades, Los Angeles, California, Occidental Petroleum, Type of Contract, Years, Cost: Represented Occidental Petroleum in controversial project at proposed drill site along Pacific Coast Highway; included testimony before L.A. Planning Commission, L.A. City Council, and the California Coastal Commission.

Principal Investigator, Las Flores Canyon Landslide Mitigation Study, Malibu, California, Los Angeles County, Department of Public Works, Type of Contract, Years, Cost: Evaluated various mitigation alternatives related to access to more than 400 homes jeopardized by Rambla Pacifico slide and continued erosion of toe by Las Flores Canyon Creek. Selection of preferred concept was based on technical issues, cost considerations, and environmental issues.

Role, Slope Stabilization, San Francisco, California, City and County of San Francisco, Department of Public Works, Type of Contract, Years, Cost: Provided consultation regarding stabilization of failed slopes at Sutro heights Park above Point Labos Avenue, and at the Cliff House.

Role, Landsliding Review Valencia, California, U.S. Postal service, Type of Contract, Years, Cost: Independent review of siting/landslide



Raymond H. Rice, P.G., C.E.G.

stabilization project for the U.S. Postal service Valencia; involved consideration of major grading in landslide- susceptible environment.

Geologist, Love Creek Slide Evaluation, Santa Cruz, California, City of Santa Cruz, Type of Contract, Years, Cost: Represented insurance company for landowner of massive slide triggered by unprecedented rains of January 1982 resulting in 11 fatalities. Provided witness expert testimony.

Water/Wastewater

Senior Reviewer, San Joaquin Pipeline No. 4 Project Environmental Analysis Services, San Joaquin County, California, San Francisco Public Utilities Commission, T&M Not to Exceed, 2006-ongoing, \$2.2 million: Provided technical oversight to geologic aspects of the EIR, a joint venture between URS and ATS.

Role, Lubet Frog Habitat, San Mateo County, California, San Francisco Public Utilities Commission, As-Needed, 2002-ongoing, \$396,000: Geological and geohydrological aspects of design and permitting services, creation of red-legged frog ponds for mitigation of various projects, Lubet property, San Mateo County, California, for SFPUC.

Task Manager, Baylands Recovery Project, San Francisco, California, San Francisco Public Utilities Commission, Type of Contract, Years, Cost: Managed the engineering geology and geotechnical investigation for remediation of property along the Hetch Hetchy right-of-way in Menlo Park that was leased by the Peninsula Sportsman's Club from 1939 to 1994 for use as a trap and skeet-shooting range. Shooting activities resulted in the deposition of clay pigeon debris, spent shotgun shell casings, lead shot across the northern portion of the property and on an adjacent levee and salt evaporation pond, and significant concentrations of residual lead. The project entailed compliance with a Regional Water Quality Control Board order to remediate the upland, levee, and salt pond areas; development of a cost-effective engineering approach to remediate the contaminated areas; development of risk-based remediation goals; sediment chemical data collection; review of a geotechnical study; constructability studies; permitting; and extensive coordination with regulatory agencies, including the California Department of Fish and Game, the U.S. Fish and Wildlife Service, and the Regional Water Quality Control Board.

Project Geologist, Geologic Hazard Assessment, Hayward, California, City of Hayward Water Distribution System, Type of Contract, Years, Cost: Work included air photo interpretation, site geologic reconnaissance, review of existing subsurface data, and prioritization of hazards associated with storage tanks, pump stations, and pipelines in areas affected by landslides, fault displacements, and potential liquefaction.



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Role, San Jose Airport, San Jose, California, ARCS, Type of Contract, Years, Cost: Leaking underground storage tank investigation, San Jose Airport, for ARCS.

Role, Dynamic Response Analysis, Sonoma, California, U.S. Army, Corps of Engineers, Type of Contract, Years, Cost: Field, laboratory, and engineering studies for seismic stability evaluation of Warm Springs Dam, a major earth fill embankment in Sonoma County, California (U.S. Army, Corps of Engineers, San Francisco District);

Role, Betania Dam, Magdalena River, Colombia, Instituto de Energia Electrica (ICEL), Type of Contract, Years, Cost: Fault studies and seismic risk assessment for Betania Dam, a major earth-fill structure on Magdalena River, Colombia.

Senior Technical Reviewer, Project, Richmond, California, Chevron, Type of Contract, Years, Cost: Waste Discharge Order Project for Chevron, USA at the Richmond, California refinery.

Role, Groundwater Contamination Studies, San Francisco, California, Client, Type of Contract, Years, Cost: Groundwater contamination studies for organic solvents, fertilizers, pesticides and petroleum products in San Francisco Bay Area for industrial clients.

Task Manager, Review and Completion of General Seismic Requirements for Design of New Facilities and Upgrade of Existing Facilities, San Francisco, California, San Francisco Public Utilities Commission, Type of Contract, Years, Cost: Supervised presentation of available geologic mapping showing areas of landsliding and liquefaction susceptibility within the area of the Hetch Hetchy water distribution system. Edited text related to landsliding and liquefaction.

Role, Pamo Dam and Reservoir, San Diego, California, San Diego County Water Authority, Type of Contract, Years, Cost: Comparative feasibility and cost analysis study of alternate dam types, including earthfill, rockfill and concrete. Investigated the site and potential borrow areas for Pamo Dam and Reservoir in San Diego County, California.

Task Manager, TOFC Remediation System, Location, Port of Oakland, Type of Contract, Years, Cost: Managed the engineering geology and geotechnical investigation for remedial design, construction oversight, system startup, and operations and maintenance services for a free-product groundwater recovery system to remediate THP contamination at a former railroad fuelling area at the Port of Oakland. To maximize the recovery of free-product, the remedial design included extraction trenches and sumps with programmable logic controller-driven, variable speed groundwater pumps, and fixed-weir skimmers. The remedial design also featured a SCADA system to reduce operations and maintenance costs and provide operational flexibility.



Raymond H. Rice, P.G., C.E.G.

Technical Reviewer, Engineering Geology Investigation Aspects of Proposed New Plymouth Reservoir Project for the City of Plymouth, Amador County, California, City of Plymouth, Type of Contract, Years, Cost: The project involved engineering geology and geotechnical investigations for an earth-fill embankment dam, two saddle or berm dams, a spillway, two diversion structures, and appurtenant facilities. Because the reservoir is situated in a former gold mining area, the handling of arsenic-contaminated spoil was an issue. The project included test pits to identify the depth to bedrock and potential borrow sources, as well as geotechnical test borings for foundation characterization. Seismic refraction surveys were conducted to define the bedrock surface. Chemical analyses of all mine spoil piles was conducted to evaluate potential issues regarding arsenic.

Project Engineering Geologist, Pardee Dam Supplementary Flood Evaluation, Amador and Calaveras Counties, California, East Bay Municipal Utility District, Type of Contract, Years, Cost: This study was conducted at the request of the FERC to evaluate the sliding stability of the concrete gravity dam under the Probable Maximum Flood (PMF) condition. The work involved a detailed review of existing data from the foundation and abutments, including obtaining rock structural discontinuities using downhole video logging techniques followed by 3-D stability analysis.

Project Manager, Terminus Dam Spillway Enlargement Project, Lake Kaweah, Tulare County, California, U.S. Army Corps of Engineers, Type of Contract, Years, Cost: The enlargement of the spillway was required to increase the flow capacity and accommodate a fuse gate structure to allow increased reservoir capacity. The work involved: characterization of the rock mass; design of a rock anchor support system for each abutment and a wet well structure, in addition to hold-down anchors for the fuse gate structure; and Quality Assurance support during the construction period.

Project Manager, Priest Reservoir Bypass Tunnel Site Investigation, Tuolumne County, California, San Francisco Public Utilities Commission, Type of Contract, Years, Cost: The work involved siting studies and subsurface exploration for the construction of a bypass tunnel, connecting the Mountain Tunnel to the Power Tunnel above the Moccasin Powerhouse. Techniques included continuous rock coring, packer testing, marine geophysics, and laboratory testing of representative rock cores.

Role, Project, Newark, California, Borden, Type of Contract, Years, Cost: Soil and groundwater contamination assessment, industrial property, Newark, California, for Borden.

Various assignments for the Marin Municipal Water District, including: evaluation of landslide hazard along Southern Marin Pipeline Road; geologic evaluation of Phoenix Bypass Pipeline; geotechnical study of Ross Reservoir.



Raymond H. Rice, P.G., C.E.G.

Principal Geologist, Preliminary Groundwater Resource Assessment, Location, Oak Valley Company, Type of Contract, Years, Cost: Evaluated the groundwater resource for a proposed 1,500-acre multi-use property in the northern portion of San Benito County, California. Included acquisition and review of geologic, hydrogeologic, geophysical, and groundwater quality data; air photo interpretation; geologic mapping; and the installation and testing of two test production wells to depths of 480 and 600 feet.

Role, Point Labos Viaduct, Location, National Park Service, GGNRA, Type of Contract, Years, Cost: Evaluated wave erosion effects on stability of the Point Labos Viaduct.

Role, Project, Location, Client, Type of Contract, Years, Cost: Leakage and stability evaluations of major hazardous waste surface impoundments for Part B permit applications.

Role, Land Reclamation, Panama Bay, Republic of Panama, Client, Type of Contract, Years, Cost: Preliminary engineering studies for proposed major land reclamation project in Panama Bay, Republic of Panama.

Role, Project, Palo Alto, California, Client, Type of Contract, Years, Cost: Regional geologic studies and development of hydrogeologic model associated with major RI/FS at an industrial facility in Palo Alto, California.

Principal Investigator, Project, Arizona, Confidential Client, Type of Contract, Years, Cost: Engineering Geology for a proposed diversion project involving site selection and preliminary design considerations for dams and tunnels in complex geological setting including granitics, volcanics, Paleozoic sediments; included comparison of Tunnel Boring Machine (TBM) vs. Drill, Blast and Muck (DBM) technologies.

Land Use Plans

Task Manager, Riolo Vineyards Specific Plan, Placer County, California, County of Placer, Type of Contract, 2005-2006, \$479,000: The proposed Riolo Vineyards Specific Plan area is located within the Dry Creek/West Placer Community Plan, surrounded by Dry Creek on the north and south, and existing and planned development on the west, south, and east. The Specific Plan consists of fifteen parcels totaling about 527.5 acres proposed for residential development (837 dwelling units), parks and open space, and an expansion of the Roseville Cemetery. Extension of water and wastewater service to service the site is required. The Applicant proposes residential and a small commercial area. The project would require the approval of Large Lot Vesting Tentative Maps and various permits, including conditional land use permits, tree removal permits, and a floodplain development permit. Issues included development in the floodplain; traffic, including internal circulation; substantial planned growth in the area; and extension of infrastructure to



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the site. Project responsibilities included preparation of the soils, geology, and geologic hazards sections of the environmental document.

Task Manger, Antonio Mountain Ranch Specific Plan EIR, Placer County, California, County of Placer, Type of Contract, 2000-present, Cost: Soils, Geology and Seismicity Task Manager and the Hazardous Materials Task Manager for this proposed Specific Plan located within Placer County's Sunset Industrial Area. The Plan Area consists of 2,200 acres of undeveloped lands proposed for a mix of industrial, commercial, residential and university uses. The project is in its initial processing phases. Performed peer reviews on the Applicant's Phase 1 ESA and Preliminary Geotechnical Reports. He will be responsible for preparing the Soils, Geology and Seismicity and the Hazardous Materials and Waste chapters of the EIR.

Task Manger, Placer Ranch Specific Plan Processing and EIR, Placer County, California, County of Placer, Type of Contract, Years, Cost: Soils, Geology and Seismicity Task Manager and the Hazardous Materials Task Manager for this proposed Specific Plan located within Placer County's Sunset Industrial Area. The Plan Area consists of 2,200 acres of undeveloped lands proposed for a mix of industrial, commercial, residential and university uses. The project is in its initial processing phases. Project responsibilities include peer review of the Applicant's Phase 1 ESA and Preliminary Geotechnical Reports, and preparation of the soils, geology and seismicity and the hazardous materials and waste chapters of the environmental document.

Task Manager, Sierra Vista Specific Plan and Annexation EIR, Roseville, California, City of Roseville, Type of Contract, Years, Cost: Project entails the preparation of environmental documentation for a 2,000-acre Specific Plan within the City of Roseville's sphere of influence. Development issues include a rapidly growing area in which several other specific plans are also being proposed; site constraints, including wetlands and other Waters of the United States; traffic, relationship to neighboring land uses, including nearby residential areas and public facilities; availability of water; capacity of water and wastewater infrastructure; and recycled water. The scope of work includes peer review of a series of master plans related to infrastructure, preparation of an historic architecture survey, a paleontological report, a traffic report, and complete documentation required for the environmental document. The City is currently assessing whether to re-scope the project for an EIS/EIR due to the significant federal permitting issues on the site. Project responsibilities include preparation of the soils, geology, and geologic hazards sections of the environmental document.

Task Manager, Urban Growth Management Plan Geologic Hazards Assessment, Tracy, California, City of Tracy, Type of Contract, Years, Cost: Reviewed published and unpublished technical data, prepared report text and graphical representations of the following geologic hazards/issues: surface fault rupture; liquefaction; seismic settlement; landslides and slope failures; compressible soils; expansive



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soils; collapsible soils; erosion; subsidence; and aggregate potential. The report included a discussion of the following factors: physiography, stratigraphy, soils, structural geology, seismicity and faulting, and groundwater.

Mass Transit/Rail

Role, Pacific Railroad, California, Client, Type of Contract, Years, Cost: Geologic studies for the Environmental Impact Assessment of proposed abandonment of Northwestern Pacific Railroad Eel River Line in Northern California.

Air Transportation

Role, Airport Studies, Chek Lap Kok, Hong Kong, Client, Type of Contract, Years, Cost: Engineering geology studies for proposed replacement airport at Chek Lap Kok, Hong Kong.

Role, Runway Expansion, Honolulu, Client, Type of Contract, Years, Cost: Geotechnical studies for Reef runway expansion at Honolulu International Airport.

Landfills

Task Manager, Presidio Trust Landfills 8 and 10, The Presidio, California, The Presidio Trust, Type of Contract, Years, Cost: Managed the geotechnical investigations of two abandoned landfills at the Presidio of San Francisco. The landfills were used for the disposal of building demolition rubble, clean soil, and vegetative waste. The project entailed the development of a comprehensive sampling and analysis plan for the field investigation of both landfills. Sixteen test pits were excavated in Landfill 8 to confirm the boundaries of the landfill as previously delineated, to estimate the landfill volume, investigate the potential boundary between fill and native soil, and to evaluate whether the landfill posed a threat to shallow groundwater. Soil samples were collected from selected test pits and analyzed for metals, semi-volatile organic compounds, pesticides, and PCBs to characterize landfill waste. The field program for Landfill 10 consisted of test borings and test pits to provide samples for laboratory evaluation, primarily of natural materials, as well as visual observation of landfill material. Representative cross sections through the site were prepared based on the results of the field investigation, and engineering properties were assigned to the various site materials.

Principal investigator, Gravel Quarry, Mexico City, Mexico, Client, Type of Contract, Years, Cost: Geologic studies associated with closure of a municipal landfill located in a former sand and gravel quarry, Mexico City.

Project Type

Role, Project, San Francisco, California, Client, Type of Contract, Years, Cost: Fault hazard assessments within Alquist-Priolo Special Studies Zones, San Francisco Bay Area.



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Role, Guatemalan Reconnaissance, Guatemala, Client, Type of Contract, Years, Cost: Part of EERI Reconnaissance Team after 1976 Guatemalan earthquake.

Role, Subsurface Mapping and Measuring, Various Locations, Client, Type of Contract, Years, Cost: Measurement and mapping of surface exposures in Pennsylvania and New York and subsurface mapping in Texas coastal plain. Included application of gamma-neutron and E-log correlation methods.

Role, Pulgas Valve Lot Vaults, San Francisco, California, San Francisco Public Utilities Commission, Type of Contract, Years, Cost: Engineering geology portion of Pulgas Valve Lot Vaults Geotechnical Investigation, SFPUC.

Role, Project, Managua, Nicaragua, Vice Ministry of Urban Planning, Type of Contract, Years, Cost: Fault rupture and volcanic hazard assessment for six cities in Managua, Nicaragua metropolitan area; performed for zoning purposes for Vice Ministry of Urban Planning.

Role, Mission del Rio, Gilroy, California, CSY Investments, Type of Contract, Years, Cost: Geologic hazards assessment, including fault rupture analysis along Sargent fault zone Mission Del Rio project near Gilroy, Santa Clara County, California.

Role, Project, Millbrae, California, City of Millbrae, Type of Contract, Years, Cost: Geologic hazards evaluation, various storage tanks, for the City of Millbrae.

Role, Project, Palo Alto, California, Stanford University, Type of Contract, Years, Cost: Evaluation of deformation potential across the stock farm monocline, Palo Alto, California, for Stanford University.

Role, EIR, Gasquet, California, California Nickel Company, Type of Contract, Years, Cost: Geology portion of EIR for California Nickel Company, proposed nickel mine, Gasquet, Del Norte County, California.

Professional Societies/Affiliates

Member, Association of Engineering Geologists

Member, Earthquake Engineering Research Institute

Awards

[Click [here](#) and type Year/Award Name/Awarded by]

Languages

English, Basic Spanish



Raymond H. Rice, P.G., C.E.G.

Specialized Training

[Click [here](#) and type Year/Training Course]

Security Clearance

[Click [here](#) and type Security Clearance Level]

Publications

Roth, W.H., Rice, R.H., Liu, D.T., and Cobarrubias, J., 1992, "Hydraugers at the Via de las Olas Landslide," in Proceedings, Stability and Performance of Slopes and Embankments, II, Berkeley, California, June 21 – July 1.

"Observations and Impressions, Guatemala, February 6-12, 1976," in The Guatemala Earthquake – February 4, 1976, published by the Earthquake Engineering Research Institute.

Roberts, G.D., and Rice, R.H., 1971, "Urban Geologic Handicaps," in Environmental Planning and Geology, U.S. Geological Survey, Department of the Interior and U.S. Department of Commerce, Housing and Urban Development.

Chronology

1999 - Present: URS, San Francisco, CA

1966 - 1999: Dames & Moore, San Francisco, CA

Summer 1965: Pan American Petroleum, Houston, TX

Summers 1963 & 1964: Tenneco Oil Company, Pittsburgh, PA

Contact Information

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ray_rice@urscorp.com

DALE ROSS, PE – SR PROJECT MANAGER

Education

BS, Civil Engineering, Colorado State University, Fort Collins, CO 1971

Registration

Professional Engineer 1999, CA # C60595; Colorado – 1978; Washington, Oregon, Idaho - 1990

Qualifications

Mr. Ross offers over 25 years of experience in civil, water, sewer, and roadway design engineering. As Senior Project Manager for Stantec in Palm Desert, CA. Mr. Ross interacts with clients and agencies to manage and coordinate projects until they are complete while maintaining a high level of quality control. He is also responsible for providing design supervision and support for sewer, water, street, storm drain, and other civil improvements. His work with agencies such as Caltrans, North County Transit District, Centre City Development Corporation, and Ramona Water District, and the Coachella Valley Water District, as well as the cities of Indio, Palm Springs, Oceanside, San Diego, Carlsbad, Vista; and the Counties of San Diego, Riverside and Imperial make Mr. Ross' expertise invaluable in dealing with public and private works projects. Most of his projects included topographic and design surveys; research and potholing of existing utilities; street improvements including curb and gutter, sidewalk, street re-construction, street lighting, signing and striping, and coordination with traffic signal installation; wet utility improvements including water, sanitary sewer, and storm drainage facilities; and rough and precise grading improvements. In addition, he has also worked with several private development companies including; Charles Companies, SunCal, Contempo Homes, Lennar Homes, Ryland, and Woodside.

Project Experience

Golf Center Parkway; SunCal Companies; Indio, CA. Project Manager responsible for producing construction documents (PS&E's) for the half-street improvements of Golf Center Parkway as part of the Landmark Lakes Estates development. Project included topographic and design surveys, to coincide with the development of a number of residential developments .

Avenue 44; SunCal Companies; Indio, CA Project Manager responsible for producing construction documents (PS&E's) for the half-street improvements of Avenue 44. Project was designed and constructed to coincide with the development of a number of residential developments as well as support services include pre-construction meeting, review of shop drawings, response to Contractor initiated Request for Information (RFI's), site inspections, and preparation of final "punchlist".

Highway 86 Frontage Road; Caltrans and Torres Martinez Cahuilla Indian Tribe; Imperial County, CA Project Manager responsible for producing construction documents (PS&E's) for the construction of approximately 2700 feet of frontage road improvements adjacent to Highway 86 in Imperial County near Salton City.

India Street Improvements; Centre City Development Corporation (CCDC); San Diego, CA Project Manager responsible for overseeing engineering efforts, agency and client coordination, resolution of design issues, and staff supervision for this 5-block (1,700 feet) street, sidewalk, and landscape improvement project in the Little Italy district of San Diego.



Kathy Rushmore

Deputy Project Manager

Overview

Kathy Rushmore has 10 years of experience in managing the preparation of environmental documents for power plant, industrial facilities, surface transportation, water resources, and land use projects. She has been the project manager, technical lead, and author of environmental documents prepared to meet the requirements of the California Environmental Quality Act (CEQA), National Environmental Policy Act (NEPA), as well as the California Energy Commission Power Plant Site Certification Regulations. She has also directed numerous resource agency permit applications and approvals and supporting analyses for air quality, water resources, and biological resources. Her experience also includes Phase I and II investigations, natural resource investigations, and the evaluation of hazardous materials and hazardous waste management practices.

Areas of Expertise

Power Plant Licensing
CEQA/NEPA Documentation
Environmental Planning and
Permitting
Hazardous Materials and Waste
Management

Education

M.S./Environmental
Science/2000/Macquarie University
B.A./Environmental Analysis and
Design/1995/University of
California at Irvine

Registration/Certification

2004/Registered Environmental
Assessor I/California
Environmental Protection Agency,
Department of Toxic Substances
Control/REA-07858

Specialized Training

2001/40-hour Hazardous Waste
Operations and Emergency
Response
2001/8-hour Supervisor of Hazardous
Waste Workers

Project Specific Experience

Deputy Project Manager and Technical Lead, CPV Sentinel Application for Certification, Competitive Power Ventures. Managed the preparation of the Application for Certification (CEQA-equivalent document) submitted to the California Energy Commission in June 2007 and technical lead for the Land Use section of the Application for Certification. Project proposes to construct and operate an 850 megawatt quick-start peaking electrical generating facility in Riverside County, California. Project responsibilities included ensuring compliance with the California Energy Commission's newly adopted siting regulations, oversight and coordination of entire project team, attendance at California Energy Commission Business Meetings, communication with the client and California Energy Commission's technical staff, preparation of docketed submittals, including responses to the California Energy Commission's Data Adequacy Recommendations.

