URS

DOCKET	
09-AFC-1	
DATE	OCT 03 2011
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October 3, 2011

Dockets Unit
California Energy Commission
1516 Ninth Street, MS 4
Sacramento, CA 95814-5512

Re: Watson Cogeneration Steam and Electric Reliability Project
Application for Certification 09-AFC-1

On behalf of Watson Cogeneration Company, the applicant for the above-referenced Watson Cogeneration Steam and Electric Reliability Project, we are pleased to submit the following:

- Applicant's Opening Testimony; and
- Applicant's Exhibits.

This document is being submitted to the CEC for docketing.

In accordance with the CEC's June 10, 2011 Committee Order Adopting Filing and Electronic Documents Directives, and in accordance with the CEC's September 12, 2011 Notice of Prehearing Conference and Evidentiary Hearing, one paper copy of the Applicant's Opening Testimony and one compact disc (CD) containing the Applicant's Exhibits (including the Opening Testimony) is being filed with the Dockets Unit. The Proof of Service distribution will receive CDs. Paper copies will be issued upon request.

Sincerely,
URS Corporation

C Kyle-Fischer

Cindy Kyle-Fischer
Project Manager

Enclosure

cc: Proof of Service List

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

APPLICATION FOR CERTIFICATION
FOR THE *WATSON COGENERATION STEAM AND ELECTRICITY RELIABILITY PROJECT*

DOCKET NO. 09-AFC-1
PROOF OF SERVICE LIST
(Revised 5/4/11)

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DECLARATION OF SERVICE

I, Cindy Kyle-Fischer, declare that on October 3, 2011, I served and filed copies of the attached *Applicant's Exhibits, dated October 2011*. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at: **[www.energy.ca.gov/sitingcases/watson]**.

The document has been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(***Check all that Apply***)

FOR SERVICE TO ALL OTHER PARTIES:

____ sent electronically to all email addresses on the Proof of Service list;

____ by personal delivery;

_X__ by delivering on this date, for mailing with the United States Postal Service with first-class postage thereon fully prepaid, to the name and address of the person served, for mailing that same day in the ordinary course of business; that the envelope was sealed and placed for collection and mailing on that date to those addresses **NOT** marked "email preferred."

AND

FOR FILING WITH THE ENERGY COMMISSION:

_X__sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (***preferred method***);

OR

____depositing in the mail an original and 12 paper copies, as follows:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 09-AFC-1
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.state.ca.us

I declare under penalty of perjury that the foregoing is true and correct, that I am employed in the county where this mailing occurred, and that I am over the age of 18 years and not a party to the proceeding.

Cindy Kyle-Fischer

APPLICANT'S OPENING TESTIMONY
APPLICATION FOR CERTIFICATION (09-AFC-1)

for Watson Cogeneration Steam and Electric Reliability Project

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

Submitted by:
Watson Cogeneration Company
22850 South Wilmington Avenue
Carson, CA 90745

With support from:
URS Corporation
8181 East Tufts Avenue
Denver, CO 80237

October 2011

Watson Cogeneration Steam and Electric Reliability Project
Final Staff Assessment
09-AFC-1

Applicant's Opening Testimony

Submitted to the
California Energy Commission

Submitted by

URS Corporation

October 3, 2011

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LIST OF APPENDICES

1.0 PROJECT DESCRIPTION

1.1 Introduction

A. Names: Ross Metersky, Stephen Garrett, Omar Olivares, Stephen Moore, Gene Amrhein, Joseph Landwehr, Philip French, and Charles Schwartze.

B. Qualifications: Qualifications of the team members listed above are as noted in their resumes contained in Appendix A.

C. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- Application for Certification (AFC) dated March 2009 (Volume I, Section 3) [Exhibit 1]
- Aqueous Ammonia Off-Site Consequence Analysis, dated March 2010 [Exhibit 11]
- Aqueous Ammonia Off-Site Consequence Analysis, Revised April 2010 [Exhibit 13]

1.2 Summary of Testimony

To the best of our knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are our own. We make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

A. Project Overview

The Watson Cogeneration Steam and Electric Reliability Project (herein "Watson Project" or "Project") is a proposed expansion of a steam and electrical generating (cogeneration) facility that is located in the City of Carson in Southern California. In operation since 1988, the existing cogeneration facility is owned by Watson Cogeneration Company (herein "Watson" or "Applicant") and operated by BP West Coast Products, LLC – BP Carson Refinery (BP Refinery). Watson is a joint partnership between subsidiaries of BP America and Edison Mission Energy. The Project will complete the original design of Watson Cogeneration Facility that has been in continuous operation for more than 20 years. The Project will add a nominal 85 megawatt (MW) combustion turbine generator (CTG) with a single-pressure heat recovery steam generator (HRSG) to provide additional process steam to the BP Refinery. The Project will increase the overall reliability of the steam delivered from the existing Watson Cogeneration Facility and complete its original design. The original facility design allocated plot space and included provisions to accommodate a new unit at a later date. The additional unit is sized and designed to provide reliable base load operations with supplemental duct firing in the HRSG.