Deputy Project Manager and Technical Lead, Colusa Generating Station Application for Certification, Competitive Power Ventures. Managed the preparation of the Application for Certification submitted to the California Energy Commission in November 2006 and served as the technical lead for the Land Use section of the application. Project proposes to construct and operate a 660 megawatt combined cycle power plant in Colusa County, California. Project responsibilities have included ensuring compliance with the California Energy Commission's siting regulations; preparation of the Land Use chapter of the Application for Certification and land use permit applications (General Plan and Zoning amendments, Tentative Parcel Map); oversight and coordination of entire project team; extensive communication with California Energy Commission staff, Colusa County Planning Department, and regulatory agencies; coordination of the Issues Resolution Workshop and associated site visit; preparation of numerous docketed submittals, including responses and comments on the California Energy Commission's Data



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Adequacy Recommendations, Data Requests, and Preliminary Staff Assessment.

Technical Lead/Task Manager, Trans Bay Cable Project EIR, City of Pittsburg. Project entails the installation of a 59-mile-long fiber optic cable from the City of Pittsburg to San Francisco, and the development of two onshore converter stations (one in Pittsburg and one in San Francisco), onshore cable installations, and sub-sea cable installation in San Francisco Bay. The project transects more than 10 local jurisdictions. Project responsibilities include preparation of the Land Use and Recreation and Public Services and Utilities sections of the environmental document; extensive research into zoning and land use plans and policies for each jurisdiction; and liaison with local regulatory agencies.

Project Manager, Station A Demolition EIR, City and County of San Francisco Major Environmental Analysis Division. Managed the preparation of environmental documentation for the demolition of historic structures situated at the Potrero Power Plant in the central waterfront district of San Francisco. Project responsibilities included the preparation of the project description; coordination with the client, regulatory agencies, and the project team; and preparation of summaries regarding legal testimony from previous Application for Certification evidentiary hearings.

Project Manager, Transportation System Capital Improvements Program Update Subsequent EIR, City of Roseville. The City of Roseville routinely updates its Capital Improvement Program to respond to changing conditions. In 2000, an EIR was prepared for the 2015 Capital Improvement Program Update, and in 2002, a Supplemental EIR was prepared to evaluate the 2020 Capital Improvement Program Update. The purpose of the Subsequent EIR is to evaluate a new update to the Capital Improvement Program that will address (1) new intersections that may fall below acceptable LOS C levels not identified in the 2020 Plan, (2) additional intersections that have reached unacceptable levels of service due to significant development in the City and may change from LOS C to LOS D, LOS D to LOS E, or from LOS E to LOS F, and (3) evaluate the widening of new intersections or roadways that were not identified in the 2020 Capital Improvement Plan. Project responsibilities include ongoing communication and coordination with the client and project team; preparation of the Notice of Preparation; preparation of the project description and specific technical sections of the Initial Study; and technical review of the Subsequent EIR.

Task Leader, Elk Grove-Rancho Cordova-El Dorado Connector Phase I Environmental Study, Sacramento Area Council of Governments. Project entails planning, engineering, and environmental services for development of a connector that will link residential areas and employment centers and provide multi-modal options for travel within the corridor, including transit, bicycle, and pedestrian facilities. The connector will relieve congestion on the overcrowded existing two-lane roadway that currently serves the corridor. The Phase I environmental



Kathy Rushmore

study, which precedes preparation of a subsequent EIS/EIR, involves preparation of a project definition, purpose and need statement, project goals and objectives; development of evaluation criteria; identification of alternatives at a sufficient level of details to support further analysis; environmental and engineering studies; preliminary cost estimates; and preparation of an alternatives comparison and study report that defines the scope, costs, and schedule for the next phase of project development. Responsibilities include community impact assessment during preparation of the Phase I environmental study and the subsequent EIS/EIR.

Deputy Project Manager, Terrace Avenue/Highway One Signalization EIR, Caltrans. Proposed project entailed the addition of a traffic signal and widening of Highway 1. Project responsibilities included researching Caltrans' requirements for highway widening projects, in particular Noise Assessments for Type I projects, Visual Assessments, and Natural Environmental Studies.

Technical Reviewer, Route 29 Improvements EIR/EA, Caltrans. Project entailed roadway improvements along State Route 29 in Lake County. Three alternatives were evaluated, including road widening along a 7-mile-long corridor. Project responsibilities included the review of reports and the Community Impact Assessment, Air Quality, Hazardous Waste and Materials, and Land Use sections of the environmental document; assessing the adequacy of the technical evaluations; and requesting additional data as required.

Technical Lead, Railway Restoration Project Environmental Assessment, Inyo County Planning Department. Prepared the physical environment sections of the environmental document that addressed Noise, Air, and Hazards impacts associated with the restoration of a railway located between Laws and Bishop in accordance with Caltrans' requirements.

Deputy Project Manager, Public Works Plan Phase I EIR, Montara Water and Sanitary District. Assisted with the management of the project team developing the environmental document for a public works project in California Coastal Zone. Oversaw the development of an extensive Biological and Hydrological Monitoring and Mitigation Plan to monitor potential impacts from groundwater extraction. Project responsibilities included significant liaison with regulatory agencies, including the California Department of Fish and Game, the U.S. Fish and Wildlife Service, and the National Oceanic and Atmospheric Administration.

Technical Lead, Pipeline Maintenance Programmatic EIR, Santa Clara Valley Water District. Public works project developed to establish best management practices for ongoing maintenance activities conducted for 23 pipelines throughout the County. Project responsibilities included preparation of the Hazards, Recreation, and Geology sections of the environmental document.



Kathy Rushmore

Task Manager, Storm Water Zoning Ordinance Amendments, Redwood City Planning Department. Assisted with the preparation of amendments to the Redwood City Zoning Ordinance, including revisions to landscape, open space, parking lot, permeable area, and creek setback requirements.

Deputy Project Manager, Sierra Vista Specific Plan EIR and EIS, City of Roseville and U.S. Army Corps of Engineers. Assisting with the management of the project team preparing an EIR for a 2,000-acre Specific Plan within the County of Roseville's sphere of influence. Development issues include a rapidly growing area in which several other specific plans are also being proposed; site constraints, including wetlands and other Waters of the United States; traffic; relationship to neighboring land uses, including nearby residential areas and public facilities; availability of water; capacity of water and wastewater infrastructure; and recycled water. The scope of work includes peer review of a series of master plans related to biological resources and infrastructure; preparation of an historic architecture survey, a traffic report, and biological resource assessment; and complete documentation required for the environmental documents. The scope of work also includes a public outreach component. Due to the significant federal permitting issues on the site, a separate EIS will also be prepared for the project, with the U.S. Army Corps of Engineers as the federal lead agency. Project responsibilities include review of technical reports and coordination with the client, applicant, and project team.

Deputy Project Manager/Technical Coordinator, Placer Ranch Specific Plan EIR, Placer County Planning Department. Assisting with the management of the project team and preparing the environmental documentation for a 2,300-acre Specific Plan within Placer County. Project site is located next to an existing large municipal solid waste landfill. One chapter of the environmental document was dedicated to the evaluation of air quality (including odor), noise, traffic, landfill gas, and groundwater impacts associated with placing such a development next to a landfill. Project responsibilities also included the preparation of the Landfill chapter, which included a summary and evaluation of technical memoranda for incorporation into the environmental document, coordination with the project team, and interview with property owners.

Contract Planner, Evaluation of Permit Applications, San Mateo County Planning Department. Prepared staff reports evaluating coastal development permit applications for projects in San Mateo County and the California Coastal Zone.

Project Manager, Biological Assessments for Development Projects, Various Clients. Managed the preparation of biological assessments for compliance with the San Mateo County Local Coastal Program. Representative projects included bridge construction over creeks and tree removal on a site located in the California Coastal Zone. Project responsibilities included the assessment of regulatory requirements and



Kathy Rushmore

the development of mitigating plans for special status plant and animal species.

Professional Societies/Affiliates

Association of Environmental Professionals



JOHN SEIDLER
President, Spectrum Energy, Inc.

Mr. Seidler has more than twenty-five years experience in power generation and co-founded Spectrum Energy, Inc., in 1998, to provide comprehensive development, engineering, construction and project management services for power generation projects. Mr. Seidler has served as Project Manager on the following Spectrum projects, all of which were completed on or before schedule, under budget, and met or exceeded performance guarantees:

Dominion Ladysmith Units 3 & 4, Virginia:

- 350 MW, Two unit GE 7FA-based, dual-fuel, simple cycle power plant built for Dominion Resources
- Engineering, procurement, and construction management services provided.

City Water & Light Unit E, Arkansas:

- 50 MW, LM6000, simple cycle power plant built for Jonesboro City Water & Light.
- Engineering, procurement, and construction management services provided.

Duke Lee CT Power Project, North Carolina:

- 95 MW, 2xLM6000, simple cycle power plant built for Duke Power
- Engineering, procurement, and construction management services provided.

Kinder Morgan Power Project, Texas:

- 110 MW, LM6000, combined cycle power plant being built for Kinder Morgan Production Company LP.
- Engineering, procurement, and construction administration services provided.

AMEA Power Project, Alabama:

- 95 MW, 2xLM6000, simple cycle power plant being built for Alabama Municipal Electric Authority.
- Engineering, procurement, and construction management services provided.

City Water & Light Unit D, Arkansas:

- 50 MW, LM6000, simple cycle power plant built for Jonesboro City Water & Light.
- Engineering, procurement, and construction management services provided.

Lordsburg Generating Station, New Mexico:

- 80 MW, 2xLM6000, simple cycle power plant for Public Service Company of New Mexico.
- Project was designed to facilitate future installation of a third LM6000 and combined cycle conversion.
- Engineering, procurement and construction services provided.

Big Sandy Peaker Plant, West Virginia:

- 300 MW, 6xFT8 TwinPac simple cycle power plant for Constellation Power.
- Engineering, procurement and construction services provided.

Henry County Generating Station, Indiana:

- 135 MW, 3xLM6000, simple cycle power plant for a Cinergy-Duke Energy partnership.
- Engineering, procurement and construction services provided.

Freedom Power Station, Illinois:

- 45 MW, LM6000, simple cycle power plant for Southwestern Electric Cooperative.
- Engineering, procurement and construction management services provided.

City Water & Light Unit C, Arkansas:

- 45 MW, LM6000, simple cycle power plant built for Jonesboro City Water & Light.
- Engineering and procurement services provided.

Previously, Mr. Seidler founded a successful consulting business that provided development, engineering, and project management services to clients in the power industry for thirteen years. Projects included:

- Fort Lupton Cogeneration Project: Project Engineer for the 272 MW gas-fired cogeneration plant that began commercial operation in 1994 and has been operating successfully since 1994.
- Puente Hills Energy Recovery from Gas Project: Project Engineer for the 50 MW landfill gas-fired power plant that has been successfully operating since November 1986. PERG was the first and remains the largest landfill gas-fired power plant in the world.

Education

Loyola Marymount University, Masters Business Administration
Loyola Law School, Juris Doctor (California State Bar #177283)
California State University Long Beach, Graduate Courses in Mechanical Engineering
University of Santa Clara, BS Engineering



Dale Shileikis

Program Manager

Overview

Dale Shileikis has more than 25 years of experience providing project direction and management, environmental analysis under NEPA, CEQA or CEQA equivalent (CEC siting regulations), mitigation planning, and regulatory permitting assistance for power plant, industrial and oil and gas development projects worldwide. His specialty includes the direction and management of environmental documentation for large, multidisciplinary, multi-jurisdictional projects, particularly involving complex engineering design and scientific components; site selection; alternatives analyses; mitigation development; public presentation; and expert testimony. He has managed more than 200 multidisciplinary impact assessments (EIS and joint EIR/EIS).

The majority of his project profile features the siting, feasibility, and environmental assessment of energy development projects. Such projects require an intimate knowledge of federal and state regulatory requirements promulgated by the California Energy Commission, California Public Utilities Commission Federal Energy Regulation Commission, Mineral Management Service, U.S. Coast Guard, California State Lands Commission, and the California Coastal Commission. He is a veteran California Energy Commission and CEQA expert and has provided siting and permitting strategy on many controversial projects. A typical project entails the development of strategic and creative solutions for project development and mitigation design involving the cooperation of engineers, scientists, planners, and managers from project applicants, regulatory agencies, and consultants.

Project-Specific Experience

Project Manager, CPV Sentinel Application for Certification, Competitive Power Ventures. Managed the preparation of the Application for Certification that was determined Data Adequate by the California Energy Commission in the summer of 2007. The project consists of constructing and operating an 850 megawatt quick-start peaking electrical generating facility in Riverside County, California. Project responsibilities included ensuring compliance with the California Energy Commission's newly adopted siting regulations, oversight and coordination of entire project team, attendance at California Energy Commission Business Meetings, workshops and hearings, communication with the client and California Energy Commission's technical staff, preparation of docketed submittals, including responses to the California Energy Commission's Data Adequacy Recommendations.

Project Manager, Colusa Generating Station Application for Certification, E&L West Coast, LLC. Managed the preparation of the Application for Certification submitted to the California Energy Commission in 2006. Project consists of constructing and operating a 660 megawatt combined cycle power plant in Colusa County, California.

Areas of Expertise

Energy Development Siting,
Planning, and Assessment
NEPA/CEQA Environmental
Impact Assessment
California Energy Commission
Siting Regulations
Regulatory Permitting and
Compliance
Land Use and Transportation
Planning

Education

Graduate Studies/Environmental
Planning and Biology/San
Francisco State University and
University of California, Berkeley
B.S./Biology/1977/San Francisco
State University



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Project responsibilities have included ensuring compliance with the California Energy Commission's siting regulations; preparation of the land use permit applications (General Plan and Zoning amendments, Tentative Parcel Map); oversight and coordination of entire project team; extensive communication with California Energy Commission staff, Colusa County Planning Department, and regulatory agencies; coordination of the Issues Resolution Workshop and associated site visit; preparation of numerous docketed submittals, including responses and comments on the California Energy Commission's Data Adequacy Recommendations, Data Requests, and California Energy Commission Preliminary Staff Assessment.

Application for Certification Siting Regulations Consultation, Gateway Power Project (formerly Contra Costa Unit 8, Pacific Gas and Electric Company). Provided consultation to Pacific Gas and Electric on developing an Application for Certification under the requirements of the California Energy Commissions siting regulations. Included the development of permitting strategy, alternative cooling technologies and the availability of sources of water to be considered for power plant cooling. Provided peer review during the development of a revised Application for Certification.

Project Manager, Diablo Canyon Nuclear Power Plant Steam Generator Replacement Project Environmental Assessment. Prepared proponents environmental assessment for a California Public Utilities Commission filing to replace eight steam generators inside two nuclear reactor facilities at the power plant. The environmental assessment involved determining the potential impacts from project activities in compliance with CEQA, the regulations of the Nuclear Regulatory Commission, and other regulatory standards. Several options for transport, delivery, staging, and installation activities were analyzed to determine the best process for replacement of the generators while minimizing the environmental effects.

Peer Review Manager, Colusa Power Plant Application for Certification, Reliant Energy. Managed and conducted a peer review of an Application for Certification for a 500 megawatt power plant proposed to be located in Colusa County, California.

Project Manager, Potrero Power Plant Unit 7 Application for Certification, Mirant Corporation. Managed preparation of an Application for Certification (a CEQA-equivalent document) for a 540 megawatt natural gas-fired combined-cycle power plant located in the central waterfront area adjacent to San Francisco Bay on the site of an existing power plant. The site will house several generators, including two combustion turbines, one steam turbine, and two heat recovery steam generators equipped with selective catalytic reduction. As currently configured, the design of the Unit 7 power plant features once through cooling using water from the Bay. Oversaw preparation of the environmental documentation, including detailed studies for sixteen disciplines; preparation of permit applications; site planning and engineering feasibility studies; marine biological surveys, including Clean

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Water Act 316 (a and b) studies; and a NPDES Section 7 consultation. Key issues included air quality, public health, environmental justice, soil contamination, and potential effects on the biological resources in the Bay. Project entailed an extensive 18-month-long marine biological survey program to develop data to support the 316 (a and b) resource assessment and for preparation of a biological assessment under Section 7 of the federal Endangered Species Act. Responsibilities also included participation in California Energy Commission evidentiary hearings and workshops, and an extensive public outreach program.

Project Director, Contra Costa Power Plant Project Application for Certification, Mirant Corporation. Managed preparation for an Application for Certification (a CEQA-equivalent document) for a 530 megawatt natural gas-fired combined cycle power plant located on the site of an existing power plant. The project site will house several generators, including two combustion, one steam turbine, and two heat recovery steam generators equipped with selective catalytic reduction; a wet cooling tower; and other ancillary facilities. Oversaw preparation of all environmental documentation, including detailed technical studies, extensive stack and cooling tower plume modeling and simulations, and detailed analyses of cooling alternatives; and the preparation of permit applications. Key issues included air quality, emission reduction credits, visual impacts, effects on water resources and the San Joaquin River, and environmental justice. Responsibilities also included participation in California Energy Commission evidentiary hearings and workshops, and an extensive public outreach program.

Project Manager, Power Plant Selective Catalytic Reduction Systems, Environmental Analysis, Southern Energy California (Mirant). Managed the preparation of environmental documentation and air quality permit applications for the installation of selective catalytic reduction systems at the Contra Costa and Pittsburg power plants.

Project Manager, Project Description and Resource Reports, FERC Certificate Application, Bradwood Landing LNG Terminal, Northern Star Natural Gas. Managed the technical preparation of the Project Description and other Resource Reports required for a FERC Certificate Application for the Bradwood landing LNG Terminal located on the Columbia River in Oregon.

Project Manager, Power Plant Permitting, Duke Energy. Managed preparation of environmental documentation, air and coastal development permitting, and strategic planning for implementation of NO_x retrofit controls (SCR catalytic reduction) and power plant expansion in Monterey County.

Program Manager, LNG Terminal Site and Technology Assessment, Confidential Client. Responsible for the review of coastal areas in California, Oregon, and Washington for potential sites for energy facilities offshore and in the coastal zone, development of permitting strategies, feasibility assessments, and evaluations of possible technological alternatives.



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Regulatory Affairs Manager, Energy Project Development and Permitting, Confidential Client. Provided internal direction, strategies for environmental permitting, and feasibility assessments to a leadership team for the development of energy projects along the West Coast.

Project Manager, Natural Gas Terminal and Pipeline Applications, Confidential Client. Managed a large multidisciplinary team preparing federal (FERC) and state (California State Lands Commission) certificate applications, environmental studies, and permits for a natural gas terminal and alternative pipeline distribution system routes.

Project Manager, LNG Vaporization Technology Assessment, Confidential Client. As part of a multidisciplinary team, conducted an assessment of various LNG vaporization technologies, including open rack, submerged combustion, shell and tube, and intermediate fluid vaporization for onshore and offshore locations in the United States. The assessment included an assessment of the feasibility of obtaining permits through FERC, the U.S. Coast Guard, and various state regulatory agencies throughout the United States.

Project Manager, LNG Terminal Mar Adentro de Baja Mexico Environmental Impact Assessment and Eco-Risk Study, ChevronTexaco. Managed preparation of a comprehensive Environmental Impact Assessment for a proposed offshore LNG regasification terminal located 13 kilometers off the coast of Tijuana and an offshore submarine pipeline system. With the capacity to store 250,000 cubic meters of LNG, the terminal will be situated in about 20 meters of water on a fixed concrete structure known as a Gravity Based Structure. As currently configured, the facility features the use of open rack vaporization with submerged combustion vaporization as a backup. The EIA evaluated air quality impacts and control technologies (to U.S. Environmental Protection Agency and California standards), including both stationary and mobile source, water intake and discharge impacts (to U.S. Clean Water Act, NPDES requirements), and marine biological resource impacts. The eco-risk study evaluated issues associated with the transport, offloading, and vaporization of the LNG.

Program Manager, Pearl Crossing Deepwater Port Application, Offshore LNG Terminal Environmental Assessment, and FERC Application, ExxonMobil. Managing multidisciplinary team preparing Resource Reports, environmental studies, a U.S. Coast Guard Deepwater Port Act Application, and permits for Coast Guard and supporting FERC 7c Certificate Application for an offshore LNG terminal designed to process 2 billion cubic feet/day of natural gas and a submarine pipeline. An Environmental Report for the offshore terminal and pipeline, and a separate Environmental Report for construction of a graving dock, were prepared simultaneously. FERC Resource Reports were prepared for a 50- to 60-mile-long onshore pipeline. Key issues include the assessment of impacts to various sensitive receptors, including wetlands along various pipeline route alternatives, commercial oyster beds, marine resources such as sea turtles and sea grass beds, and the effects of dredging.



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Program Manager, Vista del Sol LNG Terminal Environmental Assessment and FERC Application, ExxonMobil. Directing a multidisciplinary team responsible for conducting an environmental assessment and preparation of a FERC application for an LNG terminal on a 371-acre site and a 25- to 50-mile-long gas pipeline. Working under the FERC pre-filing process, the project entails the preparation of Resource Reports, field surveys, and permit applications. Three existing pipeline rights-of-way cross the site, all of which may require relocation to allow for development of the LNG berthing channel and docking facilities. The LNG terminal will be constructed in two phases. In Phase 1, which will provide storage capacity for 1 billion cubic feet of LNG, storage tanks and offloading facilities will be developed for one tanker. Phase 2 entails the development of similar facilities for a second tanker. Resource Reports are being prepared in accordance with FERC's procedures for implanting NEPA compliance and for granting Certificates of Public Convenience and Necessity under Section 3 and 7(c) of the Natural Gas Act. Responsibilities also include extensive coordination with federal, state, and local regulatory agencies.

Project Manager, Chad Cameroon Export Pipeline and Marine Terminal Environmental Impact Assessment, Esso Exploration and Production Company. Managed a 4-year study in support of environmental documentation for a major oil field development and a 170-kilometers-long export pipeline in Chad. The environmental documentation was prepared according to the guidelines of the World Bank and the International Finance Corporation.

Project Manager, Biological Field Program, Esso Exploration and Management Company. Managed a year long detailed supplemental biological field program to support the development of and Environmental Management Plan for an oil field and pipelines transportation system.

Project Manager, Pipeline and Offshore Storage Facility Environmental Impact Assessment, Cameroon Oil Transportation Company. Managed a 4-year study and preparation of environmental documentation for an 880-kilometers-long pipeline and offshore storage and offloading facility. The environmental documentation was prepared according to the guidelines of the World Bank and the International Finance Corporation.

Project Manager, Power Plant Site Environmental Assessment, World Bank and International Finance Corporation. Managed the preparation of environmental documentation for a 100 megawatt power plant, oil field development, and export pipeline. Project entailed the management of all resource studies and field work, development of the project description, impact analyses, and presentation to the World Bank.

Project Manager, Pacific Refinery Clean Fuels Project, Coastal Corporation. Managed the preparation of environmental documentation



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and a land use permit application for the modernization and clean fuels project at the Pacific Refinery in Hercules, California.

Project Manager, McKittrick Permitting and Compliance Plan, Texaco. Managed the preparation of a regulatory compliance, permitting feasibility, and environmental management plan for an oil development and mining project in McKittrick, California.

Project Manager, Watson Refinery Expansion Project Environmental Impact Report, ARCO. Managed the preparation of environmental documentation for the modernization and expansion of the refinery in Southern California.

Project Manager, Sedigi-Seerat Oil and Electric Power Development Project, Exxon Company International. Managed environmental assessment and planning for a project located near Lake Chad.

Project Manager, Emergency Contingency Plan, Chevron. Managed the preparation of an oil spill and emergency contingency plan for several platforms in the Santa Barbara Channel, including platforms Hope, Heidi, Hilda, and Hazel.

Project Manager, Platform Harvest Permit Compliance Plan, Texaco. Managed the preparation of a permit compliance plan for platform Harvest in the Santa Barbara Channel.

Project Manager, Onshore Petroleum Base Environmental Studies, Confidential Client. Managed marine biology surveys and the preparation of a permit feasibility study for an onshore support base for the petroleum industry. Primary focus was the potential effects on water quality and local commercial fisheries.

Project Manager, Todos Santos Environmental Analyses and Mitigation Plan, California Conoco, Inc. Managed the preparation of environmental resource sensitivity analyses, an environmental assessment, and mitigation plan for oil and gas exploration and development at the Todos Santos leasehold on the Vandenberg Air Force Base.

Project Manager, Environmental Assessment, Northern Michigan Exploration Company. Managed the preparation of environmental documentation for an oil and gas development project.

Project Manager, Moss Landing Power Plant Permit Application, Pacific Gas & Electric Company. Managed the preparation of an environmental study and permit application to satisfy California coastal Commission requirements through the local Coastal Plan.

Senior Peer Reviewer, Bayside Cogeneration Facility EIR, Port of San Diego. Conducted the CEQA compliance peer review for the cogeneration facility.



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Project Manager, On-Call Biological Services, Caltrans District 9.

Managed a 2-year-long contract for on-call biological services in the counties of Inyo, Mono, Kern, and San Bernardino. Task orders included wetland delineations, botanical surveys, listed species surveys, and coordination with regulatory agencies. Studies were prepared in accordance with the guidelines of both Caltrans and the Federal Highway Administration, and to meet the requirements of CEQA and NEPA and responsible regulatory agencies.

Expert Witness, Pollutant Loading In San Francisco Bay, California Water Resources Control Board. Provided expert witness testimony on pollutant loading in San Francisco Bay during the San Francisco Bay/Delta hearings.

Professional Societies/Affiliates

California Association of Environmental Professionals
National Association of Environmental Professionals
International Association of Impact Assessment



Erik Skov, P.G. C.H.G.

Project Manager

Areas of Expertise

Site Characterization and Remediation
Remedial Investigation/Feasibility Studies
RAP preparation
Facility Closures
Extensive subsurface soil/groundwater investigation experience
Due Diligence/Environmental Auditing

Years of Experience

With URS: 20 Years
With Other Firms: 0 Years

Education

B.A./Geology/1988/Humboldt State University

Registration/Certification

California State Registered Geologist/#7470
California State Certified Hydrogeologist/No. HG 892

Specialized Training

40-Hour Hazardous Waste Operations Training
8-Hour Annual Review
8-Hour Supervisors Training Course
First Aid/CPR
LPS Training

Overview

Mr. Skov has over 20 years of experience providing hazardous waste management services, including subsurface investigations involving extensive soil and groundwater sampling, monitoring well design and installation, aquifer testing, data interpretation, reporting, and remedial action plan preparation and implementation. He also participates in engineering geology studies, including siting investigations for hospitals, municipal landfills, and natural gas pipelines; and provides data input for slope stability investigations.

Project Specific Experience

Project Manager, Golden Eagle Refinery, Groundwater Investigation, [Martinez, California], Phillips Petroleum: Responsible for additional groundwater characterization activities and refinement of the hydrogeologic model associated with a major release of pure MTBE from an underground pipeline at the refinery, as well as the O&M of the groundwater extraction and treatment system associated with the release cleanup.

Task Manager, Sediment Sampling Program, Tosco Avon Refinery, Martinez, California, Joint Environmental Investigation and Remediation Committee: Sediment sampling program to support the Human Health and Ecological Risk Assessment (HHERA). Tasks included interfacing with the ecological risk assessor to identify sampling locations at appropriate areas based on initial environmental data, planning sampling activities and coordinating with the JEIRC Project Manager and refinery Area Operators to obtain entrance and work permits for certain areas of the refinery, and supervising and participating in the sampling effort under the oversight of the U.S. EPA.

Project Manager, Facility Closures, [Union City and Fremont, California], Crown Cork & Seal Company: Managed work for closure of two facilities — a two-piece beverage can manufacturing (wet operation) facility, and a sanitary food can (dry operation) facility. The wet operation used atomized petroleum and synthetic hydrocarbons for cooling and lubrication. Work included preparation of a Facility Closure Plan, including compilation of an operation history of the facility; decontamination of the building interior, decontamination and removal of excess equipment, and reuse or disposal of all hazardous materials and hazardous wastes at the site. Prepared a Post-Closure Report. Subsequent to facility closure, a groundwater investigation was conducted to delineate the extent of a chlorinated hydrocarbon plume and a field scale pilot study was conducted to assess the potential for enhanced biodegradation using a hydrogen release compound. Routine groundwater monitoring has been ongoing at the facility since 2000.

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A Facility Closure Plan was prepared for the dry operation, which was similar to the other facility, but also included abatement of asbestos from drying ovens. Prepared a Post Closure Report for the removal of the ovens, equipment, and hazardous waste and materials. The data from the facility closure investigation was used to conduct an impact assessment and prepare a RAP, which included the excavation of soil impacted with petroleum hydrocarbons and chlorinated solvents from a leaking underground storage tank. Routine groundwater monitoring has been ongoing at the facility since 2001.

Analyst, Superfund Sites Remedial Investigations, [California], Cal-EPA Department of Toxic Substances Control: Conducted remedial investigations for several Superfund sites in California. Work included extensive soil and groundwater sampling, monitoring well installation, aquifer testing, data reduction and interpretation, and report preparation.

Project Manager/Technical Lead, Pharmaceutical Manufacturing Plant Remedial Action Plan, [Sydney, Australia], International Division of Merck: Project involved the excavation and bioremediation of 10,000 m³ of soil contaminated with dichlorobenzene at a manufacturing plant in Sydney, Australia. Also designed and constructed a groundwater extraction sump and conducted a field scale pilot test of a granular activated carbon remediation system. Responsibilities included overseeing field activities, QA/QC of field validation sampling and laboratory analytical results, managing and updating budgets and schedules, monthly cost tracking, data review and interpretation, client contact, and interaction with New South Wales Environment Protection Authority and local Council.

Technical Lead, Port Costa Refinery, [Port Costa, California]: Compiled historical data from several different sources and reviewed existing data at an abandoned bulk terminal facility to assess current site conditions and plan additional characterization work to develop an exit strategy. The former Port Costa oil storage and shipping terminal included aboveground storage tanks, a wharf, a railcar loading rack and a drainage pond. Petroleum hydrocarbons were observed issuing into the Carquinez Strait from a stormwater culvert, prompting the U.S. EPA to issue a Unilateral Order.

U.S. Technical Lead working with URS Paris office to conduct a site characterization at a former Chevron Chemical Company agricultural chemical plant located in Port de Bouc, France. Responsibilities included interfacing with a multi disciplinary project team to develop a scope of work to address the requirements of newly promulgated French regulations. Also responsible for developing the Quality Assurance Project Plan (QAPP) for the initial phase of the project.

Task Manager and Lead Geologist, [Pascagoula, Mississippi], Chevron Pascagoula Refinery: Prepared an update of the geologic site model for inclusion in the RFI for the refinery. Data from all previous site investigations and current RFI investigations were combined to develop the updated geologic site model.



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Project Manager, Automobile Manufacturing Plant Site Remediation, [Sydney, Australia], Ford Motor Company: Responsible for oversight of field excavation and remediation activities on a site in Australia containing soils contaminated with hydrocarbons. Performed QA/QC of excavation, soil remediation, validation sampling, and laboratory results. Reviewed and interpreted data., monitored project costs and interfaced with regulatory agencies in New South Wales.

Project Manager/Technical Lead, Site Characterization, [Site Characterization], ICI Paints: Managed site characterization of a former paint manufacturing facility. Prepared an investigation work plan for regulatory agency approval, formulated a remedial strategy, and developed site mitigation plan. Subsequent to approval of the site mitigation plan, developed a detailed design for construction of a clean fill cap and issued bid package to potential construction contractors.

Task Leader, Marsh Landing Generating Station Application for Certification, Mirant Corporation. Managed the data collection and preparation of the Waste Handling section of an Application for Certification (CEQA-equivalent document) for a proposed 890 megawatt gas-fired combined and simple cycle generation facility in Contra Costa County, California. Responsibilities included identifying and quantifying potential waste streams associated with the construction and operation of the power plant, determining the applicable laws, ordinances, regulations, and standards governing waste generated at the facility, and evaluating the potential impacts and mitigation measures to be implemented during construction and management activities.

Task Leader, Willow Pass Generating Station Application for Certification, Mirant Corporation. Managed the data collection and preparation of the Waste Handling section of an Application for Certification (CEQA-equivalent document) for a proposed 550 megawatt gas-fired combined-cycle generation facility in Contra Costa County, California. Responsibilities included identifying and quantifying potential waste streams associated with the construction and operation of the power plant, determining the applicable laws, ordinances, regulations, and standards governing waste generated at the facility, and evaluating the potential impacts and mitigation measures to be implemented during construction and management activities.

Task Leader, Colusa Power Plant Project AFC and Permitting, [Colusa County, California], Mirant Corporation: Managed the data collection and presentation for the Waste Handling section of an AFC for a 500 MW gas-fired combined-cycle generation facility in Colusa County, California. Responsibilities included identifying and quantifying potential waste streams associated with the construction and operation of the power plant, determining the applicable Laws, Ordinances, Regulations, and Standards (LORS) governing waste generated at the facility, and evaluating the potential impacts and mitigation measures to be implemented during construction and management activities.



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Task Leader, San Gabriel Generating Station Power Plant Project Application for Certification and Permitting, Mirant Corporation.

Lead the data collection and preparation of the Waste Handling section of an Application for Certification, a CEQA compliant document, for a nominal 850 MW gas-fired combined-cycle generation facility in San Bernardino County. Responsibilities included identifying and quantifying potential waste streams associated with the construction and operation of the power plant, determining the applicable Laws, Ordinances, Regulations, and Standards governing waste generated at the facility, and evaluating the potential impacts and mitigation measures to be implemented during construction and management activities.

Task Leader, Colusa County Power Plant Project Application for Certification, Competitive Power Ventures (CPV).

Managed the data collection and preparation of the Waste Handling section of an Application for Certification (CEQA-equivalent document) for a 660 megawatt gas-fired combined-cycle generation facility in Colusa County. Responsibilities included identifying and quantifying potential waste streams associated with the construction and operation of the power plant, determining the applicable laws, ordinances, regulations, and standards governing waste generated at the facility, and evaluating the potential impacts and mitigation measures to be implemented during construction and management activities.

Task Leader, Sentinel Power Plant Project Application for Certification, Competitive Power Ventures (CPV).

Managed the data collection and preparation of the Waste Handling section of an Application for Certification (CEQA-equivalent document) for a 850 megawatt gas-fired simple cycle generation facility in Riverside County, California. Responsibilities included identifying and quantifying potential waste streams associated with the construction and operation of the power plant, determining the applicable laws, ordinances, regulations, and standards governing waste generated at the facility, and evaluating the potential impacts and mitigation measures to be implemented during construction and management activities.

Technical Support, Potrero Power Plant AFCs and Permitting, [San Francisco, California], Mirant Corporation: Provided technical support in the areas of waste management, hazardous materials generation and handling, site investigation, and compliance with local regulatory standards for a 540 MW natural-gas-fired combined-cycle plant located in San Francisco.

Task Leader, Proposed Bridgeview Power Plant Project AFC and Permitting, [Contra Costa County, California], TransCanada:

Managed the data collection and presentation for the Waste Handling section of an AFC for a combined-cycle generation facility in Contra Costa County, California. Responsibilities included identifying and quantifying potential waste streams associated with the construction and operation of the power plant, determining the applicable Laws, Ordinances, Regulations, and Standards (LORS) governing waste generated at the facility, and evaluating the potential impacts and



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mitigation measures to be implemented during construction and management activities.

Project Manager and Field Coordinator, Stanford Linear Accelerator (SLAC), [Stanford, California], Stanford Land Management Company: Managed and participated in the data review and collection of information relating to radiological and non-radiological contamination present at the SLAC facility in Palo Alto, California. The objective of the work was to conduct a detailed review of available data, combined with our experience on similar projects, to develop as detailed order of magnitude cost estimates for the dismantling and demolition of the SLAC facility after facility closure. The cost estimates included providing costs for a reconnaissance level survey, a characterization level survey, and dismantling and demolition costs given a number of different scenarios from the results of the characterization level survey.

Project Manager/Task Leader, Richmond Parkway Project, [Richmond, California], Bechtel: Responsible for technical work to address environmental issues along the Parkway alignment. Developed the scope for environmental sampling, generated schedules and budgets, tracked monthly project costs, managed project staff and equipment, reviewed and interpreted data, prepared reports, and interacted with regulatory agencies.

Project Manager, General Environmental Services Contract, [Bay Area, California], BART: Responsible for various aspects of work under the general contract. Reviewed documents, prepared Work Directive Proposals, and managed soil and groundwater investigations of properties along and adjacent to BART's expansion lines.

Team Member and Technical Lead, EIS, [Sydney, Australia], U.S./Australian Energy Consortium: A project team preparing an Environmental Impact Statement (EIS) for the construction of a gas-fired cogeneration plant on a hazardous waste site in Botany, New South Wales. Responsible for the evaluation and preparation of the geology, hydrogeology, and environmental construction management and mitigation section of the EIS. Issues included the impact of the power plant construction on the distribution of subsurface contamination and the mitigation measures to be implemented to address the impacts. Subsequent to the submission of the EIS, presented with a panel of other experts at a Commission of Inquiry called by the Minister for Urban Development, in support of the Development Application for the construction of the cogeneration plant.

Project Manager, Site Remediation Monitoring, [Santa Rosa, California], Optical Coating Laboratory Incorporated: Ongoing remediation and quarterly monitoring. OCLI manufactured thin film coatings for glass surfaces for the high tech industry. The process used chlorinated solvents in the cleaning process prior to the application of the thin film. Waste solvent was released from the site and contaminated several groundwater bearing units beneath the site. Interim remedial measures, including the design and installation of a groundwater



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extraction system and stacked column air stripper were undertaken. Routine liaison and reporting to the North Coast Regional Water Quality Control Board was required throughout the project.

Project Manager, Greyhound Bus Depot Investigation, [Santa Rosa, California], Greyhound: Project Manager and lead investigator for an alleged release of diesel fuel and gasoline from the former Greyhound Bus Depot in downtown Santa Rosa. The project involved close interaction with the North Coast Regional Water Quality Control Board as it involved multiple release sites in close proximity to one another that were impacting the storm drain along B Street.

Field Technical Coordinator, Site Investigation, Palo Alto, California, Hewlett-Packard: Tasks included coordinating field activities for five concurrent source-specific investigations. Work included extensive cone penetration testing, in situ groundwater sampling, soil vapor survey, soil sampling, groundwater sampling, geophysical logging, monitoring well installation, and aquifer testing. Contributing author of Remedial Investigation Report.

Project Manager, Site Investigation, [Palo Alto], Hewlett-Packard: Managed a source-specific investigation as part of a large RI/FS. Responsibilities included design and implementation of field investigation activities, quarterly budget and schedule generation, monthly cost tracking, personnel and equipment management, stratigraphic and chemical data review and interpretation. Contributing author of Remedial Investigation Report.

Project Manager, Sydney Harbor Casino Environmental Surveillance Project, [Sydney, Australia], Leighton Construction Management: Managed environmental surveillance of a former coal-fired power station. Coordinated onsite environmental surveillance and monitoring activities. Developed recommendations for waste handling and disposal to minimize potential impacts on the project schedule. Prepared reports detailing results of monitoring and surveillance activities. Participated in monthly environmental management meetings with contractors and regulatory agencies.

Project Manager and Technical Lead, [New South Wales, Australia], North Power: Site investigations and continued groundwater monitoring and investigations for two former coal fired power stations located in northern New South Wales.

Project Manager for a soil and groundwater investigation to characterize contamination associated with a major copper smelting operation in Port Kembla, NSW. Responsible for development of the technical approach and implementation of the subsurface investigation to delineate the extent of a copper sulphate plume in groundwater beneath the site.

Audit Team Member [New South Wales, Australia]: Conducted due diligence audits for the coal and coke industry. Have participated in audits for three coal mines and two cokeries. Responsible for evaluating



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and identifying soil and groundwater contamination issues related to the operation of the facilities and the associated potential liabilities associated with acquisition or divestment of the operations.

Project Manager for site remediation of hydrocarbon-contaminated soil at a former automobile manufacturing plant in Sydney. Responsible for oversight of field excavation and remediation activities, QA/QC of excavation and soil remediation validation sampling and laboratory results, data review and interpretation, cost tracking, and client contact and interaction with New South Wales regulatory agencies.

Field Task Manager for conducting a Remedial Investigation for metals contamination at a conduit-plating facility in Pittsburgh, California. Work included extensive soils and surface water sampling, field coordination of biota investigation and air sampling, data analysis and interpretation, and report preparation.

Field Manager for the Implementation of a Remedial Action Plan for mitigating an extensive subsurface release of diesel fuel at a lumber remanufacturing facility in Stockton, California. Tasks included excavation oversight, perimeter safety monitoring, bioremediation cell construction and pre-screening of excavated soil using Thin Layer Chromatography techniques to determine diesel fuel concentrations.

Geology and Engineering Geology

Senior Geologist, George's River Pipeline Project, [Sydney, Australia], Australian Gas and Light Company: Conducted a geologic investigation for the siting and installation of a natural gas pipeline beneath the George's River in Sydney, New South Wales. The study was conducted to determine if any of the structural features present in the rock formation would inhibit the use of directional drilling techniques.

Assisted in the geologic investigation of a proposed hospital site in Northern California. Work included test pit logging and subsurface interpretation.

Assisted in fault study for a proposed landfill site in Northern California. Work included trench siting and logging.

Assisted in slope stability investigation on a large fill area for a resort on the island of Guam. Work included the installation of slope inclinometers, standpipes and pneumatic piezometers under adverse working conditions.

Conducted design review of engineering recommendations for residences damaged or destroyed by the October 1989 Loma Prieta Earthquake. This FEMA funded oversight program was administered by the Santa Cruz County Earthquake Recovery Division.



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Publications

G.W. Nyland, M.G. Hayter and E. Skov, "Contamination Investigations in Western Sydney – Examples of the Need to Look a Little Deeper," Collected Case Studies in Engineering Geology, Hydrogeology and Environmental Geology, Third Series. Geological Society of Australia, Environmental, Engineering and Hydrogeology Specialist Group (EEHSG).

Contributing Author, Feature Article – Construction of the Sydney Harbor Casino, Australian Construction & Engineering Review, 1st Quarterly Publication, 1998.

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Erik_Skov@URSCorp.com



Richard Stuhan

Project Manager / Visual Resources

Overview

Mr. Stuhan has 10 years of professional experience with private, municipal, and state agencies. He has performed visual resource studies in support of Environmental Impact Studies as well as other state or local regulations and policies. He has extensive project experience in visual impact modeling and view-shed analysis on both a local and regional scale in support of resource planning, transportation planning, and electrical transmission line siting. Mr. Stuhan is also proficient in GIS, is responsible for development of digital geographic databases, overlay and linear analysis, preparation of reports, and cartographic design. Prior to joining URS Mr. Stuhan worked for the City of Phoenix Water Department, and Northern Arizona University.

Project Specific Experience

Assistant Project Manager, Visual Resource Specialist, TS-5 to TS-9 500/230kV Transmission Line Siting Project, Northwest Maricopa County, Arizona, Arizona Public Service (APS): URS is assisting APS with siting approximately 40 miles of double-circuit 500/230kV transmission line in northwest Maricopa County by conducting environmental studies and coordinating public participation activities, including a agency and public meetings. The environmental services included an evaluation of potential impacts to land use, visual resources, biological resources, and cultural resources, with sufficient detail to provide supporting documentation for future permitting efforts (an application for a Certificate of Environmental Compatibility). Mr. Stuhan is serving as assistant project manager as well as technical coordination and visual resource specialist.

Visual Resource Specialist, Willow Pass Generating Station Application for Certification (AFC), Pittsburg, California, Mirant: Provided visual resource inventory and impact analysis in support of state permitting process for a gas-fired power plant. Responsible for documenting existing condition, evaluation of potential impacts, and coordinates production of photographic simulations.

Visual Resource Specialist, Marsh Landing Generating Station Application for Certification (AFC), Antioch, California, Mirant: Provided visual resource inventory and impact analysis in support of state permitting process for a gas-fired power plant. Responsible for documenting existing condition, evaluation of potential impacts, and coordinates production of photographic simulations.

Visual Resource Specialist, Sentinel Generating Station Application for Certification (AFC), Palm Springs, California, Competitive Power Ventures: Provided visual resource inventory and impact analysis in support of state permitting process for a gas-fired power plant. Responsible for documenting existing condition, evaluation of potential impacts, and coordinates production of photographic simulations.

Areas of Expertise

Project Management
Visual Impact Analysis
Environmental Compliance Documentation
Internet Map Services
GIS Data Management
Cartographic Design
Overlay Analysis
Dynamic Segmentation Analysis

Years of Experience

With URS: 10 Years
With Other Firms: 1 Year

Education

BS / Applied Geography /
Geographic Information
Management / Remote Sensing /
1998 / Northern Arizona University,
Flagstaff

Registration/Certification

N/A



Visual Resource Specialist, Colusa Generating Station Application for Certification (AFC), Colusa, California, PG&E: Provided visual resource inventory and impact analysis in support of state permitting process for a gas-fired power plant.. Responsible for documenting existing condition, evaluation of potential impacts, and coordinates production of photographic simulations.

GIS / Visual Resource Specialist, Sithe Desert Rock Energy Environmental Impact Statement (EIS), Four Corners, New Mexico, Bureau of Indian Affairs (BIA): Responsible for the visual resources development of an EIS supporting a 1500mw coal-fired power plant in the Four Corners area of New Mexico. The proposed power plant would be situated entirely on the Navajo Nation. The BIA has assumed the lead Federal agency role with cooperating agencies including Office of Surface Mining (OSM), U.S. Army Corps of Engineers (USACE), Environmental Protection Agency (Region 9), and U.S. Fish and Wildlife Service (USFWS).

GIS Lead, Juneau Access Improvement Project EIS, Alaska, Alaska Department of Transportation: Responsible for visual resource impact model implementation, impact assessment, impact mapping, 3D modeling, and cartographic design, in support of a highway-siting project. Analysis included the use of digital evaluation models, aerial photography, overlay and linear analysis, and quality control.