B. Project Objectives

The Project's objectives are as follows:

1. Improve reliability of steam supplies to the BP Refinery;
2. Supply additional steam to the BP Refinery;

3. Produce electrical energy for export to the power grid that benefits the reliability of the broader transmission grid in California by adding generation capacity and voltage support near existing loads; and
4. Conserve natural gas and reduce environmental impacts from emissions and contributions to global climate change.

C. Facilities

Section 3 (Project Description) of the AFC and the Revised Section 5.5 (Water Resources) describe the proposed facility design. Subsequent to filing the AFC, the proposed use of anhydrous ammonia was revised to aqueous ammonia. In addition, revisions and supplemental information were filed with regard to water supply and stormwater management details. The updated information is contained in the responses to California Energy Commission (CEC) data requests, responses to workshop requests, and other filings. Refer to the Air Quality and Water Resources testimonies for current information. All plant facilities will be designed, constructed, and operated in accordance with applicable laws, ordinances, regulations and standards (LORS).

The Project includes one General Electric (GE) 7EA CTG, with an inlet fogging system, one duct fired HRSG, two redundant natural gas compressors (2x100 percent), one boiler feedwater pump, one circulating water pump, two new cells added to an existing cooling tower, electrical distribution system, instrumentation and controls, and all necessary auxiliary equipment.

The Project Area consists of the Project Site and the off-site Construction Laydown and Parking Area. The Project Site is located approximately 0.7 mile south of the 405 Freeway, roughly bounded by East 223rd Street to the north, Wilmington Avenue to the west, East Sepulveda Boulevard to the south, and South Alameda Street to the east, in the City of Carson. The Project Site is a 2.5-acre brown field site located within the boundary of the existing Watson Cogeneration Facility, which is a 21.7-acre area within the 428-acre parcel further described as Assessor's Parcel Number (APN) 7315-006-003, 1801 Sepulveda Boulevard, Carson, California, 90745 and is integral to BP's existing Carson Refinery (BP Refinery). The street address of the Project Site is located within the boundary of the existing Watson Cogeneration Facility at 22850 South Wilmington Avenue, Carson, California.

The Construction Laydown and Parking Area is a paved 25-acre parcel (APN 7315-020-019) located approximately 1 mile southeast of the Project Site, at 2149 East Sepulveda Boulevard which is at the northeast corner of East Sepulveda Boulevard and South Alameda Street. The area is owned by BP, and is currently used as a truck parking and staging area.

The Watson Project will not require any new off-site linear facilities (i.e., pipelines, transmission lines, etc.).

D. Process Description and Technology

The Project is designed to be fueled with either natural gas or a blend of natural gas and refinery gas. Fuel gases will be provided from the existing systems of the Watson Cogeneration Facility. The Project will add a CTG with a single-pressure HRSG.

The Project will step up electricity first to 69 kilovolts (kV) for delivery to the new on-site 69kV gas insulated substation (GIS) that provides power to the refinery and then to 230kV for delivery to the existing on-site 230kV GIS that is connected to the Southern California Edison's (SCE)

substation. The design includes a 13.8-69kV GSU transformer connected to the 69kV switchgear by cables. The 69kV switchgear is connected to the 230kV GIS substation through two 69-230kV transformers utilizing 230kV solid dielectric cables. Power will be exported to the grid via the two existing transmission lines to the Hinson substation.

1.3 Proposed Licensing Conditions

The General Conditions Section of the Staff Assessment recommends that 15 Conditions of Certification be adopted to address general conditions including compliance monitoring and closure plan issues: COMPLIANCE-1 through COMPLIANCE-15. The Applicant agrees with these conditions.

1.4 Correlation to Staff Assessment and Hearing Topics

- Staff Assessment, Sections 1, 3, and 7.
- Executive Summary, Project Description, and General Conditions.

ENVIRONMENTAL ASSESSMENT
2.0 AIR QUALITY

2.1 Introduction

A. Name: Gregory S. Darvin

B. Qualifications: Mr. Darvin is a Meteorologist with over eighteen years of consulting experience conducting air quality permitting and modeling assessments for new and modified industrial energy-related sources. Additional details regarding his qualifications are presented in his resume contained in Appendix A.

C. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- AFC dated March 2009 (Volume I, Section 5.2; Volume II, Appendix I) [Exhibit 1]
- Supplement in Response to CEC Data Adequacy Review, dated June 2009 (Air Quality Data Adequacy Worksheet and Appendix A) [Exhibit 2]
- Responses to CEC Data Requests #1-39, dated September 2009 (Responses 1 through 6, 8, and 9) [Exhibit 3]
- Responses to CEC Data Requests (#1-39), Air Quality Response #4, Status Report 1, dated October 2009 [Exhibit 4]
- Remainder of Responses to CEC Data Requests #1-39, dated October 2009 (Response 7) [Exhibit 5]
- Responses to CEC Data Requests (#1-39), Air Quality Response #4, Status Report 2, dated November 2009 [Exhibit 6]
- Response to South Coast Air Quality Management District (SCAQMD) Questions (Additional Information Request for Watson Cogeneration Steam and Electric Reliability Project, A/Ns 496922,496924, and 496925), dated November 2009 [Exhibit 7]
- Addendum Application for Using Aqueous Ammonia in Watson Cogeneration Steam and Electric Reliability Project, A/Ns 496922, 496924, and 496925 [Reference: Watson Cogeneration Company, Electric Generation (Process 17), BP Carson Refinery, Facility ID 131003] and Application for Change of Condition to Watson Cogeneration Units 1-4 (Watson Cogeneration Steam and Electric Reliability Project) [Reference: Watson Cogeneration Company at the BP Carson Refinery (Facility ID 131003; Process 17, Systems 1-4) dated February 24, 2010 [Exhibit 10]
- Authority to Construct Permit Application [SCAQMD ATC Application], dated March 23, 2009 [Exhibit 21]
- Addendum Application [SCAQMD ATC Application] for Watson Cogeneration Facility Authority to Construct Permit Application, dated February 24, 2010 [Exhibit 22]

- Comments on the Preliminary Staff Assessment, dated January 2011 [Exhibit 16]

2.2 Summary of Testimony

To the best of my knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinion, such opinion is my own. I make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

A. Affected Environment

The Project Site is a 2.5-acre brown field site located within the boundary of the existing Watson Cogeneration Facility, which is a 21.7-acre area within the 428-acre parcel further described as Assessor's APN 7315-006-003, 1801 Sepulveda Boulevard, Carson, California, 90745 and is integral to BP's existing Carson Refinery (BP Refinery). The street address of the Project Site is located within the boundary of the existing Watson Cogeneration Facility at 22850 South Wilmington Avenue, Carson, California. Figure 3-1, Regional Map, depicts the Project Site and surrounding area. An existing warehouse/maintenance shop on a portion of the site will be removed as part of the Project. The Project Site is located approximately 0.7 mile south of the 405 Freeway, roughly bounded by Wilmington Avenue to the west, East Sepulveda Boulevard to the south, and South Alameda Street to the east. The site Universal Transverse Mercator coordinates are as follows: 384725.7mE, 3742300mN, Zone 11 (NAD27). The Project Site elevation is approximately 32 feet above mean sea level (amsl). Because the site is located within the existing refinery property boundary, the Project Site and surrounding areas are highly developed, and have been subject to disturbance for many years. Table Air-1 presents the state and federal air quality attainment status for the project area and shows that the project area has a non-attainment status for both ozone and particulate matter ($PM_{10}/_{2.5}$). Federal and state regulations require that Watson mitigate the potential effect of the project's emission of these pollutants and their precursor pollutants through the use of Emission Reduction Credits (ERCs) and CEC approved mitigation techniques. Implementation of mitigation techniques as recommended by the CEC and summarized in the Conditions of Certification will insure that the project impacts are less than significant. The SCAQMD is the air pollution control agency for the region.

Table Air-1. SCAQMD Attainment Status

Pollutant	Averaging Time	Federal Status	State Status
Ozone	8-hr	Severe NA	Extreme NA
NO_2	All	UNC/ATT	UNC/ATT
CO	All	ATT	ATT
SO_2	All	ATT	ATT
PM_{10}	All	Serious NA	NA
$PM_{2.5}$	All	NA	NA

Source: SCAQMD Website, 2008.
Notes:
ATT = attainment
PM_{10} = sub 10-micron particulate matter

CO	=	carbon monoxide	$PM_{2.5}$	=	sub 2.5-micron particulate matter
NA	=	non-attainment	SO_2	=	sulfur dioxide
NO_2	=	nitrogen dioxide	UNC	=	unclassified

The attainment status of the project area partly defines whether the area will be subject to Federal Prevention of Significant Deterioration (PSD) or New Source Review (NSR) permitting requirements. The potential emissions from the project will also define whether a project is subject to PSD or NSR. These federal permitting requirements are essentially the same with the exception that the NSR program requires the application of the Lowest Achievable Emission Rate (LAER) control technologies to be installed on the project and the PSD program requires less stringent Best Available Control Technology (BACT). However, in the SCAQMD, BACT and LAER are the same level of control. Based on the project emissions and non-attainment status for ozone and particulate matter, the NSR permitting requirements will apply. The facility will be subject to PSD for greenhouse gases.