GIS Lead, West Valley-South Power Line and Substation Project, Arizona, APS: Responsible for cartographic design, impact assessment, alternatives evaluation, map production, and quality control. The project included siting studies of a proposed 230kV system option and substation sites with associated 69kV alternatives in the West Valley.

GIS Lead, 765kV Siting Project/EIS, Virginia, American Electric Power: Provided visual resource impact model implementation, impact assessment, impact mapping, 3D modeling, and cartographic design. Analysis included the use of digital evaluation models, aerial photography, overlay and linear analysis, and quality control.

GIS Lead, La Paz Generating Facility, La Paz County, Arizona, Allegheny Energy: Supported a Certificate of Environmental Compatibility (CEC) application to construct a 1,080 MW natural gas-fired, combined-cycle power plant and an interconnecting 500kV transmission line and pipeline. Provided cartographic design, overlay analysis, map production, and quality control.

MARK O. TURNER
Director, Development
Competitive Power Ventures
55 Second Street, Suite 525
San Francisco, CA 94105

SUMMARY

Over 15 years experience in the electric energy industry, Mr. Turner is an experienced project developer with a proven capability of leading challenging power generation development efforts from inception through financial close. Mr. Turner is currently the Project Manager for the proposed 800 MW CPV Sentinel Power Project located in Southern California. Mr. Turner also has a background in strategic energy market consulting, specializing in the WECC and Northeast electricity markets, price and market forecasting, risk management and asset valuation.

EMPLOYMENT HISTORY

COMPETITIVE POWER VENTURES

Director, Development
San Francisco, CA

August 2006 – Present

As Project Manager, leading the development, permitting and commercialization of the CPV Sentinel Power Project, an 800MW simple cycle power project located in Riverside County, CA.

GLOBAL ENERGY DECISIONS (formerly HENWOOD ENERGY SERVICES, now VYNTEX)

Project Manager, North East Region
Sacramento, CA

April 2004 – August 2006

Lead Global Energy's advisory services in the Northeast region of North America. Responsible for conducting a wide range of strategic market analyses with a focus on the WECC, PJM, ISO-NE, NY-ISO and Ontario, including price and market forecasting, project and risk assessment and market consulting valuation in support of acquisition, development and financing efforts.

INDEPENDENT CONSULTING

Real Energy, Sacramento, CA

October 2003 – April 2004

Financial analysis and origination support services to Real Energy's distributed generation efforts in Northern and Southern California.

Roseville Electric, Roseville, CA

May 2003 – October 2003

Managed Roseville Electric's efforts to identify and purchase Emissions Reduction Credit's for its Roseville Energy Center in Northern California.

Henwood Energy Services, Sacramento, CA

April 2003 – October 2003

Developed Henwood's first model for post-processing LMP data in order to estimate transmission congestion costs and help clients manage transmission risk through the acquisition of Financial Transmission Rights (FTRs).

INTERGEN NORTH AMERICA

Director, Development
Sacramento, CA (Western Region)

2001-2002

Managed the development of the 90 MW Larkspur and 135 MW Indigo electric generation facilities in southern California, leading key development milestones including land and right-of-way acquisition, gas interconnection, transmission interconnection agreement negotiations, air permitting and site permitting. Supported permitting and other development efforts for the Ocotillo Energy Facility development effort in Palm Springs, CA.

Manager, Development
Houston, TX (US Headquarters)

1999-2001

Supported the successful development of the Magnolia Energy Facility, a 900 MW combined cycle facility in northwest Mississippi as assistant project manager.

INTERGEN ENERGY – LATIN AMERICA REGIONAL OFFICE

Sr. Associate - Development

Miami, FL

1996-1999

Supported InterGen's Latin American development efforts in Peru and Mexico. Responsibilities included power marketing & origination, market analysis, project financial analysis, regulatory liaison with federal energy commission (CFE) staff, and transmission/gas interconnection issues associated with the TermoNoreste development effort in Monterrey, Mexico. Lead commercial aspects of negotiations with the industrial host for the TermoNoreste cogeneration facility development effort.

UNITED STATES SENATE COMMITTEE ON ENERGY AND WATER

Fellow/Regulatory Analyst, Washington DC

1995-1996

Supported appropriations committee efforts under Senators Hatfield and Dominici on projects funded under the Energy & Water Appropriations Sub-Committee, analyzing committee projects and reporting to senior staff.

EDUCATION & TRAINING

COLUMBIA UNIVERSITY

Masters, School of International and Public Affairs

Honors: Full tuition merit scholarship - Jacob Javits U.S. Senate Fellowship

BA, Government/Economics, California State University, Sacramento



Jim Zhang, PhD, PE

Project Hydrogeologist and GW Modeler

Overview

Dr. Zhang is a senior hydrogeologist and groundwater modeler. He has 15 years of experience in analysis and numerical modeling of flow and fate transport processes in subsurface environments. He is well experienced in groundwater investigations, subsurface site characterization, remedial investigation (RI), and feasibility study (FS), and has very strong programming expertise in the development and maintenance of various groundwater and surface water numerical codes. In addition, he has extensive experience in hydrogeological data analyses, vadose zone hydrology, surface hydrology, and others including hydrologic evaluation of landfill performance, statistical analysis of groundwater data, stochastic modeling of hydrologic random processes, flood analysis, dam and break analysis, pipeline transient analysis, and thermal-fluid analysis. Examples of such studies include:

Areas of Expertise

Modeling of Flow and Transport in Subsurface
Hydrogeological Investigation
Surface Hydrology (flood analysis, dam-break analysis, etc.)
Statistic Analysis and Stochastic Modeling

Years of Experience

With URS: 5 Years
With Other Firms: 10 Years

Education

Ph.D./Groundwater Hydrology/
1995/University of Arizona
MS/Hydrology and Water Resources/
1986/Hohai University, P.R. China
BS/Hydraulic Engineering/
1983/Hohai University, P.R. China

Registration/Certification

Professional Engineer-Civil
Engineering/CA/ #68273/09-30-2007

Project Specific Experience

Flow and Transport Modeling

Principal Modeler and Task Leader, New Irvington Tunnel Project, San Francisco Public Utilities Commission (SFPUC), California.

Developed a complex 3-D finite element groundwater flow model (FEFLOW) to simulate groundwater conditions during construction, maintenance, and operation of new Irvington Tunnel. Modeling objectives are: 1). Evaluate the influence on groundwater system (groundwater drops) during tunnel construction; 2). Simulate groundwater inflows to tunnel during construction and maintenance. 3). Simulate groundwater recovery after tunnel construction, and 4). Evaluate the effectiveness of grouting along the length of the tunnel to promote increases in groundwater levels near the tunnel.

Principal Modeler and GW Modeling Task Manager, McClellan AFB (Air Force Base), McClellan, CA, Air Force Real Property Agency (AFRPA):

Developed a complicated 3-D groundwater model to simulate ground water flow and contaminant transport. The study was to evaluate the effectiveness of current pump-and-treat system (capture zone analysis) at the site, to estimate cleanup times for different plumes under current and alternate extraction operations, predict multi-contaminant capture base-wide under different operating extraction wells and pumping schedules, and to optimize the operation system.

Key Modeler and WG Modeling Task Manager, Defense Deposition Depot San Joaquin County (DDJC) – Sharpe and Tracy Sites, California: Air Force Center for Environmental Excellence (AFCEE):

Developed two 3-D groundwater models to simulate ground water flow and contaminant transport. Model objectives include: 1). Optimize current extraction systems; 2). Predict multi-contaminant capture basewide under different operating extraction wells and pumping



schedules, and 3). Estimate cleanup times for different plumes under current and alternative extraction operations.

Key Modeler and GW Modeling Task Manager, Beale AFB (Air Force Base), California: Air Force Center for Environmental Excellence (AFCEE): Analyzed and modeled groundwater flow and contaminant transport migrations under natural attenuation condition (RI), and designed, evaluated and optimized various alternative remedial actions (FS) for various sites of Beale AFB. The modeled sites include Sites 18 & 31, Site 23/SMNU 23, and Site 3.

Key Modeler, 250-Foot Channel Corrective Action, Richmond, California, Chevron/Texaco: Extensive use of historic investigative and project-specific data led to the development of a 3-D Numerical Groundwater Flow Model to support selection of a Limited Corrective Action Alternative with Institutional Controls. The selected corrective action (approved by the Regulatory Agencies) continues to be an effective environmental and enormously cost effective solution compared with all other alternatives considered.

Hydrogeologist and Modeler, Rhodia, Martinez, California, Rhodia, Inc.: Modeling groundwater fluxes to trenches and sloughs at different scenarios (using SEEP2D), generated 3-D visualization of cross sections with boring log data, calculated groundwater storage changes with different water levels, and analyzed and pumping test data.

Modeler, Upper Level Storage Area Intercept Trench Performance Evaluation, Torrance, California, Exxon-Mobil Refining & Supply: Modeled groundwater flow and capture analysis by particle tracking to evaluate the effect of construction of an interceptor trench at the Upper Level Storage Area (ULSA), and analyzed data to evaluate the effectiveness of another trench at the site.

Project Hydrogeologist, RCRA Facility Investigation (Phase II) for Tosco Avon Refinery Facility, California, Tosco Avon Refinery: Conducted surface water/groundwater mixing model to support the Phase II Human Health and Ecological Risk Assessment (HHERA). The study was to evaluate the concentrations of chemicals at the surface water bodies located and near the refinery.

Key Modeler, Marine Corps Air Stations (MCAS), California, US NAVY: Developed 3-D groundwater models to simulate groundwater flow and VOC contaminant transport in support of remedial investigation (RI) and feasibility study (FS) for remediation of the ground water zone at various Marine Corps Air Stations (MCAS) in southern California. The objectives of the models includes delineating capture zones for hydraulic containment, estimating cleanup times for different remedial alternatives, and optimizing pump-and-treat operation systems. The modeled MCAS sites include Tustin, El-Toro, and Seal Beach.



Hydrological and Hydrogeologic Analysis

Hydrologic Engineer, Naval Training Center, San Diego, California, US NAVY: Conducted hydrologic evaluation of the performance of closure caps for landfills at MCAS El-Toro, Naval Training Center in San Diego by evaluating the percolation rates through disposal facility for different soil properties and construction alternatives.

Hydrologic Engineer, EMF, Pocatello, ID, FMC Pocatello: Vadose zone flow and transport in support of pond closure design. Review and technical guidance for the development of a groundwater flow model for a Superfund site.

Hydrologic Engineer, EMF, Pocatello, ID, FMC Pocatello: Using Mann-Whitney method to perform statistical analysis of groundwater quality data for FMC Elemental Phosphorus Plant at Pocatello, Idaho to analysis the potential leakage from multiple the Waste Management Units.

Hydrologic Engineer, North Island Naval Air Station, San Diego, California, US NAVY: Contaminant transport analysis for determining risk-based cleanup standards for soils impacted by diesel, gasoline and petroleum hydrocarbons at the North Island Naval Air Station and the Naval Training Center in San Diego.

Project Engineer, Taiwan LLRW Disposal Facility, Taiwan, Tai-Power Company: Numerical analysis of radioactive waste transport processes to evaluate the performance of the proposed low-level radioactive waste disposal facilities in Chia-chou Island, Taiwan for the Tai-Power Company.

Hydrologic Engineer, Tampa Air Station, Florida, US Air Force: Performed Monte Carlo simulation in support of uncertainty analysis of groundwater flow and nuclide transport processes and evaluated the performances of multiple proposed cleanup remedial alternatives for Tampa Air Station, Florida.

Surface Hydrology and Water Resources

Senior Modeler, Flood Analysis for Yom-Nan River System, Thailand: Performed flood analysis for the Yom-Nan River System (Thailand) to forecast the flooding water surface elevation, peak flood arrival time, and flooding area for different potential floods using DHI software MIKE 11.

Senior Modeler, Flood Analysis for Alameda Creek Restoration, Alameda, California: Investigated the inundation patterns after restoration of the salt ponds and assess the flood relief of the Alameda Flood Control Channel and the old Alameda Creek. 1-D model (MIKE 11) was developed for the two flood control channels, and 2-D model



(MIKE 21) was used to simulate water level and flow in the bathymetry, while MIKE FLOOD was selected to integrate the MIKE 11 and MIKE 21 and solve flow exchanges between the two models.

Hydrologist, Cowlitz Falls Dam, Washington, Bonneville Power Admin.: Conduct hydraulic evaluation to obtain the downstream water surface elevation and flood arrival time resulting from the dam failure during the potential maximum flood for the dam failure for Cowlitz Falls Dams, Washington State.

Hydrologist, Cochalle Valley Flood Analysis, California, City of Palm Desert: Performed flood analysis for the White Water Channel to evaluate the effectiveness of the hydraulic structures (drops) and the analysis the risks that the bridges will be overtopped during different floods.

Engineer, Multiple Projects in China, China: Worked on several engineering projects. Selected projects include: Designing a small earth dam for irrigation and flood control, designing a multi-functions project for swamping a large area of wasteland in the flood seasons, thus fertilizing the wasteland with silts to buildup a farmland, assisting in the designing of an aquifer remediation and treatment system; modeling water flow and sediment transport in rivers and reservoir.

Additional Projects

Analytical study and calculations including hydraulic analyses in support of various flood studies; Statistical analysis of groundwater data, stochastic modeling of geological parameter spatial distribution; Pipeline transient analyses; Evaluation of thermal performance for a fissile material storage facility; and assessment of water quality conditions for a coupled lake/bay system.

Professional Societies/Affiliates

Geological Society of America
American Water Resources Association
American Geophysical Union
California and National Society of Professional Engineers

Languages

English, Chinese

Specialized Training

2002/40-hour HAZWOPER
2002/First Aid-CPR

Publications

An iterative geostatistical inverse method for steady state flow in the vadose zone, *Water Resources Research*, Vol 33(1), Jan. 1998



A geostatistical inverse method for variably saturated flow in the vadose zone, *Water Resources Research*, Vol 32(9), Sept. 1996.

Characterization of non-uniform open channel flow: Vertically convergent flow, *Jour. of Hohai Univ.*, 19(6), March, 1991.

Experimental study of effects of submerged spur dikes on super-elevation in open channel flow, *Jour. of Hohai Univ.*, 189(5), May, 1990

Chronology

04/02 - Present: URS Corporation, Hydrogeologist and GW Modeler, Oakland, CA

02/96 - 03/02: Bechtel Corporation, Senior Hydrologic Engineer, San Francisco, CA

08/91 - 12/95: University of Arizona, Research Assistant, Tucson, AZ

07/89 - 05/91: Hohai University, Lecturer, China

09/86 -07/89: Bureau of Water Resource, Engineer, China

Contact Information

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APPENDIX B
TENTATIVE EXHIBIT AND DECLARATION LIST

APPLICANT'S TENTATIVE EXHIBIT AND DECLARATION LIST

CPV SENTINEL ENERGY POWER PLANT PROJECT

Docket No. 07-AFC-03

(as of 10/16/08)

Exhibit No.	CEC Log No.	Date	Description	Topic Area	Sponsoring Party	Pages
1.	41166	6/25/07	AFC Section 1.0 – Introduction	Project Description	M. Turner	13
2.	41166	6/25/07	AFC Section 2.0 – Facility Description and Location	Project Description	J. Seidler	83
3.	41166	6/25/07	AFC Section 3.0 – Facility Closure	Various	D. Shileikis	2
4.	41166	6/25/07	AFC Section 4.0 – Transmission Facilities	Transmission Facilities	J. Seidler	8
5.	41166	6/25/07	AFC Section 5.0 – Natural Gas Supply	Various	J. Seidler	6
6.	41166	6/25/07	AFC Section 6.0 – Water Supply	Soil and Water Resources	A. Connell	2
7.	41166	6/25/07	AFC Section 7.1 – Air Quality	Air Quality	J. Lague	81
8.	41166	6/25/07	AFC Section 7.2 – Biological Resources	Biological Resources	D. Kisner	48
9.	41166	6/25/07	AFC Section 7.3 – Cultural Resources	Cultural Resources	B. Hatoff (Archaeology) R. Herbert (Historic Architecture)	38
10.	41166	6/25/07	AFC Section 7.4 – Land Use	Land Use	T. Dorje	22
11.	41166	6/25/07	AFC Section 7.5 – Noise	Noise	R. Reeves	24
12.	41166	6/25/07	AFC Section 7.6 – Public Health	Public Health	J. Mitchell	16
13.	41166	6/25/07	AFC Section 7.7 – Worker Safety and Health	Worker Safety	L. Griggs	35
14.	41166	6/25/07	AFC Section 7.8 – Socioeconomics	Socioeconomic Resources	M. Feeney	34
15.	41166	6/25/07	AFC Section 7.9 – Soils	Soil and Water Resources	T. Dorje	11
16.	41166	6/25/07	AFC Section 7.10 – Traffic & Transportation	Traffic & Transportation	N. Casil	44
17.	41166	6/25/07	AFC Section 7.11 – Visual Resources	Visual Resources	R. Stuhan	36
18.	41166	6/25/07	AFC Section 7.12 – Hazardous Material Handling	Hazardous Materials	T. Hussain	34
19.	41166	6/25/07	AFC Section 7.13 – Waste Management	Waste Management	E. Skov	24
20.	41166	6/25/07	AFC Section 7.14 – Water Resources	Soil and Water Resources	A. Connell	46
21.	41166	6/25/07	AFC Section 7.15 – Geologic Hazards and Resources	Geology	B. O'Braitis (Geologic Hazards) R. Rice (Geologic Resources)	38

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Exhibit No.	CEC Log No.	Date	Description	Topic Area	Sponsoring Party	Pages
22.	41166	6/25/07	AFC Section 7.16 – Paleontological Resources	Paleontology	L. Fisk	21
23.	41166	6/25/07	AFC Section 8.00 – Alternatives	Alternatives	K. Rushmore	12
24.	41166	6/25/07	AFC Data Adequacy Worksheets	Various	D. Shileikis	105
25.	41166	6/25/07	AFC Appendix A – Parcels Within Specified Distances of Project Site and Linear Features	Project Description	T. Dorje	6
26.	41166	6/25/07	AFC Appendix B – Civil Engineering Design Criteria	Facility Design	J. Seidler	9
27.	41166	6/25/07	AFC Appendix C – Structural Engineering Design Criteria	Facility Design	J. Seidler	54
28.	41166	6/25/07	AFC Appendix D – Mechanical Engineering Design Criteria	Facility Design	J. Seidler	15
29.	41166	6/25/07	AFC Appendix E – Control Systems Engineering Design Criteria	Facility Design	J. Seidler	9
30.	41166	6/25/07	AFC Appendix F – Electrical Engineering Design Criteria	Facility Design	J. Seidler	24
31.	41166	6/25/07	AFC Appendix G – Draft Stormwater Pollution Prevention Plan	Soil and Water Resources	D. Ross	126
32.	41166	6/25/07	AFC Appendix H – System Impact Study	Transmission Facilities	J. Kritikson	85
33.	41166	6/25/07	AFC Appendix I-1 – Seasonal Wind Roses	Air Quality	J. Lague	4
34.	41166	6/25/07	AFC Appendix I-2 – Construction Emissions	Air Quality	J. Lague	9
35.	41166	6/25/07	AFC Appendix I-3 – Operating Emissions	Air Quality	J. Lague	16
36.	41166	6/25/07	AFC Appendix I-4 – Greenhouse Emissions	Air Quality	J. Lague	3
37.	41166	6/25/07	AFC Appendix I-5 – Modeling Protocol	Air Quality	J. Lague	36
38.	41166	6/25/07	AFC Appendix I-6 – VISCREEN and PLUVUE 2 Modeling Inputs	Air Quality	J. Lague	17
39.	41166	6/25/07	AFC Appendix I-7 – BACT Analysis	Air Quality	J. Lague	7
40.	41166	6/25/07	AFC Appendix J – Biological Resources Survey and Résumés	Biological Resources	D. Kisner	39
41.	41166	6/25/07	AFC Appendix K – Archaeological Inventory Report for the Sentinel Energy Project (Confidential)	Cultural Resources	B. Hatoff	1

CPV SENTINEL ENERGY POWER PLANT PROJECT**Docket No. 07-AFC-03**

Exhibit No.	CEC Log No.	Date	Description	Topic Area	Sponsoring Party	Pages
42.	41166	6/25/07	AFC Appendix L – Discretionary Reviews Performed Within the Past 18 Months (Riverside County, City of Palm Springs, and City of Desert Hot Springs)	Various	T. Dorje	49
43.	41166	6/25/07	AFC Appendix M – 1 Field Equipment List and Calibration Certifications	Noise	R. Reeves	7
44.	41166	6/25/07	AFC Appendix M – 2 Field Measurement Data Sheets	Noise	R. Reeves	5
45.	41166	6/25/07	AFC Appendix M – 3 Photographic Log	Noise	R. Reeves	4
46.	41166	6/25/07	AFC Appendix M – 4 Equipment Sound Power Levels	Noise	R. Reeves	2
47.	41166	6/25/07	AFC Appendix N – Public Health Data	Public Health	J. Mitchell	6
48.	41166	6/25/07	Appendix O-1 – Traffic Counts	Traffic & Transportation	N. Casil	41
49.	41166	6/25/07	Appendix O-2 – Peak Hour Intersection Capacity Worksheet – Existing Conditions	Traffic & Transportation	N. Casil	13
50.	41166	6/25/07	Appendix O-3 – Peak Hour Intersection Capacity Worksheet – Year 2009 No Project Conditions	Traffic & Transportation	N. Casil	12
51.	41166	6/25/07	Appendix O-4 – Peak Hour Intersection Capacity Worksheet – Year 2009 Project Construction Conditions	Traffic & Transportation	N. Casil	15
52.	41166	6/25/07	Appendix O-5 – Peak Hour Intersection Capacity Worksheet – Year 2010 No Project Conditions	Traffic & Transportation	N. Casil	13
53.	41166	6/25/07	Appendix O-6 – Peak Hour Intersection Capacity Worksheet – Year 2010 Project Operations Conditions	Traffic & Transportation	N. Casil	15
54.	41166	6/25/07	Appendix P – Off Site Consequence Analysis Modeling Outputs	Hazardous Materials	T. Hussain	10
55.	41166	6/25/07	Appendix Q – Phase I and Phase II Investigations	Soil and Water Resources	G. Molinario	350
56.	41166	6/25/07	Appendix R-1 – Groundwater Modeling	Soil and Water Resources	G. Muehleck	54
57.	41166	6/25/07	Appendix R-2 – Hydrology Report	Soil and Water Resources	A. Connell	41
58.	41166	6/25/07	Appendix S – Geologic and Foundation Criteria	Geology	B. O'Braitis	124

CPV SENTINEL ENERGY POWER PLANT PROJECT

Docket No. 07-AFC-03

Exhibit No.	CEC Log No.	Date	Description	Topic Area	Sponsoring Party	Pages
59.	41166	6/25/07	Appendix T – Paleontological Resources Impact Assessment [Confidential]	Paleontology	L. Fisk	1
60.	41167	6/25/07	CPV Sentinel Application For Certification - Air Quality and Public Health Modeling Files	Public Health	J. Mitchell	1 CD
61.	41716	7/30/07	Email from Carol Roberts, Fish and Wildlife Office, to Bill Pfanner re endangered species issues	Biological Resources	D. Kisner	1
62.	41768	7/31/07	Permit To Construct / Permit To Operate Application For the CPV Sentinel Energy Project	Air Quality	J. Lague	343
63.	43226	11/05/07	CD Copy of Air Dispersion Model Input and Output in Response to Data Request 3	Air Quality	J. Lague	1 CD
64.	43227	11/05/07	Responses to Data Requests dated October 4, 2007	Various	D. Shileikis	224
65.	43491	11/26/07	Public Use Permit Application	Land Use	T. Dorje	43
66.	43584	12/03/07	CPV Sentinel Energy Project Response to Data Request 41	Soil and Water Resources	D. Ross	1 CD
67.	43987	1/04/08	CPV Sentinel Energy Project Response to Data Request 36 - Draft DESCP, with POS	Soil and Water Resources	D. Ross	87
68.	44688	1/22/08	Response to Data Requests 35, 38, 43, 50, 60, and 62 through 65	Soil and Water Resources	K. Helm	113
69.	44850	1/24/08	Letter from Dale Shileikis to the CEC regarding Appendix C and associated replacement pages to Applicant's responses to CEC Data Requests 35, 38, 43, 50, 60, and 62 through 65	Facility Design	D. Shileikis	37
70.	45406	2/19/08	AFC Supplement: Revised Water Supply Plan	Soil and Water Resources	K. Helm	64
71.	45450	2/19/08	Application for Confidential Designation - Cultural Records Search Data	Cultural Resources	B. Hatoff	62
72.	45611	3/10/08	CPVS Groundwater Flow Model & MSWD Psomas Model	Soil and Water Resources	G. Muehleck	3
73.	N/A	N/A	Intentionally omitted	N/A	N/A	N/A
74.	45889	4/11/08	Applicant's Responses to Data Requests 66-97	Waste Management	E. Skov	110
75.	N/A	N/A	Intentionally omitted	N/A	N/A	N/A
76.	45900	3/31/08	Application for Confidential Designation re Cultural Records Map	Cultural Resources	B. Hatoff	3

CPV SENTINEL ENERGY POWER PLANT PROJECT

Docket No. 07-AFC-03

Exhibit No.	CEC Log No.	Date	Description	Topic Area	Sponsoring Party	Pages
77.	46210	5/05/08	Letter from Mark Turner to Bill Pfanner re Revised Water Supply Plan	Soil and Water Resources	M. Turner	17
78.	46848	6/30/08	Applicant's Responses to Groundwater Workshop Data Requests	Soil and Water Resources	K. Helm	67
79.	46963	7/09/08	Applicant's Responses to Groundwater Workshop - Additional July 3, 2008 Data Requests	Soil and Water Resources	K. Helm	130
80.	46971	7/09/08	Letter from M. Turner Regarding the June 24, 2008 Letter from MSWD	Soil and Water Resources	B. Hren	9
81.	47585	8/15/08	Letter re Preliminary Analysis of Alternative Water Supply Plans	Soil and Water Resources	B. Hren	13
82.	47682	8/22/08	Comments for Preliminary Staff Assessment	Various	D. Shileikis	89
83.	47709	8/22/08	Proposed Water Supply Plan for CPV Sentinel Energy Project	Soil and Water Resources	K. Helm	125
84.	47710	8/22/08	2007 Geological / Seismic Hazards Evaluation for Proposed CPV Sentinel Energy Project	Geology	B. O'Braitis	91
85.	47799	8/27/08	Applicants Comments on the Preliminary Staff Assessment (additional table)	Soil and Water Resources	K. Helm	6
86.	47826	8/27/08	Analysis of CEC Staff Alternative Waters Supply Plans	Soil and Water Resources	B. Hren	233
87.	47861	8/29/08	FDOC for CPV Sentinel Proposed 850 Megawatt Power Plant Project	Air Quality	J. Lague	165
88.	48058	9/17/08	Comments on the Preliminary Staff Assessment 2	Various	D. Shileikis	17
89.	48191	9/25/08	Letter to John Kessler re Supplemental Noise Monitoring Data	Noise	R. Reeves	4
90.	Pending	9/26/08	Letter from Desert Water Agency to John Kessler re extraction fee and water supply	Soil and Water Resources	K. Helm	4
91.	48152	9/23/08	Applicant's Statement RE GW Recharge Lead Time	Soil and Water Resources	K. Helm	3
92.	48424	10/03/08	CPV Sentinel Construction Emissions	Air Quality	J. Lague	11
93.	48442	10/07/08	Letter from Robert Krieger to John Kessler re Mission Creek Ground Water Subbasin	Soil and Water Resources	K. Helm	8
94.	Pending	9/23/08	Letter to MWDSC from Desert Water Agency re Delivery and Exchange Agreement	Soil and Water Resources	K. Helm	4

CPV SENTINEL ENERGY POWER PLANT PROJECT

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Exhibit No.	CEC Log No.	Date	Description	Topic Area	Sponsoring Party	Pages
95.	N/A	N/A	Intentionally omitted	N/A	N/A	N/A
96.	N/A	N/A	Intentionally omitted	N/A	N/A	N/A
97.	N/A	N/A	Intentionally omitted	N/A	N/A	N/A
98.	N/A	N/A	Intentionally omitted	N/A	N/A	N/A
99.	N/A	N/A	Intentionally omitted	N/A	N/A	N/A
100.	N/A	N/A	Intentionally omitted	N/A	N/A	N/A
101.	Pending	10/16/08	Declaration of J. Seidler regarding Facility Design	Facility Design		TBD
102.	Pending	10/16/08	Declaration of J. Lague regarding Air Quality	Air Quality		TBD
103.	Pending	10/16/08	Declaration of D. Kisner regarding Biological Resources	Biological Resources		TBD
104.	Pending	10/16/08	Declaration of B. Hatoff regarding Archaeological Cultural Resources	Cultural Resources		TBD
105.	Pending	10/16/08	Declaration of R. Herbert regarding Historic Architectural Cultural Resources	Cultural Resources		TBD
106.	Pending	10/16/08	Declaration of S. Hussain regarding Hazardous Materials	Hazardous Materials		TBD
107.	Pending	10/16/08	Declaration of T. Dorje regarding Land Use and Soil	Land Use and Soil		TBD
108.	Pending	10/16/08	Declaration of R. Reeves regarding Noise	Noise		TBD
109.	Pending	10/16/08	Declaration of J. Mitchell regarding Public Health	Public Health		TBD
110.	Pending	10/16/08	Declaration of M. Feeney regarding Socioeconomic Resources	Socioeconomic Resources		TBD
111.	Pending	10/16/08	Declaration of G. Molinaro regarding Environmental Site Investigations	Soil and Water Resources		TBD
112.	Pending	10/16/08	Declaration of G. Muehleck regarding Groundwater	Soil and Water Resources		TBD
113.	N/A	N/A	Intentionally omitted	N/A	N/A	N/A
114.	Pending	10/16/08	Declaration of A. Connell regarding Soil and Water Resources	Soil and Water Resources		TBD
115.	Pending	10/16/08	Declaration of K. Helm regarding Soil and Water Resources	Soil and Water Resources		TBD
116.	Pending	10/16/08	Declaration of D. Ross regarding Soil and Water Resources	Soil and Water Resources		TBD
117.	Pending	10/16/08	Declaration of N. Casil regarding Traffic and Transportation	Traffic and Transportation		TBD

CPV SENTINEL ENERGY POWER PLANT PROJECT
Docket No. 07-AFC-03

Exhibit No.	CEC Log No.	Date	Description	Topic Area	Sponsoring Party	Pages
118.	Pending	10/16/08	Declaration of J. Kritikson regarding Transmission Facilities	Transmission Facilities		TBD
119.	Pending	10/16/08	Declaration of R. Stuhan regarding Visual Resources	Visual Resources		TBD
120.	Pending	10/16/08	Declaration of E. Skov regarding Waste Management	Waste Management		TBD
121.	Pending	10/16/08	Declaration of L. Griggs regarding Worker Safety	Worker Safety		TBD
122.	Pending	10/16/08	Declaration of B. O'Braitis regarding Geologic Hazards	Geology		TBD
123.	Pending	10/16/08	Declaration of R. Rice regarding Geologic Resources	Geology		TBD
124.	Pending	10/16/08	Declaration of L. Fisk regarding Paleontology	Paleontology		TBD
125.	Pending	10/16/08	Declaration of M. Turner regarding Introduction	Introduction		TBD
126.	Pending	10/16/08	Declaration of K. Rushmore regarding Alternatives	Alternatives		TBD
127.	Pending	10/16/08	Declaration of D. Shileikis regarding Various	Various		TBD
128.	Pending	10/16/08	Declaration of B. Hren regarding Soil and Water Resources	Soil and Water Resources		TBD
129.	Pending	10/16/08	Declaration of R. Krieger regarding Water Resources	Soil and Water Resources		TBD
130.	Pending	10/16/08	Declaration of J. Zhang regarding Water Resources	Soil and Water Resources		TBD

APPENDIX C
PROPOSED MODIFICATIONS TO CONDITIONS OF CERTIFICATION

BIOLOGICAL RESOURCES

PROPOSED CONDITIONS OF CERTIFICATION

Staff proposes the following Conditions of Certification:

Designated Biologist Selection

BIO-1 The project owner shall assign a Designated Biologist to the project. The project owner shall submit the resume of the proposed Designated Biologist, with at least 3 references and contact information, to the Energy Commission Compliance Project Manager (CPM) for approval.

The Designated Biologist must meet the following minimum qualifications:

1. Bachelor's Degree in biological sciences, zoology, botany, ecology, or a closely related field; and
2. Three years of experience in field biology or current certification of a nationally recognized biological society, such as The Ecological Society of America or The Wildlife Society; and
3. At least one year of field experience with biological resources found in or near the project area.

In lieu of the above requirements, the resume shall demonstrate to the satisfaction of the CPM, that the proposed Designated Biologist or alternate has the appropriate training and background to effectively implement the conditions of certification.

Verification: The project owner shall submit the specified information at least 90 days prior to the start of any site (or related facilities) mobilization. No site or related facility activities shall commence until an approved Designated Biologist is available to be on site.

If a Designated Biologist needs to be replaced, the specified information of the proposed replacement must be submitted to the CPM at least 10 working days prior to the termination or release of the preceding Designated Biologist. In an emergency, the project owner shall immediately notify the CPM to discuss the qualifications and approval of a short-term replacement while a permanent Designated Biologist is proposed to the CPM for consideration.

Designated Biologist Duties

BIO-2 The project owner shall ensure that the Designated Biologist performs the following actions during any site (or related facilities) mobilization, ground disturbance, grading, construction, operation, and closure activities. The Designated Biologist may be assisted by the approved Biological Monitor(s), but remains the contact for the project owner and CPM.

1. Advise the project owner's Construction and Operation Managers on the implementation of the biological resources Conditions of Certification;
2. Consult on the preparation of the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP), to be submitted by the project owner;
3. Be available to supervise, conduct and coordinate mitigation, monitoring, and other biological resources compliance efforts, particularly in areas requiring avoidance or containing sensitive biological resources, such as special-status species or their habitat;
4. Clearly mark sensitive biological resource areas, if present and inspect these areas at appropriate intervals for compliance with regulatory terms and conditions;
5. Inspect active construction areas where animals may have become trapped prior to construction, commencing each day. At the end of the day, inspect for the installation of structures that prevent entrapment or allow escape during periods of construction inactivity. Periodically inspect areas with high vehicle activity (i.e. parking lots) for animals in harm's way;
6. Notify the project owner and the CPM of any non-compliance with any biological resources Condition of Certification;
7. Respond directly to inquiries of the CPM regarding biological resource issues;
8. Maintain written records of the tasks specified above and those included in the BRMIMP. Summaries of these records shall be submitted in the Monthly Compliance Report and the Annual Report; and
9. Train the Biological Monitors as appropriate, and ensure their familiarity with the BRMIMP, Worker Environmental Awareness Program (WEAP) training and all permits.

Verification: The Designated Biologist shall submit in the Monthly Compliance Report to the CPM copies of all written reports and summaries that document biological resources activities. If actions may affect biological resources during operation, a Designated Biologist shall be available for monitoring and reporting. During project operation, the Designated Biologist shall submit record summaries in the Annual Compliance Report unless their duties are ceased as approved by the CPM.

Biological Monitor Qualifications

BIO-3 The project owner's CPM-approved Designated Biologist shall submit the resume, at least 3 references and contact information, of the proposed Biological Monitors to the CPM for approval. The resume shall demonstrate to the satisfaction of the CPM, the appropriate education and experience to accomplish the assigned biological resource tasks.

Biological Monitor(s) training by the Designated Biologist shall include familiarity with the Conditions of Certification and the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP), Worker Environmental Awareness Program (WEAP), and all permits.

Verification: The project owner shall submit the specified information to the CPM for approval at least 30 days prior to the start of any site (or related facilities) mobilization. The Designated Biologist shall submit a written statement to the CPM confirming that the individual Biological Monitor(s) have been trained including the date when training was completed. If additional biological monitors are needed during construction, the specified information shall be submitted to the CPM for approval 10 days prior to their first day of monitoring activities.

Designated Biologist and Biological Monitor Authority

BIO-4 The project owner's Construction/Operation Manager shall act on the advice of the Designated Biologist and Biological Monitor(s) to ensure conformance with the biological resources Conditions of Certification.

If required by the Designated Biologist and Biological Monitor(s), the project owner's Construction/Operation Manager shall halt all site mobilization, ground disturbance, grading, construction, and operation activities in areas specified by the Designated Biologist.

The Designated Biologist shall:

1. Require a halt to all activities in any area when determined that there would be an unauthorized adverse impact to biological resources if the activities continued;
2. Inform the project owner and the Construction/Operation Manager when to resume activities; and
3. Notify the CPM if there is a halt of any activities, and advise the CPM of any corrective actions that have been taken, or will be instituted, as a result of the work stoppage.

If the Designated Biologist is unavailable for direct consultation, the Biological Monitor shall act on behalf of the Designated Biologist.

Verification: The project owner shall ensure that the Designated Biologist or Biological Monitor notifies the CPM immediately (no later than the following morning of the incident, or Monday morning in the case of a weekend) of any non-compliance or a halt of any site mobilization, ground disturbance, grading, construction, and operation activities. The project owner shall notify the CPM of the circumstances and actions being taken to resolve the problem.

Whenever corrective action is taken by the project owner, a determination of success or failure will be made by the CPM within five working days after receipt of notice that corrective action is completed, or the project owner will be notified by the CPM that

coordination with other agencies will require additional time before a determination can be made.

Worker Environmental Awareness Program

- BIO-5** The project owner shall develop and implement a CPM-approved Worker Environmental Awareness Program (WEAP) in which each of its employees, as well as employees of contractors and subcontractors who work on the project site or any related facilities during site mobilization, ground disturbance, grading, construction, operation, and closure are informed about sensitive biological resources associated with the project.

The WEAP must:

1. Be developed by or in consultation with the Designated Biologist and consist of an on-site or training center presentation in which supporting written material and electronic media is made available to all participants;
2. Discuss the locations and types of sensitive biological resources on the project site and adjacent areas, if present;
3. Present the reasons for protecting these resources;
4. Present the meaning of various temporary and permanent habitat protection measures as necessary;
5. Identify whom to contact if there are further comments and questions about the material discussed in the program; and
6. Include a training acknowledgment form to be signed by each worker indicating that they received training and shall abide by the guidelines.

The specific program can be administered by a competent individual(s) acceptable to the Designated Biologist.

Verification: At least 60 days prior to the start of any site (or related facilities) mobilization, the project owner shall provide to the CPM (for review and approval) the proposed WEAP and all supporting written materials and electronic media prepared or reviewed by the Designated Biologist and a resume of the person(s) administering the program.

The project owner shall provide in the Monthly Compliance Report the number of persons who have completed the training in the prior month and a running total of all persons who have completed the training to date. At least 10 days prior to site and related facilities mobilization, two copies of the CPM-approved materials shall be submitted.

Training acknowledgement forms signed during construction shall be kept on file by the project owner for a period of at least six months after the start of commercial operation.

During project operation, signed statements for operational personnel shall be kept on file for six months following the termination of an individual's employment.

Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP)

BIO-6 The project owner shall develop a BRMIMP and submit two copies of the proposed BRMIMP to the CPM (for review and approval) and to CDFG and USFWS (for review and comment) if applicable and shall implement the measures identified in the approved BRMIMP.

The BRMIMP shall be prepared in consultation with the Designated Biologist and shall identify:

1. All biological resources mitigation, monitoring, and compliance measures proposed and agreed to by the project owner;
2. All biological resources Conditions of Certification identified as necessary to avoid or mitigate impacts;
3. All biological resource mitigation, monitoring, and compliance measures required in federal and State agency terms and conditions, such as those in a federal Endangered Species Act Section 10(a)(1)(B) Habitat Conservation Plan (HCP) from the USFWS or a California Endangered Species Act Section 2081 Incidental Take Permit from the CDFG, respectively;
4. All sensitive biological resources to be impacted, avoided, or mitigated by project construction and operation;
5. All temporary impact areas to be restored through surface recontouring, reseeding and/or replanting following construction-related activities;
6. All required mitigation measures for temporary impact areas and each sensitive biological resource;
7. A detailed description of measures that shall be taken to avoid or mitigate temporary disturbances from construction activities;
8. All locations on a map, at an approved scale, of sensitive biological resource areas subject to disturbance and areas requiring temporary protection and avoidance during construction;
9. Aerial photographs, at an approved scale, of all areas to be disturbed during project construction activities—one set prior to any site or related facilities mobilization disturbance and one set subsequent to completion of project construction. Planned timing of aerial photography and a description of why times were chosen shall also be included;
10. Duration for each type of monitoring and a description of monitoring methodologies and frequency;
11. Performance standards to be used to help decide if/when proposed mitigation is or is not successful;
12. All performance standards and remedial measures to be implemented if performance standards are not met;
13. A preliminary discussion of biological resources related facility closure measures;

14. A process for proposing plan modifications to the CPM and appropriate agencies for review and approval; and
15. A copy of all biological resources related permits obtained.

Verification: The project owner shall provide the specified document at least 60 days prior to start of any site (or related facilities) mobilization.

The CPM, in consultation with other appropriate agencies, will determine the BRMIMP's acceptability within 45 days of receipt. If there are any permits that have not yet been received when the BRMIMP is first submitted, these permits shall be submitted to the CPM within 5 days of their receipt, and the BRMIMP shall be revised or supplemented to reflect the permit condition within 10 days of their receipt by the project owner. Ten days prior to site and related facilities mobilization the revised BRMIMP shall be resubmitted to the CPM.

The project owner shall notify the CPM no less than five working days before implementing any modifications to the approved BRMIMP to obtain CPM approval. Any changes to the approved BRMIMP must also be approved by the CPM in consultation with other appropriate agencies to ensure no conflicts exist.

Implementation of BRMIMP measures will be reported in the Monthly Compliance Reports by the Designated Biologist (i.e., survey results, construction activities that were monitored, species observed). Within 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written construction closure report identifying which items of the BRMIMP have been completed, a summary of all modifications to mitigation measures made during the project's site mobilization, ground disturbance, grading, and construction phases, and which mitigation and monitoring items are still outstanding.

Impact Avoidance Mitigation Features

- BIO-7** Any time the project design is modified or finalized, all feasible measures that avoid or minimize impacts to the local biological resources shall be incorporated, including the following:
1. Design, install and maintain gas transmission lines, potable water lines, access roads, and storage and parking areas to avoid identified sensitive resources;
 2. Design, install, and maintain the transmission line from CPV Sentinel to SCE Devers Substation and all other electrical components in accordance with the Avian Power Line Interaction Committee (APLIC), *Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006* to reduce the likelihood of electrocutions of large birds;
 3. Design, install, and maintain structures and supports to prevent common raven (*Corvus corax*) nesting. Destroy nests that are established prior to egg laying and the modify the location to prevent future nest establishment (modified from applicant's Mitigation Measure Bio-9);

4. Install silt fencing buried 1-foot deep and attached to a chain-link fence around the project site prior to construction to keep burrowing animals from easily tunneling into the site. Examine the fencing at least once a week and repair when necessary. Maintain the fencing until construction is complete (modified from applicant's Mitigation Measure Bio-10);
5. Following installation of silt fence and prior to ground disturbance, conduct small mammal trapping for five nights in order to capture and relocate as many small mammals from within the project area as possible. Set traps near sign, burrows, or tracks at dusk each day and check at midnight or no later than dawn the next day to ensure no unnecessary deaths occur (modified from applicant's Mitigation Measure Bio-11);
6. Eliminate any California Exotic Pest Plants of Concern (CalEPPC) List A species or plant species identified on Table 4-113 (Prohibited Invasive Plant Species) of the CVMSHCP from reseeding areas following temporary disturbance or from landscaping plans (modified from applicant's Mitigation Measure Bio-8);
7. Prescribe a road sealant that is non-toxic to wildlife and plants; and
8. Design, install, and maintain facility lighting to prevent side casting of light towards wildlife habitat.

Verification: All mitigation measures and their implementation methods shall be included in the BRMIMP. Implementation of the measures will be reported in the Monthly Compliance Reports by the Designated Biologist. Within 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written construction termination report identifying how measures have been completed.

Mitigation Management to Avoid Harassment or Harm

BIO-8 The project owner shall implement the following measures to manage the construction site, and related facilities, in a manner to avoid or minimize impacts to the local biological resources:

1. Install temporary fencing and provide wildlife escape ramps for construction areas that contain steep-walled holes or trenches if outside of an approved, permanent exclusionary fence. The temporary fence shall be hardware cloth or similar materials that are approved by USFWS. Before such holes or trenches are filled, they shall be thoroughly inspected for trapped animals by the Designated Biologist or Biological Monitor;
2. Make certain all food-related trash is disposed of in closed containers and removed at least once a week;
3. Prohibit feeding of wildlife by staff and subcontractors;
4. Prohibit non-security related firearms or weapons from being brought to the site;

5. Prohibit pets from being brought to the site;
6. Report all inadvertent deaths of sensitive species to the appropriate project representative. Injured animals shall be reported to CDFG or USFWS and the project owner shall follow instructions that are provided by CDFG or USFWS;
7. Minimize use of rodenticides in the project area; and
8. Prohibit vehicles and personnel from entering sensitive habitats.

Verification: All mitigation measures and their implementation methods shall be included in the BRMIMP. Implementation of the measures shall be reported in the Monthly Compliance Reports by the Designated Biologist. Within 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written construction termination report identifying how measures have been completed.