B. Construction Impacts

Construction will occur at the proposed project. Construction impacts to air quality will be in the form of fugitive dust and vehicle exhaust emissions. Fugitive dust emissions will result from construction equipment disturbing (excavating, grading, and dumping) soils on the proposed project site and from the movement of vehicles on unpaved soils. Vehicle exhaust emissions are associated with burning ultra-low sulfur diesel and gasoline in the construction equipment, construction vehicles, and construction worker's automobiles traveling to and from the construction site. These construction impacts will be temporary and finite in duration with construction activities expected to be completed within 20 months. Air quality modeling was used to assess the impacts during construction. Modeled exceedances were calculated for 24-hour and annual $PM_{10}/_{2.5}$ and 1-hour NO_2, but will be mitigated to a level of insignificance through the adoption of CEC construction mitigation techniques.

C. Operations Impacts

Potential air quality impacts from operations, including the existing Watson Cogeneration Facility emissions were determined by performing air dispersion modeling. The air modeling used worst-case pollutant emissions assumptions to calculate total air quality impacts. Five years of hourly meteorology from Long Beach were used in the analysis. The project operational air quality impacts are presented in Table Air-2. All modeled concentrations were less than significance for all attainment pollutants averaging periods. The project impacts for PM_{10} were less than significance. $PM_{2.5}$ impacts are over the significance levels for both 24-hour and annual averaging periods, but the operational impacts for this pollutant and PM_{10} will be mitigated to levels of insignificance. Thus, the operational impact of the project will not cause or contribute to the non-attainment status of the South Coast Air Basin.

Table Air-2 Operational Impacts

Pollutant	Avg. Period	Maximum Concentration ($\mu g/m^3$)	Background ($\mu g/m^3$)	Total ($\mu g/m^3$)	Class II Significance Level ($\mu g/m^3$)	Ambient Air Quality CAAQS/NAAQS ($\mu g/m^3$)	($\mu g/m^3$)
Normal Operating Conditions							
NO_2	1-hour	9.049	264	273.04	-	339	-
	Annual	0.596	58.9	59.49	1	56	100
CO	1-hour	4.040	9,600	9,604.04	2,000	23,000	40,000
	8-hour	2.997	7,315	7317.99	500	10,000	10,000
SO_2	1-hour	2.206	107	109.21	-	655	-
	3-hour	1.828	86	87.83	25	-	1,300
	24-hour	0.578	28.6	29.19	5	105	365
	Annual	0.155	7	7.16	1	-	80
PM_{10}	24-hour	3.919	131	134.91	5	50	150
	Annual	0.340	45	45.34	1	20	-
$PM_{2.5}$	24-hour	1.472	48.5	49.97	1.2	-	35
	Annual	0.340	17.5	17.84	0.3	12	15
Start-up/Shutdown Periods							
NO_2	1-hour	28.98	264	292.98	-	338	-
CO	1-hour	31.09	9,600	9,631.09	2,000	23,000	40,000
	8-hour	23.35	7,315	7,338.35	500	10,000	10,000
Commissioning Activities							
NO_2	1-hour	36.63	264	300.63	-	338	-
CO	1-hour	37.25	9,600	9,637.25	2,000	23,000	40,000
	8-hour	27.75	7,315	7,342.75	500	10,000	10,000
PM_{10}	24-hour	3.992	131	134.92	5	50	150
$PM_{2.5}$	24-hour	1.522	45	46.52	1.2	-	35

Source: Watson Cogeneration Steam and Electric Reliability Project Team, 2009.

Notes:

Modeling includes all five turbines/HRSGs and the nine cell cooling tower

CO = carbon monoxide

NO_2 = nitrogen dioxide

PM_{10} = sub 10-micron particulate matter

$PM_{2.5}$ = sub 2.5-micron particulate matter

SO_2 = sulfur dioxide

$\mu g/m^3$ = micrograms per cubic meter

D. Cumulative Impacts

The project's cumulative impacts were estimated through air dispersion modeling. The cumulative impacts modeling incorporated the existing Watson Cogeneration Facility turbines and cooling tower. Consultation with the SCAQMD confirmed that there are no projects within six miles from the project site that are under construction or have received permits to be built or operate in the foreseeable future. Therefore, no additional sources were included in the cumulative impact assessment and no additional cumulative impacts are expected.

E. Mitigation

Applicant proposed mitigation for construction includes:

- The Applicant will have an on-site construction mitigation manager who will be responsible for the implementation and compliance of the construction mitigation program. The documentation of the ongoing implementation and compliance with the proposed construction mitigations will be provided on a periodic basis.
- All unpaved roads and disturbed areas in the Watson Project and Construction Laydown and Parking Area will be watered as frequently as necessary to control fugitive dust. The frequency of watering will be on a minimum schedule of every two hours during the daily construction activity period. Watering may be reduced or eliminated during periods of precipitation.
- On-site vehicle speeds will be limited to 5 miles per hour on unpaved areas within the project construction site.
- The construction site entrance will be posted with visible speed limit signs.
- All construction equipment vehicle tires will be inspected and cleaned as necessary to be free of dirt prior to leaving the construction site via paved roadways.
- Gravel ramps will be provided at the tire cleaning area.
- All unpaved exits from the construction site will be graveled or treated to reduce track-out to public roadways.
- All construction vehicles will enter the construction site through the treated entrance roadways, unless an alternative route has been provided.
- Construction areas adjacent to any paved roadway will be provided with sandbags or other similar measures as specified in the construction Stormwater Pollution Prevention Plan (SWPPP) to prevent runoff to roadways.
- All paved roads within the construction site will be cleaned on a periodic basis (or less during periods of precipitation), to prevent the accumulation of dirt and debris.
- The first 500 feet of any public roadway exiting the construction site will be cleaned on a periodic basis (or less during periods of precipitation), using wet sweepers or air-filtered dry vacuum sweepers, when construction activity occurs or on any day when dirt or runoff from the construction site is visible on the public roadways.
- Any soil storage piles and/or disturbed areas that remain inactive for longer than 10 days will be covered, or shall be treated with appropriate dust suppressant compounds.
- All vehicles that are used to transport solid bulk material on public roadways and that have the potential to cause visible emissions will be covered, or the materials shall be sufficiently wetted and loaded onto the trucks in a manner to minimize fugitive dust emissions. A minimum freeboard height of 2 feet will be required on all bulk materials transport.

- Wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) will be used on all construction areas that may be disturbed. Any windbreaks installed to comply with this condition will remain in place until the soil is stabilized or permanently covered with vegetation.
- Disturbed areas, which are presently vegetated, will be re-vegetated as soon as practical.

To mitigate exhaust emissions from construction equipment, the Applicant is proposing the following:

- The Applicant will work with the general contractor to utilize to the extent feasible, United States Environmental Protection Agency (EPA)/Air Resources Board Tier 3 engine compliant equipment for equipment over 50 horsepower.
- Ensure periodic maintenance and inspections per the manufacturers specifications.
- Reduce idling time through equipment and construction scheduling.
- Use California low sulfur diesel fuels (<=15 ppm_w Sulfur).

The implementation of CEC recommended mitigation measures is expected to limit and control the fugitive dust emissions to a level of insignificance.

Mitigation measures include the use of BACT and ERCs. BACT will be applied on the turbine/HRSG which will minimize emissions of criteria pollutants and hazardous air pollutants. BACT will also be utilized on the cooling tower which will limit $PM_{10}/_{2.5}$ emissions through the use of high efficiency drift eliminators. Mitigation through the use of ERCs are summarized below.

- NO_x and SO_x mitigation, in the form of Regional Clean Air Initiatives Market (RECLAIM Trading Credits [RTCs]) will be achieved via the RECLAIM program either through existing holdings or through purchase.
- VOC mitigation will be achieved by obtaining sufficient purchased ERCs to fully satisfy the Regulation XIII offset requirements.
- PM_{10} emissions from the new cogeneration unit will be addressed through adoption of an emissions limit for all five cogeneration units, which is equal to the current limit for the existing four units, minus 1 lb PM_{10}/day. The existing CEC license limits PM_{10} emissions from the four existing cogeneration units to 1,244 lbs/day; hence the new limit will be 1,243 lbs PM_{10}/day for all five cogeneration units. For this project, an exemption from emissions offsets under District Rule 1,304, due to Concurrent Facility Modification, is claimed for PM_{10} emissions.

2.3 Proposed Licensing Conditions

The Staff Assessment included 15 conditions of certification. The Applicant agrees with and will abide by all of the proposed air quality conditions of certification.