Pre-construction Surveys for Desert Tortoise and Impact Avoidance

BIO-9 The project owner shall conduct follow-up surveys to augment the protocol-level surveys conducted in 2007 and 2008 by Xeric Specialties for the project and implement the appropriate measures to minimize impacts if detected:

1. Qualified (permitted or USFWS-approved) biologist(s) shall conduct additional surveys for desert tortoise in the project area, including the power plant site and the linear facilities (e.g. natural gas and potable water lines). The survey shall be conducted approximately 30 days prior to the start of initial ground disturbance activities and shall follow a modified Field Survey Protocol for any Federal Action that may Occur within the Range of the Desert Tortoise (USFWS 1992) including:
 - A. Complete a Presence-Absence Survey in January 2008. This survey window encompasses the active period for juvenile desert tortoise throughout its range during a typical year.
 - B. The survey should identify the number and location of all tortoises and tortoise sign that occur within a given project area and if any tortoises occur in adjacent areas whose home range may overlap into the project area and thus be lost or harassed by the proposed action.
 - C. Surveys shall only be conducted during daylight hours and shall include the entire project area (100 percent coverage) using 10 meters wide (30 feet) belt transects.
 - D. In addition, the "Zone of Influence" shall be surveyed using as a minimum, belt transects located at 100, 300, 600, 1200, and 2400-foot intervals from and parallel to the edge of the project boundaries. The Zone of Influence is defined as the area where tortoises on adjacent lands may be directly or indirectly affected by project exploration, construction, maintenance, operation, monitoring, dismantlement, enhancement, and project abandonment.

- E. Map all tortoise sign (live tortoises, shell, bones, scutes, limbs, scats, burrows, pellets, tracks, egg shell fragments, courtship rings, drinking sites, mineral licks, etc.) within the project area and located on transects within the Zone of Influence.
 - F. All burrows shall be visually examined using a "burrow scope" to ensure there are no brumating or aestivating individuals. If determined vacant, burrows will be hand excavated to ensure the contents of the burrow are definitively identified.
2. If no evidence of desert tortoise use is detected during the survey, then it shall be assumed the site is unoccupied and no Incidental Take Permits from USFWS or CDFG shall be required for construction.
 3. If evidence of the desert tortoise or another federally or State listed reptile species is detected in the project area then the project owner shall be required to show coverage under the CVMSHCP or obtain a Biological Opinion (ESA Section 10) and/or a CESA Section 2081 Letter of Concurrence to determine appropriate mitigation for impacts which may include the following:
 - A. Capture and relocate animals to an approved location.
 - B. Purchase of lands offsite and establishment of an endowment for management of the lands.

Verification: The project owner shall report to the CPM the results of the surveys and whether coverage under the CVMSHCP or a Biological Opinion (ESA Section 10) and/or a CESA Section 2081 Letter of Concurrence are required as soon as possible. At least 60 days prior to start of any project-related ground disturbance activities, the project owner shall provide the CPM with the final version of the BRMIMP, which includes desert tortoise survey results to date and any necessary impact avoidance measures. Results for all surveys conducted after the final version of the BRMIMP is complete shall be submitted as a supplement to the CPM. All modifications to the approved BRMIMP shall be made only after consultation with the CPM and other appropriate agencies. The project owner shall notify the CPM five working days before implementing any modifications to the BRMIMP.

Pre-construction Surveys for Listed Plant Species and Impact Avoidance

- BIO-10** The project owner shall conduct follow-up surveys to the protocol level surveys conducted in 2007 and 2008 by xeric Specialties to determine the presence of the Coachella Valley milk-vetch and the Triple-ribbed milk-vetch and implement the appropriate measures to minimize impacts if detected:
1. A qualified biologist shall conduct surveys for both Coachella Valley milk-vetch and triple-ribbed milk-vetch in the project area, including the power plant site and the linear facilities. The survey shall be conducted at least 30 days prior to the start of initial ground disturbance activities and shall follow the CNPS Botanical Survey Guidelines (1983), Guidelines for

Conducting and reporting Botanical inventories for Federally Listed, Proposed and Candidate Species (USFWS 2000), and Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities (CDFG 1983) including:

- A. Conduct surveys at the appropriate times of year when the target species are present and identifiable. If milk-vetch are detected, but cannot be identified to species, follow-up surveys shall be conducted during the blooming season to confirm the species. Estimated blooming season for both species occurs between February and May (CNPS 2007).
 - B. If available, use a regional or local reference population to confirm that the plants are identifiable at the time of the survey as well as to obtain a visual image of target species and the associated habitat.
 - C. Compile a comprehensive list of plants observed on site, identified to the lowest taxonomic level applicable to allow for rarity to be determined.
 - D. Conduct surveys using systematic field techniques to ensure thorough coverage of the project area and any surrounding suitable habitat.
 - E. If a special status species is observed, including the two target species, a California Native Species Field Survey Form shall be completed, along with the appropriate 7.5 minute topographical map with the occurrence mapped. Accurate population boundaries shall be mapped along with an estimate of the number of individuals within the population. A copy of the completed form shall be included in the monthly compliance report.
 - F. Multiple visits are recommended during the growing season in particular due to the ongoing drought conditions in Southern California which may result in late or early emergent's as well unsuccessful blooming.
2. If either target species or another federally or State listed plant species is detected in the project area then the project owner shall be required to show coverage under the CVMSHCP or obtain a Biological Opinion (ESA Section 10) and/or a CESA Section 2081 Letter of Concurrence to determine appropriate mitigation for impacts which may include the following:
 - A. Complete avoidance of populations of sensitive plants through project modification.
 - B. Complete avoidance by flagging and mapping the population prior to construction to avoid direct impacts.

- C. Relocate plants and/or collect seeds from existing populations that would be impacted and then plant/seed these plants in adjacent suitable habitat that would not be affected by proposed project and then monitor for 5 years.
- D. If available, purchase of in-kind habitat acreage in a mitigation bank at a ratio to be determined by the appropriate regulatory agency.
- E. Off-site mitigation including restoration and enhancement as determined by the appropriate regulatory agency.

Verification: The project owner shall report to the CPM the results of the surveys and whether coverage under the CVMSHCP or a Biological Opinion (ESA Section 10) and/or a CESA Section 2081 Letter of Concurrence are required as soon as possible. At least 60 days prior to start of any project-related ground disturbance activities, the project owner shall provide the CPM with the final version of the BRMIMP, which includes rare/listed plant survey results to date and any necessary impact avoidance measures. Results for all protocol surveys conducted after the final version of the BRMIMP is complete shall be submitted as a supplement to the CPM. All modifications to the approved BRMIMP shall be made only after consultation with the CPM and CDFG. The project owner shall notify the CPM five working days before implementing any modifications to the BRMIMP.

Burrowing Owl and Nesting Bird Surveys and Impact Avoidance

- BIO-11** The project owner shall conduct follow-up surveys to the surveys conducted in 2007 and 2008 by Xeric Specialties and URS to identify the presence and avoid or minimize impacts to burrowing owls and other nesting birds:
- 1. A qualified biologist shall conduct survey for burrowing owl activities in the project area, including the power plant site, the linear facilities (e.g. natural gas lines), and a 150 meter (approximately 500 feet) buffer (where possible and appropriate based on the habitat). The survey should follow the protocol outlined in the CDFG Staff Report on Burrowing Owl Mitigation (1995), as modified below, including:
 - A. One (1) winter (December 1 to January 31) survey no less than 30 days prior to the start of initial ground disturbance activities.
 - B. Conduct surveys from two hours before to one hour after sunset or from one hour before to two hours after sunrise.
 - C. Identify all active and historical burrows (natural or artificial) as well as suitable habitat within the entire project area including the 150 meter buffer (accounts for impacts from noise and vibration impacts).
 - D. Space transects to allow for 100 percent visual coverage (maximum 30 meters from centerline).
 - E. Surveyors shall avoid owls and occupied burrows by a minimum 50 meters where practical.

2. If burrowing owls are present within 500 feet of the power plant site or linear facilities, then the project owner shall contact CDFG and implement the CDFG burrowing owl guidelines (1995) to include:
 - A. Mitigation should consist of passive relocation with a one-way door to avoid direct impacts to the burrowing owls on site. Passive relocation shall be conducted during the non-breeding season (September 1–January 31) to ensure that active nests are not lost as a result of owl exclusion. The methodology for owl relocation shall follow the guidelines set forth in the CDFG Staff Report on Burrowing Owl Mitigation (CDFG 1995).
 - B. Occupied burrows shall not be disturbed during the nesting season (February 1–August 31) unless a qualified biologist approved by CDFG verifies through noninvasive methods that either: (1) the birds have not begun egg laying and incubation; or (2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival.
 - C. If permanent impacts to breeding habitat are unavoidable, the project owner shall acquire, permanently protect and enhance a minimum of 6.5 acres of suitable habitat per pair of breeding burrowing owl, or submit evidence of coverage under the CVMSHCP to the CPM.
3. If initial ground disturbance is to occur during the breeding season, complete a pre-construction survey for nesting birds on the project site and/or linear facilities no less than 30 days prior to the start of ground disturbance activities. This survey can occur in conjunction with the burrowing owl surveys.
4. **Ground disturbance and work near potential raptor nesting sites should be scheduled for the non-breeding season.** ~~If active, occupied nests are found, schedule work~~ **is to occur** ~~during non-the nesting periods or prohibit~~ **will be prohibited** ~~season, work~~ within 500 feet of raptor nests or 200 feet of other species' nests. ~~With~~ **At the request of the Designated Biologist and with** CPM approval, visual barriers and sound buffers may be used to reduce these buffers around nests.

Verification: At least 60 days prior to start of any project-related ground disturbance activities, the project owner shall provide the CPM with the final version of the BRMIMP, which includes burrowing owl/nesting bird survey results to date and any necessary impact avoidance measures. Results for all protocol surveys conducted after the final version of the BRMIMP is complete shall be submitted as a supplement to the CPM. All modifications to the approved BRMIMP must be made only after consultation with the CPM and other appropriate agencies. The project owner shall notify the CPM five working days before implementing any modifications to the BRMIMP.

SOIL AND WATER RESOURCES

PROPOSED CONDITIONS OF CERTIFICATION

NPDES STORMWATER PERMIT – CONSTRUCTION ACTIVITY

SOIL&WATER-1: The project owner shall comply with the requirements of the general National Pollution Discharge Elimination System (NPDES) permit for discharge of stormwater associated with construction activity. The project owner shall develop, obtain compliance project manager (CPM) approval of, and implement a Storm Water Pollution Prevention Plan (SWPPP) for the construction of the CPV Sentinel site, laydown area, and all linear facilities including the recycled water supply pipeline to PSNGC.

Verification: At least 60 days prior to site mobilization, the project owner shall submit to the CPM a copy of the construction SWPPP for review and approval prior to site mobilization. The project owner shall retain a copy on site. The project owner shall submit copies to the CPM of all correspondence between the project owner and the Colorado Region Regional Water Quality Control Board (RWQCB) regarding the NPDES permit for the discharge of stormwater associated with construction activity within 10 days of its receipt or submittal. Copies of correspondence shall include the notice of intent sent to the State Water Resources Control Board (SWRCB), and the board's confirmation letter indicating receipt and acceptance of the notice of intent.

COUNTY GRADING AND FLOODING PERMIT REQUIREMENTS

SOIL&WATER-2: The project owner shall complete all necessary plans, reports, documents, and monitoring necessary to satisfy the Conditions of Approval related to grading and flooding outlined in Draft Public Use Permit Number 897 issued by the County of Riverside, dated August 11, 2008, and Riverside County's Ordinance 754.2. Prior to initiation of construction activities, the project owner shall submit to the County of Riverside all necessary documentation, plans, and fees **normally** required for County's determination of compliance with Conditions of Approval, with copies to the CPM. The project shall not commence construction until the county of Riverside provides its written evaluation as to whether the proposed grading and flood control construction and operation activities complies with all county requirements and the CPM provides approval for construction. The project owner shall ensure compliance with all county standards and requirements for grading, erosion control, and flooding for the life of the project and shall provide the CPM with two (2) copies of all monitoring or other reports required for compliance with the County of Riverside requirements.

Verification: The project owner shall do all of the following:

1. No later than sixty (60) days prior to the start of grading the project owner will provide to the County of Riverside and CPM a copy of all necessary information to satisfy the Conditions of Approval for grading and flooding and acquire a grading permit from the County of Riverside. The submittal must be reviewed by the County of Riverside and approved by the CPM.

2. No later than sixty (60) days prior to the start of facility construction the project owner will provide to the County of Riverside and CPM a copy of all necessary information to satisfy the Conditions of Approval for grading and flooding and acquire a building permit from the County of Riverside. The submittal must be reviewed by the County of Riverside and approved by the CPM.
3. No later than 30 days prior to project operation, the project owner will facilitate inspections and provide documentation to the County of Riverside and CPM demonstrating that all necessary grading and flooding improvements have been completed and are operational. The submittal must be reviewed by the County of Riverside and approved by the CPM.

PROJECT GROUNDWATER WELLS

SOIL&WATER-3: The project owner shall construct and operate up to five onsite groundwater wells that produce water from the Mission Creek Groundwater Sub-basin (MCGS). The project owner shall ensure that the wells are completed in accordance with all applicable state and local water well construction permits and requirements. Prior to initiation of well construction activities, the project owner shall submit a well construction packet to the County of Riverside, in accordance with the County of Riverside Ordinance 682, containing all documentation, plans, and fees normally required for the county's well permit, with copies to the CPM. The project shall not construct a well or extract and use any groundwater therefrom until the County of Riverside issues its written evaluation as to whether the proposed well construction and operation activities comply with all applicable county well requirements, and the CPM provides approval to construct the well. The project owner shall provide documentation to the CPM that the well has been properly completed. In accordance with California's Water Code section 13754, the driller of the well shall submit to the Department of Water Resources (DWR) a Well Completion Report for each well installed. The project owner shall ensure the Well Completion reports are submitted. The project owner shall ensure compliance with all county water well standards and requirements for the life of the wells and shall provide the CPM with two (2) copies of all monitoring or other reports required for compliance with the County of Riverside water well standards and operation requirements, as well as any changes made to the operation of the well.

Verification: The project owner shall do all of the following:

1. No later than thirty (30) days prior to the construction of the onsite water supply wells, the project owner shall submit two (2) copies to the CPM of the water well construction packet submitted to the County of Riverside.
2. No later than fifteen (15) days prior to the construction of the onsite water supply wells, the project owner shall submit two (2) copies of the written concurrence document from the County of Riverside indicating that the proposed well construction activities comply with all county well requirements and meet the requirements established by the county's water well permit program.

No later than 60 days after installation of each well at the project site, the project owner shall ensure that the well driller submits a Well Completion Report to the DWR with a copy provide to the CPM. The project owner shall submit to the CPM together with the Well Completion Report a copy of well drilling logs, water quality analyses, and any inspection reports that may be:

- A. Submit copies to the CPM of any proposed well construction or operation permit changes within ten (10) days of submittal to or receipt from the County of Riverside.
- B. Submit copies of any water well permit-related well monitoring reports required by the County of Riverside to the CPM in the annual compliance report.
- C. No later than fifteen (15) days after completion of the onsite water supply wells, the project owner shall submit documentation to the CPM and the RWQCB that well drilling ac available for each well installed.

During well construction and for the operational life of the well, the project owner shall:

- D. Submit copies to the CPM of any proposed well construction or operation changes.
- E. Submit copies of any water well monitoring reports required by the County of Riverside to the CPM in the annual compliance report.
- F. No later than fifteen (15) days after completion of the onsite water supply wells, the project owner shall submit documentation to the CPM and the RWQCB that well drilling activities were conducted in compliance with Title 23, California Code of Regulations, Chapter 15, Discharges of Hazardous Wastes to Land, (23 CCR, sections 2510 et seq.) requirements and that any onsite drilling sumps used for project drilling activities were removed in compliance with 23 CCR section 2511(c).

NPDES STORMWATER PERMIT – INDUSTRIAL ACTIVITY

SOIL&WATER-4: The project owner shall comply with the requirements of the general NPDES permit for discharges of storm water associated with industrial activity. The project owner shall develop, obtain CPM approval of, and implement an industrial SWPPP for the operation of the project.

Verification: At least 60 days prior to commercial operation, the project owner shall submit to the CPM a copy of the industrial SWPPP for operation of the project for review and approval prior to commercial operation. The project owner shall retain a copy on site. The project owner shall submit copies to the CPM of all correspondence between the project owner and the RWQCB regarding the general NPDES permit for discharge of storm water associated with industrial activity within 10 days of its receipt or submittal. Copies of correspondence shall include the Notice of Intent sent by the project owner to the SWRCB.

POTABLE WATER USE

SOIL&WATER-5: The project owner shall use potable water supplied by one of the following: (1) Mission Springs Water District (MSWD); or (2) onsite wells. The annual use of potable water shall not exceed 2-acre-feet per year. If MSWD or onsite wells are the source of potable water, the project owner shall

monitor and record in gallons per day the total volume of potable water supplied to the CPV Sentinel project. Prior to the use of potable water for commercial operation, the project owner shall either install and maintain metering devices as part of the water supply and distribution system or verify that the water supplier will provide metering allowing the project owner to document project water use as required. The metering devices shall be operational for the life of the project.

1. Beginning with the commencement of commercial operation, the project owner shall prepare an annual summary of amount of water used for potable purposes. The summary shall include the monthly range and monthly average of daily water usage in cubic feet per month, and total water used on a monthly and annual basis in acre-feet. For years subsequent to the initial year of operation, the annual summary will also include the yearly range and yearly average water use. For calculating the total water use, the beginning of the one-year term will correspond to the date established for the annual compliance report submittal.
2. At least sixty (60) days prior to commercial operation of CPV Sentinel project, the project owner shall submit to the CPM a copy of the water supply agreement, if applicable, and evidence that metering devices have been installed and are operational. Potable water use reporting may be based on metering from the supplier.

EVALUATION OF IMPACTS TO PRIVATE WELLS

SOIL & WATER-6: The project owner shall take the following steps to assess potential impacts to private well owners and to mitigate any such impacts.

The project owner will determine whether there are any private wells within a 3 mile radius of the project. If there are any such wells, the project owner will conduct groundwater modeling analysis to determine what type of impacts may result at these wells based on the site-specific conditions and well construction details. The project owner shall use the URS model developed during the AFC process for this project, and shall base its conclusions on the following values: transmissivity equal to Tyley's T and anisotropy equal to 2.

If this analysis indicates that the project will create a drawdown of five feet or more at any private well at any time over the project life of 30 years, the project owner shall provide the following mitigation to the well owner:

1. Payment or reimbursement (at the affected well owner's option) for increased energy costs calculated pursuant to **SOIL&WATER-7** due to the project's impacts; and
2. Payment or reimbursement of an amount equal to the cost of lowering the well owner's pump setting necessary to accommodate the decline in water level caused by the project, unless the project owner can demonstrate to the satisfaction of the CPM that the existing pump setting is sufficiently deep that lowering is unnecessary. In the event that the pump setting cannot be lowered without deepening the well, the project owner shall pay or reimburse the private well owner an amount equal to the customary

local cost of deepening the well. If the well cannot be deepened, the project owner shall pay or reimburse the private well owner an amount equal to the customary local cost of installation of a new well.

Verification: No later than thirty (30) days prior to start of project construction the project owner shall provide documentation showing the results of the mail notification and identification of any impacted well owners. If any private well owners are identified and if so the analysis showing what types of impacts. This documentation should be provided to the CPM for review and approval prior to implementing appropriate measures or methods of mitigation for impacts.

No later than 60 days prior to project operation the project owner shall provide documentation showing that any mitigation for private well impacts was undertaken and satisfied based on the requirements of the CPM and the property owner.

MITIGATION OF ENERGY USE IMPACTS ON PRIVATE WELLS

SOIL&WATER-7: Where it is determined that the project owner shall reimburse a private well owner for increased energy costs identified as a result of analysis performed in Condition of Certification **SOIL&WATER-6**, the project owner shall calculate the compensation owed to any owner of an impacted well as described below.

<u>Increased cost for energy</u>	= change in lift/total system head x total energy consumption x costs/unit of energy
Where:	
change in lift (ft)	= calculated change in water level in the well resulting from project
total system head (ft)	= elevation head + discharge pressure head
elevation head (ft)	= difference in elevation between wellhead discharge pressure gauge and water level in well during pumping.
discharge pressure head (ft)	= pressure at wellhead discharge gauge (psi) X 2.31

At least 30 days prior commencement of production pumping, the project owner shall submit to the CPM for review and approval the documentation showing which well owners must be compensated for increased energy costs and that the proposed amount is sufficient compensation to comply with the provisions of this condition.

1. Any reimbursements (either lump sum or annual) to impacted well owners shall be only to those well owners whose wells were in service within six months of the Commission decision and within a 3-mile radius of the project site.
2. The project owner shall notify all owners of the impacted wells within one month of the CPM approval of the compensation analysis for increase energy costs.

3. Compensation shall be provided on either a one-time lump-sum basis, or on an annual basis, as described below.

Annual Compensation: Compensation provided on an annual basis shall be calculated prospectively for each year by estimating energy costs that will be incurred to provide the additional lift required as a result of the project. With the permission of the impacted well owner, the project owner shall provide energy meters for each well or well field affected by the project. The impacted well owner to receive compensation must provide documentation of energy consumption in the form of meter readings or other verification of fuel consumption. For each year after the first year of operation, the project owner shall include an adjustment for any deviations between projected and actual energy costs for the previous calendar year.

One-Time Lump-Sum Compensation: Compensation provided on a one-time lump-sum basis shall be based on a well-interference analysis, assuming the maximum project-pumping rate of 1,100 AFY. Compensation associated with increased pumping lift for the life of the project shall be estimated as a lump sum payment as follows:

1. The current cost of energy to the affected party considering time of use or tiers of energy cost applicable to the party's billing of electricity from the utility providing electric service, or a reasonable equivalent if the party independently generates their electricity;
2. An annual inflation factor for energy cost of 3 percent; and
3. A net present value determination assuming a term of 30 years and a discount rate of 9 percent;

Verification: The verification for compensation required for increased lift shall be as follows:

1. No later than 30 days after CPM approval of the well drawdown analysis, the project owner shall submit to the CPM for review and approval all documentation and calculations describing necessary compensation for energy costs associated with additional lift requirements.
2. The project owner shall submit to the CPM all calculations, along with any letters signed by the well owners indicating agreement with the calculations, and the name and phone numbers of those well owners that do not agree with the calculations.

Compensation payments shall be made by March 31 of each year of project operation or, if lump-sum payment is selected, payment shall be made by March 31 of the first year of operation only. Within 30 days after compensation is paid, the project owner shall submit to the CPM a compliance report describing compensation for increased energy costs necessary to comply with the provisions of this condition.

PROJECT GROUNDWATER USE

SOIL&WATER-8: The CPV Sentinel project shall use groundwater produced by the on-site wells identified in **SOIL&WATER-3** for all non-potable plant construction and process uses during operation including cooling and landscape irrigation.