2.4 Correlation to Staff Assessment and Hearing Topics

- Staff Assessment, Section 4.1
- Air Quality

3.0 BIOLOGICAL RESOURCES

3.1 Introduction

A. Name: David Kisner

B. Qualifications: Mr. Kisner's qualifications are as noted in his resume contained in Appendix A.

C. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- AFC dated March 2009 (Volume I, Section 5.6; Volume II, Appendix N) [Exhibit 1]
- Supplement in Response to CEC Data Adequacy Review, dated June 2009, Biological Resources Data Adequacy Worksheet and Appendix B [Exhibit 2]
- Response to Questions from CEC Staff, dated June 2010, Biology [Exhibit 15]
- Comments on the Preliminary Staff Assessment, dated January 2011, Section 4.2 [Exhibit 16]

3.2 Summary of Testimony

To the best of my knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are my own. I make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

A. Regional Overview

The Applicant is proposing the Watson Project as an expansion of the existing Watson Cogeneration Facility, a steam and electrical generating (cogeneration) facility that is located in the City of Carson in Southern California. The Project Site is a 2.5-acre brown field site located within the boundary of the existing Watson Cogeneration Facility, which is a 21.7-acre area within the 428-acre parcel further described as APN 7315-006-003, 1801 Sepulveda Boulevard, Carson, California, 907445 and is integral to BP's existing Carson Refinery (BP Refinery). The Project Site elevation is approximately 32 feet above mean sea level. Because the site is located within the existing refinery property boundary, the Project Site and surrounding areas are highly developed, and have been subject to disturbance for many years.

The Project's primary objectives are to improve reliability and to provide additional process steam in response to the refinery's process steam demand. The Project complements the existing cogeneration facility located within the confines of the refinery. The existing facility has four GE 7EA CTGs, four HRSGs, and two steam turbine generators. The Project consists of adding a fifth CTG/HRSG to the existing configuration and is referred to as the "fifth train."

The Construction Laydown and Parking Area is a paved 25-acre parcel located approximately 1 mile southeast of the Project Site, at the northeast corner of East Sepulveda Boulevard and South Alameda Street. The area is owned by BP and is currently used as a truck parking and staging area.

No off-site improvements associated with the Project, such as water supply, natural gas or wastewater pipelines, are currently planned for the Project. The Project will connect to the existing supply pipelines currently located at the facility.

Together, the Project Site and the surrounding refinery constitute an industrial facility devoid of native vegetation. The refinery area is open and dry and completely hardscaped. Vegetation present on-site consists of scattered landscape plants and ruderal invasive species. The Project disturbance will be localized and contained mainly to the areas designated for the additional train and the two additional cooling tower cells. No off-site linears will be constructed. The Project Construction Laydown and Parking Area will be used only for storage and equipment parking, with no ground disturbance.

Before conducting field surveys, a review of literature was performed including a search of the California Native Plant Society (CNPS) Inventory of Rare Plants Database (CNPS 2008), and the California Natural Diversity Data Base (CNDDB), to determine special-status species known to occur or that could occur within the Project survey area.

B. Wildlife Resources

Biological field surveys were conducted according to the CEC regulations (CEC 2000). The Project Site is defined as the area that could be directly disturbed during Project construction, and includes the power facility site, and Construction Laydown and Parking Area. The Project survey area includes the Project Site and a 1-mile radius buffer surrounding the cogeneration facility where field surveys were conducted for botanical and wildlife resources.

1. General Wildlife Species

The Project Site and surrounding refinery provide no habitat for wildlife species due to the existing site activities. It is unlikely that vertebrate species utilize the Project Site or surrounding refinery due to the lack of vegetative cover and continual elevated levels of disturbance. The noise, lights, and human activity resulting from typical refinery operations create an environment unsuitable for species to forage or breed. A common pigeon or rock dove (*Columba livia*) walking along the ground was the only vertebrate observed during the field survey. Species such as house finch (*Carpodacus mexicanus*), European starling (*Sturnus vulgaris*), American crow (*Corvus brachyrhynchos*), mourning dove (*Zenaida macroura*), and black phoebe (*Sayornis nigricans*) are typically found in disturbed/developed areas and may have some low potential to occur in the Project Site. No evidence of avian breeding activity was found in the Project survey area and no sign of other wildlife such as reptiles or mammals was observed.

2. Special Status Wildlife Species

No special-status wildlife species were observed during the field survey and the CNDDB has none recorded within the Project survey area. However, records exist for 32 special-status wildlife species within 1, 5, and 10 miles of the Project Site. Seven of these species have a low potential to occur in the Project survey area.

3. Wildlife Movement Corridors

No substantial wildlife movement occurs through the Project Site, and the Project Site is not part of a significant wildlife corridor, so no significant effects to wildlife movement are expected as a result of the Project.

4. Construction Impacts to Wildlife

The construction of the Project would not significantly increase effects to the surrounding environment beyond those currently associated with the facility's operation. Potential effects would be an insignificant change from any existing effects.

The Project includes the installation of one steam electrical turbine, two cooling tower cells, and applicable connections to the infrastructure of the existing Watson Cogeneration Facility. No off-site improvements are proposed. The Project Site is already graded to provide the proper drainage. All areas disturbed during construction will be graded to a smooth surface and paved. Construction of the Project will have no additional effects to native plant species because the Project Site has no native vegetation.

No additional effects will occur to common native wildlife species at the Project Site because the site is completely disturbed, no additional area will be disturbed beyond the Project Site, and little sign of animal activity was detected at the Project Site during the field survey. Beyond the potential of Project construction to affect bat species, the potential effects of Project construction and operation are incremental and not significant due to the conditions at the Project Site.

An increase in air emissions and noise as a result of Project construction is not expected to cause significant effects to wildlife. The Project survey area provides very poor to no habitat for wildlife due to the high amount of activity and development. The wildlife observed at the Project Site were species that are often found in disturbed or developed areas, and these species are expected to adapt to the new noise levels and air emissions.

Two state species of concern, the pocketed free-tailed bat and the burrowing owl, have a low potential to occur at the Project Site. However neither species was observed during survey of the Project Site. The pocketed free-tailed bat may potentially use the maintenance building that currently exists where the Project will be constructed. Based on historic observations, the burrowing owl may occur within the Project Area. However, no known nests are within the Project Area and known or assumed burrows are 0.25 mile away. Burrowing owls are protected from direct harm under the Migratory Bird Treaty Act; the State also protects nest and nesting activities of the burrowing owl. Measures typically employed to avoid effects to burrowing owls involve no work activities within 150 feet of an active burrow. All previously known burrowing owl burrows have been greater than 150 feet from the Project Areas. Therefore, it is not anticipated that the Project will have any effect to burrowing owls.

The Construction Laydown and Parking Area is an existing asphalt parking area with no vegetation present. Therefore, the Project is not expected to have any effects on vegetation.

5. Operations Impacts to Wildlife

The operation of the Project would not significantly increase effects to the surrounding environment beyond those currently associated with the facility's operation. Operation of the Project would not cause significant effects to biologic resources or special-status species. Potential effects would be an insignificant change from any existing effects. The potential effects of Project operation and maintenance on biological resources include incremental increase in air emissions, noise, and collision hazards beyond existing conditions.

6. Potential Cumulative Impacts to Wildlife

Several projects have been identified within the surrounding area of the Watson Cogeneration Facility (see Section 5.9.3 of the Land Use section of the Project's AFC). Both the project site and the proposed projects are within heavily industrialized and developed areas of limited biological use. The proposed neighboring projects are primarily of a change or improvement to an existing development. Effects to the natural habitat surrounding the Project Site occurred in the previous century during the initial development of the surrounding areas. No cumulative impacts are anticipated from the development of the cogeneration facility when evaluated with the development of the proposed neighboring projects.

7. Permitting Overview

No permits are required for biological resources.

8. Mitigation for Wildlife

Preconstruction surveys shall be conducted for western burrowing owls for any areas subject to disturbance from construction prior to the start of site mobilization. Surveys shall be conducted by walking the entire project site and in areas within 500 feet of anticipated ground disturbance, construction laydown areas, and parking area. In the event that owls or owl sign are identified during the survey(s), the project owner shall identify the date and time of owl survey visit(s) and a map depicting location(s) of owls and owl sign.

If owls are found and need to be relocated, only passive relocation of the owls would occur prior to the start of construction and only during the non-breeding season (September 1 through January 31).

During the breeding season (February 1 through August 31) occupied burrows shall not be disturbed and shall be provided with a 250-foot protective buffer until the young have fledged.

No other biological effects are expected to occur as a result of the Project. Therefore, no other avoidance or minimization measures are required to protect this resource.

9. Wildlife References

CDFG (California Department of Fish and Game). 2008. California Natural Diversity Data Base.

CEC (California Energy Commission). 2000. Rules of Practice and Procedure and Plant Site Certification Regulations.

City of Carson. 2004. General Plan. Conservation and Open Space Elements. Available at http://ci.carson.ca.us/content/files/pdfs/GenPlan/os_cons_chapter8.pdf.