- a. Prior to the use of groundwater for commercial operation, the project owner shall install and maintain metering devices as part of the water supply and distribution system to document project process water use as required to monitor and record in hundreds of cubic feet per month the total volume(s) of water supplied to the CPV Sentinel project from this water source. The metering devices shall be operational for the life of the project. ~~Each of the five wells~~well to be constructed will be metered separately or provisions will be made to ensure water use from each well can be identified and documented.
- b. The amount of groundwater that can be used for project process needs shall be limited as follows:
 1. No more than 1,100 acre-feet may be consumed in any calendar year; and
 2. In any given month, the amount of water that may be consumed is the total amount of water that has been recharged (pursuant to **SOIL&WATER-10**) ~~25~~15 months or more prior to that month, minus the cumulative amount of water previously pumped for project process needs since the commercial operation date.
- c. The project owner shall submit to the CPM an annual summary of daily groundwater use for project process needs, including monthly subtotals and an accumulation of all project groundwater use since the commercial operation date, and the accumulation of groundwater recharged in accordance with **SOIL&WATER-10**.
- d. If insufficient water has been recharged in advance of groundwater pumping for project process needs, as defined in b(2) above, the CPV Sentinel project shall ~~not operate~~perform groundwater modeling of project pumping and recharge attributable to the project to the satisfaction of the USFWS and the CPM to assess the potential for any impacts to the Willow Hole Conservation Area Mesquite Hummocks (WHCAMH). If it is determined that the project, absent avoidance measures, will impact the WHCAMH, the CPV Sentinel project shall submit a plan satisfactory to the USFWS and the CPM to implement alternative avoidance measures to WHCAMH.

Verification: The project owner shall prepare an annual summary, which will include identification of the well or wells used, daily~~monthly~~ groundwater usage in hundreds of cubic feet with appropriate unit conversions to gallons per day, ~~maximum and minimum daily usage~~and acre-feet for each month and annually, and total water used on a monthly and annual basis in acre-feet~~said units~~. For years subsequent to the initial year of operation, the annual summary will also include the yearly maximum and

minimum and yearly average water use by source. Calculations shall be performed on a calendar year basis.

At least sixty (60) days prior to commercial operation of the CPV Sentinel project, the project owner shall submit to the CPM evidence that metering devices have been installed and are operational for process water supply and distribution.

TRANSMISSIVITY INVESTIGATION – EVALUATION OF HYDROGEOLOGIC CONDITIONS IN THE MESQUITE HUMMOCKS CONSERVATION AREA

SOIL&WATER-9: The project owner may complete an investigation that determines subsurface geology, groundwater levels, and aquifer properties (i.e., transmissivity and storage properties) in the ~~Mesquite Hummocks Conservation Area~~ vicinity of the project pumping wells and the DWA recharge basins located in the Mission Creek Groundwater Sub-basin. This investigation shall consist of the following:

1. Submit a scope of work (the Work Plan) to the CPM. This Work Plan shall contain a detailed discussion proposing the approach, methods, and timeframe for the hydrogeologic investigation.
2. Obtain CPM approval of the Work Plan prior to starting the investigation.
3. Complete the investigation as described in the approved Work Plan.
4. Submit a report of results that documents the methods used, data collected, analyses conducted and study conclusions regarding hydrogeologic conditions in the ~~Mesquite Hummocks Conservation Area~~ Study Area.

If the report demonstrates that hydrogeologic conditions and aquifer properties in the ~~Mesquite Hummocks Conservation Area~~ support the hypothesis that transmissivity is greater than mapped by Tyley (1974), the project owner may, upon receipt of written CPM approval, request use this transmissivity value in the calculation of the pre-charge schedule and in the calculation of potential well interference at private wells.

Verification: The project owner shall ~~shall~~ may:

1. At least 60 days before conducting the investigation, ~~the project owner shall submit to the CPM, for approval, a Work Plan describing in detail the scope of work proposed for the hydrogeologic study.~~
2. ~~At~~ **If a study is conducted, at** least 12 months before project operation, the project owner shall submit to the CPM a report of results documenting the aquifer properties in the ~~Mesquite Hummocks Conservation Area~~ Study Area, and if the transmissivity value is greater than that mapped by Tyley (1974), obtain CPM approval, if desired, to use this transmissivity value in calculating the pre-charge schedule and potential well interference at private wells.

GROUNDWATER RECHARGE

SOIL&WATER-10: The project owner shall ensure that its recharge of groundwater complies with the following:

1. Recharge shall occur at the Desert Water Agency's (DWA's) Mission Creek Spreading Grounds;
2. Water purchased by the project owner for recharge shall be in addition to State Water Project (SWP) supplies acquired by DWA under its entitlements as a State Water Project contractor (including DWA's Table A allocation and any surplus SWP purchases) for its groundwater replenishment program;
3. The initial water used for recharge shall be the 8,350 acre-feet of Exchanged North Kern water (hereafter referred to as North Kern water) water secured from North Kern Water Storage District pursuant to the Water Supply Agreement between CPV Sentinel and DWA, dated August 19, 2008. Recharge of additional water must comply with subdivisions a) and b) of this condition and must be approved pursuant to **SOIL&WATER-11**; and
4. The applicant shall provide to the CPM an annual accounting of cumulative water recharged on a monthly basis throughout the operating life of the project as part of the Annual Compliance Report, and in coordination with the annual reporting requirements in **SOIL&WATER-16**.

Verification: ~~Within 60 days of licensing, the project owner shall submit to the CPM copies of final agreements between it and the seller of the North Kern water, between it and DWA, and between the Metropolitan Water District (MWD) and DWA that ensure that the North Kern water will be delivered to the DWA spreading grounds. If recharge of other water is approved by the CPM pursuant to **SOIL&WATER-11**, the project owner shall within 60 days of that approval, submit to the CPM copies of final agreements between it and the seller of the other water (if applicable), between it and DWA, and between DWA and MWD (if water is to be delivered through an exchange with MWD) that ensure that the other water will be delivered to the DWA spreading grounds.~~

APPROVAL OF NEW RECHARGE WATER SOURCES

SOIL&WATER-11:

1. The project owner shall submit a Water Supply Plan identifying additional water for recharge to the CPM for review and approval when following completion of delivery of the North Kern water, the amount of water available for project process needs is reduced to 1,650 acre-feet as calculated in **SOIL&WATER-8**.
2. Any Water Supply Plan submitted pursuant to this Condition shall include the following:
 - A. Identification of the water source;
 - B. Demonstration of the project owner's legal entitlement to the water;
 - C. Demonstration of CEQA compliance; and

- D. An estimated schedule for delivery to the DWA's Mission Creek Spreading Grounds, including applicable agreements with water supply, transfer and conveyance entities.
3. The project shall not utilize water other than North Kern water unless the CPM has approved the Water Supply Plan submitted pursuant to this Condition.

Verification: The project owner shall submit a Water Supply Plan that meets the requirements of this condition.

ZERO LIQUID DISCHARGE SYSTEM REQUIREMENTS

SOIL&WATER-12: The project owner shall treat all process wastewater streams with a Zero Liquid Discharge (ZLD) system that results in a residual solid waste. The solid waste shall be disposed of in the appropriate class of landfill suitable for the constituent concentrations in the waste. Surface or subsurface disposal of process wastewater from the CPV Sentinel is prohibited. The project owner shall operate the ZLD system in accordance with a ZLD management plan approved by the CPM. The ZLD management plan shall include the following elements:

1. A flow diagram showing all water sources and wastewater disposal methods at the power plant;
2. A narrative of expected operation and maintenance of the ZLD system;
3. A narrative of the redundant or back-up wastewater disposal method to be implemented during periods of ZLD system shutdown or maintenance;
4. A maintenance schedule;
5. A description of on-site storage facilities and containment measures;
6. A table identifying influent water quality; and
7. A table characterizing the constituent concentrations of the solid waste or brine and specifying the permit limits of the selected landfill.

The CPV Sentinel operation and wastewater production shall not exceed the treatment capacity of the ZLD system or result in an industrial wastewater discharge.

Verification: At least 60 days prior to the start of commercial operation, the project owner shall submit to the CPM evidence that the final design of the ZLD system has the approval of the Chief Building Officer. At least 60 days prior to the start of commercial operation, the project owner shall prepare a ZLD management plan for review and approval by the CPM. The ZLD management plan shall be updated by the project owner and submitted to the CPM for review and approval if a change in water source or infrastructure is needed.

In the annual compliance report, the project owner shall submit a status report on operation of the ZLD system, including dates and length of disruptions, maintenance activities performed, volumes of interim wastewater streams stored on site, monthly volumes of residual salt cake or brine generated, and results of at least one annual sampling of the waste solids or brine comparing the constituent concentrations to the permit limits of the landfill. The annual compliance report shall contain an evaluation of whether the ZLD is being operated within the parameters described in the ZLD

management plan. The ZLD management plan shall be updated by the project owner if the CPM has determined it is necessary based on the project owner's Annual Compliance Report.

COUNTY SEPTIC FACILITY PERMIT REQUIREMENTS

SOIL&WATER-13: The project owner will comply with the requirements of the Riverside County Department of Health and Human Services, Riverside County Ordinance Code 592.1, regarding a Septic Facility Permit for sanitary waste disposal facilities such as septic systems and leach fields.

Verification: The project owner will submit all necessary information and the appropriate fee to the county of Riverside to ensure that the project has complied with the county's sanitary waste disposal facilities requirements. A written assessment prepared by Riverside County of the project's compliance with these requirements must be provided to the CPM 60 days prior to the start of operation.

WATER SUPPLY CONVERSION OF PALM SPRINGS NATIONAL GOLF COURSE

SOIL&WATER-14: In accordance with the Water Conservation Funding Agreement, dated July 15, 2008, the project owner will fund construction of the water supply conversion of the PSNGC from groundwater use to recycled water use, and comply with the following requirements:

1. The project owner shall pay \$1,000,000 to the DWA for enhancements and improvements to DWA's reclaimed water system intended to maximize the availability of reclaimed water to DWA costumers;
2. The project owner shall pay \$300,000 to DWA for fees and construction costs to enable delivery of the recycled water from DWA's South Murray Canyon Drive service main to the PSNGC.
3. The project owner shall, in each calendar year following the start of commercial operation, ensure that the maximum available supply of DWA's recycled water that can be beneficially used by PSNGC will be delivered and used by PSNGC. ~~At least 1,100 AFY of recycled water supply must be made available to PSNGC for irrigation.~~
4. The project owner shall obtain records from DWA showing the volume of recycled water used and report ~~daily~~monthly water use in hundreds of cubic feet with conversions to gallons ~~per day~~and acre-feet, and monthly and annual totals in ~~acre-feet~~same units in the Annual Compliance Report. If any groundwater is used for irrigation of PSNGC, the project owner shall also obtain records showing the ~~daily~~monthly water use in hundreds of cubic feet with applied conversions to gallons ~~per day~~and acre-feet, and monthly and annual totals in ~~acre-feet~~same units in the Annual Compliance Report and provide an explanation of why irrigation with groundwater was necessary.

5. In the event the PSNGC no longer requires recycled water service, the project owner shall notify the CPM within 10 days and shall comply with the requirements of **SOIL&WATER-16**.

Verification: The project owner shall do all of the following:

~~No later than 60 days prior to the start of the PSNGC water supply conversion project construction the project owner will provide the CPM with an agreement and schedule demonstrating the PSNGC conversion project will be constructed and operational prior to pumping groundwater for use on the CPV Sentinel project. The conversion project agreement and schedule must be reviewed and approved by the CPM prior to conversion project construction. The CPV Sentinel project may not operate until the PSNGC conversion project is operational.~~

No later than 90 days prior to the start of conversion project operation, the project owner will provide to the CPM a copy of the agreement between DWA and PSNGC that ensures they will take delivery of recycled water for all their irrigation needs as soon as it is available. The CPV Sentinel project may not operate until the PSNGC conversion project is operational.

The project owner shall prepare an annual summary to be included in the annual compliance report, which will include the monthly range and monthly average of daily recycled and groundwater use in hundreds of cubic feet with conversions to gallons per day and acre-feet, and total water used on a monthly and annual basis in ~~acre-feet~~ same units. For years subsequent to the initial year of operation, the annual summary will also include the yearly range and yearly average water use by source. Calculations shall be on a calendar year basis.

IRRIGATION CONTROLLER PROGRAM

SOIL&WATER-15: In accordance with the WSP, the project owner will fund installation by DWA of irrigation controllers in existing residences and businesses in DWA's service area to achieve fresh water conservation consistent with the WSP. ~~The program will include provisions for education and outreach, demonstration programs, and installation of the controllers by DWA. The project owner shall:~~

1. Contribute funding sufficient for DWA's installation of 4,800 irrigation controllers in its services area at existing businesses or residences to conserve between an estimated 480 to 706 acre-feet of groundwater per year. ~~Installation shall be completed no later than the end of the 7th year following the start of construction;~~
- ~~2. Contribute funding for DWA to provide long-term maintenance or periodic replacement of the irrigation controllers to ensure that they are effective for a minimum of 30 years;~~
2. ~~3.~~ Cause DWA to complete an evaluation of the effectiveness of the irrigation controller program using methods similar to those used by

CVWD in their Final Report dated June 21, 2007 or other methods to be approved by the CPM; and

~~If the installation of irrigation controllers does not result in fresh water conservation of at least 480 acre-feet each year, the project owner shall comply with **SOIL&WATER-16**.~~

Verification: The project owner shall do all of the following:

- ~~1. No later than thirty (30) days after the CPV Sentinel project certification, the project owner will provide to the CPM an executed agreement with DWA to fund an irrigation controller management program with the following elements included: purchasing and installing at least 4,800 irrigation controllers for water conservation to DWA's existing residential and business customers. The agreement will include a commitment from DWA showing they will conduct the necessary education and outreach, and demonstration projects to ensure that 4,800 controllers are installed within 7 years following start of CPV Sentinel construction.~~
1. ~~2.~~ No later than one year after funding implementation of the irrigation controller program the project owner shall develop and submit to the CPM for approval a methodology and outline for a report to evaluate the effectiveness of the irrigation controller program and estimate the water savings in the Upper Coachella Valley Groundwater Basin.
2. ~~3.~~ Each year after initiating the irrigation controller program, and annually thereafter, the project owner shall analyze the effectiveness of the irrigation controller program using the approved methods and report on the total water conservation achieved. The report should be included in the Annual Compliance Report for approval by the CPM.
3. ~~4.~~ Submit to the CPM, as part of the Annual Compliance Report documentation, the following:
 - The annual invoice paid to the DWA, in accordance with the Water Conservation Funding Agreement: **dated July 15, 2008**. This shall include proof of invoice payment to the DWA;
 - The estimated total and average water conservation achieved based on the number of controllers; and
 - The accounting of the project owner's contributions to DWA's Irrigation controller Program over the life of the program; and
 - ~~A plan for maintaining and replacing as necessary the irrigation controllers over 30 years starting with CPV Sentinel's first year of commercial operation;~~

Calculations shall be on a calendar year basis.

REPORTING AND VERIFYING THE FRESH WATER CONSERVATION PROGRAM BENEFITS

SOIL&WATER-16: The project owner shall perform the following:

1. Provide annual reporting to ensure that the fresh water conservation benefits to be achieved by implementation of **SOIL&WATER-14** and **SOIL&WATER-15** shall meet the following requirements: **achieve annual fresh water conservation benefits by the end of the first full calendar year following the project commercial operation date, and thereafter equal to or exceeding the project's use of groundwater as reported in SOIL&WATER-8.**
 - ~~A. Achieve 1,000 AFY in fresh water conservation benefits by the end of the first full calendar year following the project commercial operation date, increasing by 100 AFY annually over the subsequent 5 years to 1,500 AFY by the end of the 6th full calendar year following the commercial operation date.~~
 - ~~B. Achieve minimum water conservation benefits of 1,500 AFY for each year following the 6th full calendar year following the commercial operation date for the life of the project.~~
2. If the fresh water conservation benefits of the water supply conversion of the PSNGC and the irrigation program projects cannot be sustained for any reason according to 1) and 2) above, the project owner shall submit a revised Water Conservation Plan within 6 months of the annual report, obtain CPM approval of the revised plan, and implement additional fresh water conservation projects on the schedule identified in the approved plan that will achieve fresh water conservation that will include the makeup of any deficits in meeting the water conservation requirements of 1) and 2) of this condition.

Verification: For each year following the commercial operation date, the project owner shall provide an Annual Compliance Report, an accounting of fresh water conservation benefits for the previous calendar year, and a summary of annual fresh water conservation quantities since inception. If the water conservation benefits are not in conformance with the fresh water performance measures included in this condition, the project owner shall submit:

1. A revised Water Conservation Plan within 6 months of the annual report;
2. Obtain CPM approval of the revised plan; and
3. Implement additional fresh water conservation projects on the schedule identified in the approved plan that will achieve fresh water conservation that will include the makeup of any deficits in meeting the water conservation requirements of 1) and 2) of this condition.

TRAFFIC AND TRANSPORTATION

PROPOSED CONDITIONS OF CERTIFICATION

Encroachment Permit

TRANS-1 Prior to any ground disturbance within a public right-of-way (e.g., highway, road, bicycle path, pedestrian path), the project owner or its contractor(s) shall secure an encroachment permit in accordance with the applicable requirements of the county of Riverside, the city of Palm Springs, and Caltrans (if applicable) for encroachment into the affected jurisdiction's public right-of-way.

Verification: Prior to ground disturbance in the public right-of-way the project owner shall provide to the CPM copies of the county of Riverside Transportation and Land Management Agency, the city of Palm Springs Department of Public Works and Engineering, and Caltrans (if applicable) issued/approved encroachment permit(s). In addition, the project owner shall retain copies of the issued/approved permit(s) and supporting documentation in its compliance file for a minimum of 180 calendar days after the start of commercial operation.

Parking Standards

TRANS-2 The project owner shall comply with the applicable parking standards of the county of Riverside. The project owner shall prepare and submit to the CPM for approval a parking plan for the operation phase of the project in consultation with the county of Riverside.

The operational parking plan shall show the location of the proposed parking area(s), a plot plan (diagram) with dimensions with an accurate portrayal of the number of parking spaces in accordance to the sizes stipulated in the applicable parking standards by the county of Riverside Transportation and Land Management Agency. The plan shall also show ingress/egress access (including emergency services vehicle access), parking lot circulation, car/van pool loading and unloading area(s) and any other item(s) that are requested by the county of Riverside Transportation and Land Use Management Agency subject to approval by the CPM.

The operational parking plan shall include a policy to be enforced by the project owner stating all project-related parking occur onsite or in designated offsite parking areas as shown on the plan.

Prior to site mobilization, the project owner shall provide to the CPM for approval a conceptual construction parking layout plan for the project. The conceptual parking layout plan shall show with an accurate portrayal the number of parking spaces in accordance to the sizes stipulated in the applicable parking standards by the county of Riverside Transportation and Land Management Agency, and parking lot circulation.

Verification: The project owner shall submit the proposed operation parking plan to the county of Riverside Department of Transportation for review and comment. The project owner shall provide to the CPM a copy of the transmittal letter submitted to the county of Riverside Department of Transportation requesting their review of the parking plan. The project owner shall provide any comment letters to the CPM for review.

The applicant shall provide the county of Riverside Transportation and Land Management Agency 30 calendar days to review the parking plan and provide written comments to the project owner. The project owner shall provide a copy of the county of Riverside Transportation and Land Management Agency written comments and a copy of the parking plan(s) to the CPM for review and approval.

At least 30 calendar days prior to site mobilization, the project owner shall provide a copy of the construction phase parking plan to the CPM for review and approval.

At least 60 calendar days prior to the start of commercial operation, the project owner shall provide a copy of the operation phase parking plan to the CPM for review and approval.

Prior to site mobilization, the project owner shall provide to the CPM for approval a conceptual construction parking layout plan for the project.

Traffic Control and Implementation Plan

TRANS-3 The project owner shall prepare a construction traffic control and implementation plan for the project and its associated facilities. The project owner shall consult with the county of Riverside Transportation and Land Management Agency, the city of Palm Springs Department of Public Works and Engineering, and Caltrans in the preparation of the traffic control and implementation plan. The project owner shall provide a copy of the county of Riverside Transportation and Land Management Agency, the city of Palm Springs Department of Public Works and Engineering, and Caltrans written comments and a copy of the traffic control and implementation plan to the CPM for review and approval.

The traffic control and implementation plan shall include and describe the following minimum requirements:

- Timing of heavy equipment and building materials deliveries;
- Redirecting construction traffic with a flag person if required;
- Signing, lighting, and traffic control device placement if required;
- Construction work hours and arrival/departure times outside of peak traffic periods;
- Haul routes;
- Procedures for safe access to the main entrance;
- Ensure access for emergency services vehicles to the project site;
- Temporary travel lane closure;

- Ensure access to adjacent residential and commercial property during the construction of all linears, and;
- Provide a construction workforce organized ridesharing plan (ridesharing refers to carpooling and vanpooling. Rideshare programs typically provide carpool matching, vanpool sponsorship, marketing programs and incentives to rideshare rather than drive alone).

Verification: The project owner shall submit the proposed traffic control and implementation plan to the county of Riverside Transportation and Land Management Agency, the city of Palm Springs Department of Public Works and Engineering, and Caltrans for review.

The project owner shall provide to the CPM a copy of the transmittal letter submitted to the county of Riverside Transportation and Land Management Agency, the city of Palm Springs Department of Public Works and Engineering, and Caltrans requesting their review of the traffic control and implementation plan.

The project owner shall provide the county of Riverside Transportation and Land Management Agency, the city of Palm Springs Department of Public Works and Engineering, and Caltrans 30 calendar days to review the plan and provide written comments to the project owner. The project owner shall provide the CPM a copy of the county of Riverside Transportation and Land Management Agency, the city of Palm Springs Department of Public Works and Engineering, and Caltrans comments to the CPM.

If the CPM determines that the plan requires revision, the project owner shall provide to the CPM and the county of Riverside Transportation and Land Management Agency, the city of Palm Springs Department of Public Works and Engineering, and Caltrans a plan with the specified revisions for review and approval by the CPM before the plan is implemented.

At least 30 calendar days prior to site mobilization, the project owner shall provide a copy of the traffic control and implementation plan to the CPM for review and approval.

Repair of Public Right-of-Way

TRANS-4 The project owner shall repair affected public rights-of-way (e.g., highway, road, bicycle path, pedestrian path) to original or near original condition that has been damaged due to construction activities conducted for the project and its associated facilities.

Prior to start of site mobilization, the project owner shall notify the county of Riverside Transportation and Land Management Agency, the city of Palm Springs Department of Public Works and Engineering, and Caltrans about their schedule for project construction. The purpose of this notification is to request the county of Riverside Transportation and Land Management Agency, the city of Palm Springs Department of Public Works and Engineering, and Caltrans to consider public right-of-way repair or improvement activities after project construction has taken place and to coordinate construction-related activities.

Verification: Prior to the start of site mobilization, the project owner shall photograph, or videotape the following applicable affected public right-of-way segment(s) (includes intersections): Indian Avenue, Dillon Road, Melissa Lane, State Route 62, South Murray Canyon Drive, and Kings Road East. The project owner shall provide the CPM, the county of Riverside Transportation and Land Management Agency, the city of Palm Springs Department of Public Works and Engineering, and Caltrans with a copy of these images.

Within 60 calendar days after completion of construction, the project owner shall meet with the CPM, the county of Riverside Transportation and Land Management Agency, the city of Palm Springs Department of Public Works and Engineering, and Caltrans to identify sections of public right-of-way to be repaired, to establish a schedule to complete the repairs and to receive approval for the action(s). Following completion of any public right-of-way repairs, the project owner shall provide to the CPM a letter signed by the county of Riverside Transportation and Land Management Agency, the city of Palm Springs Department of Public Works and Engineering, and Caltrans stating their satisfaction with the repairs.

Improvement to Melissa Lane and Dedication of Roadway

TRANS-5 Prior to the start of commercial operation, the project owner shall dedicate, and complete improvement of Melissa Lane from Dillon Road to the north boundary of the CPV Sentinel Energy facility site 16th Avenue to the eCounty of Riverside standard for a collector rural road – Riverside County Standard No. 136. The project owner shall improve improve this portion of Melissa Lane with 28-feet of asphalt concrete pavement within a 60-foot full-width dedicated right-of-way including standard corner cutback in accordance to county standards. North of 16th Avenue to the project site will be constructed as a private driveway within the exiting recorded right of way. The project owner shall improve this portion of Melissa Lane with 20 feet of asphalt pavement.

Verification: Not later than a 180 days prior to the estimated start of commercial operation, the project owner shall submit to the Director of the county of Riverside Transportation and Land Management Agency, Planning Department for review, the required improvement plan(s) for Melissa Lane, and the completed forms for the dedication of the roadway.

The project owner shall provide to the CPM a copy of the transmittal letter submitted to the county of Riverside Department of Transportation and Land Management Agency, Planning Department requesting their review of the improvement plans and dedication of roadway submitted for Melissa Lane.

The project owner shall allow the Director of the county of Riverside Transportation and Land Management Agency, Planning Department 30 days to provide comment on the improvement plans and roadway dedication.

The project owner shall provide a copy of the Director of the county of Riverside Transportation and Land Management Agency, Planning Department comments to the

CPM prior to the start of construction of the improvements to Melissa Lane and roadway dedication.

If the CPM determines that the improvement plans and/or the roadway dedication requires revision, the project owner shall provide to the CPM and the Director of the county of Riverside Transportation and Land Management Agency, Planning Department a plan and/or roadway dedication request with the specified revision(s) for review and approval by the CPM before the improvement plan is implemented.

The project owner shall simultaneously notify the CPM and the Director of the county of Riverside Transportation and Land Management Agency, Planning Department that the improvement to Melissa Lane is completed and ready for final inspection.

County Transportation Uniform Mitigation Fee

TRANS-6 Prior to the start of commercial operation, the project owner shall pay to the county of Riverside or designee, the Transportation Uniform Mitigation Fee calculated for the CPV Sentinel Energy Project in accordance to Riverside County Ordinance 673.

Verification: Prior to the start of commercial operation, the project owner shall provide to the CPM a copy of the receipt provided by the county of Riverside or its designee demonstrating payment of Transportation Uniform Mitigation Fee.

TRANSMISSION SYSTEM ENGINEERING

CONDITIONS OF CERTIFICATIONS FOR TSE

TSE-1 The project owner shall furnish to the CPM and to the CBO a schedule of transmission facility design submittals, a Master Drawing List, a Master Specifications List, and a Major Equipment and Structure List. The schedule shall contain a description and list of proposed submittal packages for design, calculations, and specifications for major structures and equipment. To facilitate audits by Energy Commission staff, the project owner shall provide designated packages to the CPM when requested.

Verification: At least 60 days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of construction of the transmission facilities, the project owner shall submit the schedule, a Master Drawing List, and a Master Specifications List to the CBO and to the CPM. The schedule shall contain a description and list of proposed submittal packages for design, calculations, and specifications for major structures and equipment (see a list of major equipment in **Table 1: Major Equipment List** below). Additions and deletions shall be made to the table only with CPM and CBO approval. The project owner shall provide schedule updates in the Monthly Compliance Report.

Table 1: Major Equipment List
Breakers
Step-up Transformer
Switchyard
Busses
Surge Arrestors
Disconnects and Wave-traps
Take off facilities
Electrical Control Building
Switchyard Control Building
Transmission Pole/Tower
Insulators and Conductors
Grounding System

TSE-2 Prior to the start of construction the project owner shall assign an electrical engineer and at least one of each of the following to the project: A) a civil engineer; B) a geotechnical engineer or a civil engineer experienced and knowledgeable in the practice of soils engineering; C) a design engineer, who is either a structural engineer or a civil engineer fully competent and proficient in the design of power plant structures and equipment supports; or D) a

mechanical engineer. (Business and Professions Code Sections 6704 et seq., require state registration to practice as a civil engineer or structural engineer in California.)

The tasks performed by the civil, mechanical, electrical or design engineers may be divided between two or more engineers, as long as each engineer is responsible for a particular segment of the project (e.g., proposed earthwork, civil structures, power plant structures, equipment support). No segment of the project shall have more than one responsible engineer. The transmission line may be the responsibility of a separate California registered electrical engineer. The civil, geotechnical or civil and design engineer assigned in conformance with Facility Design condition **GEN-5**, may be responsible for design and review of the TSE facilities.

The project owner shall submit to the CBO for review and approval, the names, qualifications and registration numbers of all engineers assigned to the project. If any one of the designated engineers is subsequently reassigned or replaced, the project owner shall submit the name, qualifications and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer. This engineer shall be authorized to halt earthwork and to require changes if site conditions are unsafe or do not conform with predicted conditions used as a basis for design of earthwork or foundations.

The electrical engineer shall:

1. Be responsible for the electrical design of the power plant switchyard, outlet and termination facilities; and
2. Sign and stamp electrical design drawings, plans, specifications, and calculations.

Verification: At least 30 days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of rough grading, the project owner shall submit to the CBO for review and approval, the names, qualifications and registration numbers of all the responsible engineers assigned to the project. The project owner shall notify the CPM of the CBO's approvals of the engineers within five days of the approval.

If the designated responsible engineer is subsequently reassigned or replaced, the project owner has five days in which to submit the name, qualifications, and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer within five days of the approval.

TSE-3 If any discrepancy in design and/or construction is discovered in any engineering work that has undergone CBO design review and approval, the project owner shall document the discrepancy and recommend corrective action. (1998 CBC, Chapter 1, Section 108.4, Approval Required; Chapter 17,

Section 1701.3, Duties and Responsibilities of the Special Inspector; Appendix Chapter 33, Section 3317.7, Notification of Noncompliance). The discrepancy documentation shall become a controlled document and shall be submitted to the CBO for review and approval and shall reference this condition of certification.

Verification: The project owner shall submit a copy of the CBO's approval or disapproval of any corrective action taken to resolve a discrepancy to the CPM within 15 days of receipt. If disapproved, the project owner shall advise the CPM, within five days, the reason for disapproval, and the revised corrective action required to obtain the CBO's approval.

TSE-4 For the power plant switchyard, outlet line and termination, the project owner shall not begin any increment of construction until plans for that increment have been approved by the CBO. These plans, together with design changes and design change notices, shall remain on the site for one year after completion of construction. The project owner shall request that the CBO inspect the installation to ensure compliance with the requirements of applicable LORS. The following activities shall be reported in the Monthly Compliance Report:

- a) receipt or delay of major electrical equipment;
- b) testing or energization of major electrical equipment; and
- c) the number of electrical drawings approved, submitted for approval, and still to be submitted.

Verification: At least 30 days (or a lesser number of days mutually agreed to by the project owner and the CBO) prior to the start of each increment of construction, the project owner shall submit to the CBO for review and approval the final design plans, specifications and calculations for equipment and systems of the power plant switchyard, outlet line and termination, including a copy of the signed and stamped statement from the responsible electrical engineer attesting to compliance with the applicable LORS, and send the CPM a copy of the transmittal letter in the next Monthly Compliance Report.

TSE-5 The project owner shall ensure that the design, construction and operation of the proposed transmission facilities will conform to all applicable LORS, including the requirements listed below. The project owner shall submit the required number of copies of the design drawings and calculations to the CBO as determined by the CBO.

- a) The power plant switchyard and outlet line shall meet or exceed the electrical, mechanical, civil and structural requirements of CPUC General Order 95 or National Electric Safety Code (NESC), Title 8 of the California Code and Regulations (Title 8), Articles 35, 36 and 37 of the "High Voltage Electric Safety Orders", California ISO standards, National Electric Code (NEC) and related industry standards.
- b) Breakers and busses in the power plant switchyard and other switchyards, where applicable, shall be sized to accommodate full output from the project and to comply with a short-circuit analysis.

- c) Outlet line crossings and line parallels with transmission and distribution facilities shall be coordinated with the transmission line owner and comply with the owner's standards.
- d) The project conductors shall be sized to accommodate the full output from the project.
- e) Termination facilities shall comply with applicable PG&E interconnection standards.
- f) The project owner shall provide to the CPM:
 - i) A line route drawing after selecting one of the alternate route options for the generator interconnection 230 kV tie line.
 - ii) The Special Protection System (SPS) sequencing and timing if applicable,
 - iii) A letter stating that the mitigation measures or projects selected by the transmission owners for each criteria violation are acceptable,
 - iv) The Operational study report based on 2010 or current Commercial Operation Date (COD) system conditions (including operational mitigation measures) from the California ISO and/or SCE. **operational study examining the impact of adding the proposed project as of the in-service date will be provided when it is available.**

Verification: At least 60 days prior to the start of construction of transmission facilities (or a lesser number of days mutually agree to by the project owner and CBO), the project owner shall submit to the CBO for approval:

- a) Design drawings, specifications and calculations conforming with CPUC General Order 95 or NESC, Title 8, Articles 35, 36 and 37 of the "High Voltage Electric Safety Orders", NEC, applicable interconnection standards and related industry standards, for the poles/towers, foundations, anchor bolts, conductors, grounding systems and major switchyard equipment.
- b) For each element of the transmission facilities identified above, the submittal package to the CBO shall contain the design criteria, a discussion of the calculation method(s), a sample calculation based on "worst case conditions"¹ and a statement signed and sealed by the registered engineer in responsible charge, or other acceptable alternative verification, that the transmission element(s) will conform with CPUC General Order 95 or NESC, Title 8, California Code of Regulations, Articles 35, 36 and 37 of them, "High Voltage Electric Safety Orders", NEC, applicable interconnection standards, and related industry standards.
- c) Electrical one-line diagrams signed and sealed by the registered professional electrical engineer in responsible charge, a route map, and an engineering

¹ Worst case conditions for the foundations would include for instance, a dead-end or angle pole.

description of equipment and the configurations covered by requirements **TSE-5** a) through f) above.

- d) A line route drawing after selecting one of the alternate route options for the generator interconnection 230 kV tie line.
- e) The Special Protection Scheme (SPS) sequencing and timing if applicable shall be provided concurrently to the CPM.
- f) A letter stating that the mitigation measures or projects selected by the transmission owners for each criteria violation are acceptable.
- g) ~~The Operational study report based on 2010 or current COD system conditions (including operational mitigation measures) from the California ISO and/or PG&E.~~ **operational study examining the impact of adding the proposed project as of the in-service date will be provided when it is available.**

TSE-6 The project owner shall inform the CPM and CBO of any impending changes that may not conform to requirements **TSE-5** a) through f), and have not received CPM and CBO approval, and request approval to implement such changes. A detailed description of the proposed change and complete engineering, environmental, and economic rationale for the change shall accompany the request. Construction involving changed equipment or substation configurations shall not begin without prior written approval of the changes by the CBO and the CPM.

Verification: At least 60 days prior to the construction of transmission facilities, the project owner shall inform the CBO and the CPM of any impending changes that may not conform to requirements of **TSE-5** and request approval to implement such changes.

TSE-7 The project owner shall provide the following Notice to the California Independent System Operator (Cal-ISO) prior to synchronizing the facility with the California Transmission system:

1. At least one week prior to synchronizing the facility with the grid for testing, provide the Cal-ISO a letter stating the proposed date of synchronization; and
2. At least one business day prior to synchronizing the facility with the grid for testing, provide telephone notification to the ISO Outage Coordination Department.

Verification: The project owner shall provide copies of the Cal-ISO letter to the CPM when it is sent to the Cal-ISO one week prior to initial synchronization with the grid. The project owner shall contact the Cal-ISO Outage Coordination Department, Monday through Friday, between the hours of 0700 and 1530 at (916) 351-2300 at least one business day prior to synchronizing the facility with the grid for testing. A report of conversation with the Cal-ISO shall be provided electronically to the CPM one day before synchronizing the facility with the California transmission system for the first time.

TSE-8 The project owner shall be responsible for the inspection of the transmission facilities during and after project construction, and any subsequent CPM and CBO approved changes thereto, to ensure conformance with CPUC GO-95 or

NESC, Title 8, CCR, Articles 35, 36 and 37 of them, “High Voltage Electric Safety Orders”, applicable interconnection standards, NEC and related

industry standards. In case of non-conformance, the project owner shall inform the CPM and CBO in writing, within 10 days of discovering such non-conformance and describe the corrective actions to be taken.

Verification: Within 60 days after first synchronization of the project, the project owner shall transmit to the CPM and CBO:

- a) "As built" engineering description(s) and one-line drawings of the electrical portion of the facilities signed and sealed by the registered electrical engineer in responsible charge. A statement attesting to conformance with CPUC GO-95 or NESC, Title 8, California Code of Regulations, Articles 35, 36 and 37 of the, "High Voltage Electric Safety Orders", and applicable interconnection standards, NEC, related industry standards, and these conditions shall be provided concurrently.
- b) An "as built" engineering description of the mechanical, structural, and civil portion of the transmission facilities signed and sealed by the registered engineer in responsible charge or acceptable alternative verification. "As built" drawings of the electrical, mechanical, structural, and civil portion of the transmission facilities shall be maintained at the power plant and made available, if requested, for CPM audit as set forth in the "Compliance Monitoring Plan".
- c) A summary of inspections of the completed transmission facilities, and identification of any nonconforming work and corrective actions taken, signed and sealed by the registered engineer in charge.

WASTE MANAGEMENT

PROPOSED CONDITIONS OF CERTIFICATION

WASTE-1 The project owner shall provide the resume of a Registered Professional Engineer or Geologist, who shall be available for consultation during soil excavation and grading activities, to the CPM for review and approval. The resume shall show experience in identification of hazardous materials, contaminated soils, and remedial investigation and feasibility studies. The Registered Professional Engineer or Geologist shall be given full authority by the project owner to oversee any earth moving activities that have the potential to disturb contaminated soil.

Verification: At least thirty (30) days prior to the start of site mobilization the project owner shall submit the resume to the CPM for review and approval.

WASTE-2 If potentially hazardous material or contaminated soil is identified during project construction or operation at the proposed site or natural gas and water pipeline corridors as evidenced by discoloration, odor, detection by handheld instruments, or other signs, the Registered Professional Engineer or Geologist shall inspect the site, determine the need for sampling to confirm the nature and extent of the hazardous material or contamination soil, and file a written report to the project owner, appropriate regulatory agency, and CPM stating the recommended course of action.

The Registered Professional Engineer or Geologist shall have the authority to temporarily suspend construction activity at that location for the protection of workers or the public. If, in the opinion of the Registered Professional Engineer or Geologist, significant remediation may be required, the project owner shall contact representatives of the Riverside County Department of Environmental Health for guidance and possible oversight.

Verification: The project owner shall submit any final reports filed by the Registered Professional Engineer or Geologist to the CPM within five (5) days of their receipt. The project owner shall notify the CPM within 24 hours of any orders issued to halt construction.

WASTE-3 If an abandoned well is located during construction or operation, the project owner shall comply with Division of Oil, Gas, and Geothermal Resources (DOGGR) procedures for abandonment of an orphaned oil or gas wells and CCR Title 14, Division 2. The project owner shall also submit to the DOGGR, in writing: (1) a detailed description of the status of the oil/gas well; (2) an explanation of the results of the visual site survey and geophysical survey; and (3) a request, in accordance with DOGGR requirements to certify the well has been properly abandoned.

Verification: A copy of the project owner's written submittal to the DOGGR and a copy of the DOGGR response indicating the well has been properly abandoned, shall be forwarded to the CPM within 10 days of submittal and receipt of response.

WASTE-4 The project owner shall conduct a Phase I ESA along the proposed natural gas and water pipeline corridors before construction begins. This Phase 1 ESA shall be conducted in accordance with ASTM Standard Practice E 1527-00 or other acceptable method for ESAs. A report documenting the result of the Phase I ESA shall be submitted to the CPM. IF any RECs are indentified, the project owner shall coordinate with the CPM and identify appropriate mitigation measures and ensure all concerns are addressed prior to commencement of construction in the affected areas.

Verification: The project owner shall submit to the CPM a copy of the Phase I ESA within 30 days of completion of the Phase I ESA and 60 days before construction begins.

WASTE-5 To manage construction generated waste, the project owner shall develop and implement a Construction Waste Management Plan before beginning construction. The Construction Waste Management Plan shall include detailed information about how construction generated waste would be managed from the time it was generated to the time it is recycled or land filled. The plan shall contain, at a minimum, the following:

- A description of all construction waste streams, including projections of frequency, amounts generated, and hazard classifications;
- Procedures for handling contaminated soil or water that could be encountered during construction; and
- Management methods to be used for each waste stream, including temporary onsite storage, housekeeping and best management practices to be employed, treatment methods and companies providing treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/source reduction plans.

Verification: The project owner shall submit the Construction Waste Management Plan to the CPM for approval no less than 30 days prior to the initiation of construction activities at the site.

WASTE-6 ~~The project owner shall ensure that spills~~**Spills** or releases of hazardous substances, hazardous materials, or hazardous wastes associated with the construction or operation of the project ~~are~~**shall be** reported, delineated, cleaned-up, and remediated as necessary, under the supervision of a California Professional Geologist or Engineer and in accordance with the requirements of the Riverside County Department of Environmental Health. This responsibility excludes construction.

operation, and maintenance of the transmission lines, which will be installed, operated, and maintained by Southern California Edison.

Verification: ~~The project owner shall document unauthorized~~ Unauthorized spills or releases of hazardous substances, materials, or wastes that occur on the project property or related pipeline and transmission corridors shall be documented. The documentation shall include, at a minimum, the following information: location of release; date and time of release; reason for release; volume released; amount of contaminated soil/material generated; how release was managed and material cleaned-up; if the release was reported; to whom the release was reported; release corrective action and cleanup requirements placed by regulating agencies; level of cleanup achieved and actions taken to prevent a similar release or spill; and disposition of any hazardous wastes and/or contaminated soils and materials that may have been generated by the release. Copies of the unauthorized spill documentation shall be provided to the CPM within 30 days of the date the release was discovered.

WASTE-7 Upon becoming aware of any impending waste management-related enforcement action by any local, state, or federal authority, the project owner shall notify the CPM of any such action taken or proposed to be taken against the project itself, or against any waste hauler or disposal facility or treatment operator with which the owner contracts.

Verification: The project owner shall notify the CPM, in writing, within 10 days of becoming aware of an impending enforcement action. The CPM shall notify the project owner of any changes that would be required in the way project-related wastes are managed.

WASTE-8 The construction contractor or project owner shall obtain a hazardous waste generator identification number from the U.S. EPA prior to generating any hazardous waste during construction and operations in accordance with CCR Title 22, Division 4.5.

Verification: The construction contractor or project owner shall keep a copy of the identification number on file at the project site and provide the number to the CPM in all compliance reports.

WASTE-9 The project owner shall prepare an Operation Waste Management Plan for all wastes generated during operation of the facility, and shall submit the plan to the CPM for review and approval. The plan shall contain, at a minimum, the following:

- A detailed description of all operation and maintenance waste streams, including projections of amounts to be generated, frequency of generation, and waste hazard classifications;
- Management methods to be used for each waste stream, including temporary onsite storage, housekeeping and best management practices to be employed, treatment methods and companies providing treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/source reduction plans;

- Information and summary records of conversations with the local Certified Unified Program Agency and the Department of Toxic Substances Control regarding any waste management requirements necessary for project activities. Copies of all required waste management permits, notices, and/or authorizations shall be included in the plan and updated as necessary;
- A detailed description of how facility wastes would be managed, and any contingency plans to be employed, in the event of a unplanned closure or planned temporary facility closure; and
- A detailed description of how facility wastes would be managed and disposed upon closure of the facility.

Verification: The project owner shall submit the Operation Waste Management Plan to the DTSC and RWQCB (copy to the CPM) for approval no less than 30 days prior to the start of project operation. The project owner shall submit any required revisions to the DTSC and RWQCB (copy to the CPM) within 20 days of notification from the CPM that revisions are necessary.

WASTE-10 At a minimum, the project owner shall conduct annual analyses of the solids residue from the ZLD process to determine if the solids are hazardous or non-hazardous and ensure appropriate disposal of the solids residue. The project owner shall also conduct analyses of the ZLD solids after any change in water supply to determine if the solids are hazardous or non-hazardous.

Verification: The project owner shall submit to the CPM a copy of documentation showing appropriate disposal of the ZLD solids within 10 days of the disposal.

WASTE-11 The project owner shall submit annual compliance reports to the CPM documenting the annual volumes of wastes generated and the method used to manage the waste generated, such as recycling or disposal. If such waste are disposed of offsite, the disposal facility(s) name and address shall be included in the report.

Verification: The project owner shall also document in each annual compliance report the actual volume of wastes generated and the waste management methods used during the year. The annual compliance report shall include a comparison of the actual waste generation and management methods used as compared to those proposed in the original Operation Waste Management Plan. The Operation Waste Management Plan shall be updated as necessary to address current waste generation and management practices.

**STATE OF CALIFORNIA
ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION**

In the Matter of:)	Docket No. 07-AFC-3
)	
Application for Certification,)	ELECTRONIC PROOF OF SERVICE
for the CPV SENTINEL ENERGY PROJECT)	LIST
)	
)	(July 24, 2008]
_____)	

☒ Transmission via electronic mail and by depositing one original signed document with FedEx overnight mail delivery service at Costa Mesa, California with delivery fees thereon fully prepaid and addressed to the following:

DOCKET UNIT

CALIFORNIA ENERGY COMMISSION

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CPV SENTINEL ENERGY PROJECT
CEC Docket No. 07-AFC-3

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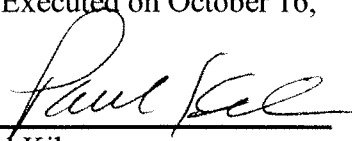
DECLARATION OF SERVICE

I, Paul Kihm, declare that on October 16, 2008, I deposited a copy of the attached:

APPLICANT'S PREHEARING CONFERENCE STATEMENT

with FedEx overnight mail delivery service at Costa Mesa, California with delivery fees thereon fully prepaid and addressed to the California Energy Commission. I further declare that transmission via electronic mail was consistent with the requirements of California Code of Regulations, title 20, sections 1209, 1209.5, and 1210. All electronic copies were sent to all those identified on the Proof of Service List above.

I declare under penalty of perjury that the foregoing is true and correct. Executed on October 16, 2008, at Costa Mesa, California.



Paul Kihm