Jameson, Jr., E.W. and J.J. Peeter. 1988. California Mammals. University of California Press, Berkeley, California.

North American Breeding Bird Survey. 2006. Available at http://www.mbr-pwrc.usgs.gov/bbs/grass/.a4740.htm.

Sauer, Maxine. BP Environmental Field Coordinator. Personal communication. September 4, 2008.

SCAG (Southern California Association of Governments). 2008. Available at http://www.scag.ca.gov/.

URS. 2009. Application for Certification (09-AF C-01) for Watson Cogeneration Steam and Electric Reliability Project.

URS. 2009. Supplement in Response to CEC Data Adequacy Review Application for Certification (09-AF C-01) for Watson Cogeneration Steam and Electric Reliability Project. Submitted to: California Energy Commission. Submitted by: Watson Cogeneration Company. June.

U.S. Fish and Wildlife Service (USFWS). 2008. Website. Available at http://www.fws.gov.

Western Bat Working Group. 2008. Available at http://wbwg.org/species_accounts/vespertilonidae/lano.pdf.

C. Botanical Resources

1. General Botanical Resources

No natural or viable habitat occurs within the Project Site. The Project survey area is industrial and highly disturbed in nature. The Project Site and surrounding refinery are hardscaped with roadbase, rock, asphalt, or concrete with no natural habitat. Plant species that were observed included ruderal vegetation with very few native species.

The adjacent stormwater retention basins are maintained and devoid of any habitat or plant species. The small basin southwest of the main basin was observed to contain approximately 6 inches of clear water, at the time of the field survey.

The Construction Laydown and Parking Area was observed to have only scattered ruderal species present along the asphalt berm. The remaining parking area is completely devoid of vegetation. Mulefat (*Bacharis salicifolia*), tumbleweeds (*Amaranthus albus*), and ornamental grasses were observed along the berm.

Mulefat, tumbleweeds, and ornamental grasses were also observed along the dirt access road, which follows the Dominguez Channel east of the Construction Laydown and Parking Area. Fan palms (*Washingtonia filifera*) were also observed along the road.

No plant communities or species were associated with the Dominguez Channel. No native/natural bank habitat is present. The bank of the channel is armored with large granite boulders.

It is unlikely the Project will cause a disturbance to any natural habitat or plant communities in addition to the current conditions. The addition of the Project will incrementally increase any effects related to the existing facility.

2. Special Status Plants

No special-status plant species were observed during the field survey and no record exists of any special-status species within the Project survey area. However, 27 special status plant species were identified as having low to no potential to occur within or near the Project Area.

No native plant species were observed within the Project Site. Although these observations are limited due to conducting the survey in late summer outside of the blooming period for many annual plant species, no special-status annual plant species are known or have the potential to occur in the Project study area due to a high amount of soil disturbance, hardscaping, and maintenance activity associated with the Watson Cogeneration Facility and the surrounding refinery.

3. Botanical Resources References

CDFG (California Department of Fish and Game). 2008. California Natural Diversity Data Base.

CEC (California Energy Commission). 2000. Rules of Practice and Procedure and Plant Site Certification Regulations.

City of Carson. 2004. General Plan. Conservation and Open Space Elements. Available at http://ci.carson.ca.us/content/files/pdfs/GenPlan/os_cons_chapter8.pdf.

CNPS (California Native Plant Society). 2008. Rare Plant Database.

Hickman, J.C. 1993. *The Jepson Manual: Higher Plants of California*. Berkeley and Los Angeles: University of California Press, 1,400 pp.

Sauer, Maxine. BP Environmental Field Coordinator. Personal communication. September 4, 2008.

SCAG (Southern California Association of Governments). 2008. Available at http://www.scag.ca.gov/.

U.S. Fish and Wildlife Service. 2008. Website. Available at http://www.fws.gov.

D. Jurisdictional Waters of the U.S. and State

No jurisdictional waters are present within the Project Site. Adjacent to the Project Site, the Dominguez Channel flows in a southeasterly direction east of the Project Site and adjacent to the parking area. A formal determination of the Dominguez Channel with the federal and state agencies was not conducted; however, the Dominguez Channel is considered jurisdictional water. No effects or disturbances to the channel are anticipated either during construction or operation of the facility. Discharges to the channel are not planned either during construction or operation of the Project.

No jurisdictional wetlands occur within the Project Site. No wetland habitats were observed adjacent or near the Project Site.

3.3 Proposed Licensing Conditions

The Staff Assessment recommends that 5 Conditions of Certification be adopted to avoid, minimize, or mitigate potential or anticipated impacts to biological resources. The Applicant is in agreement with these Conditions of Certification.

3.4 Correlation to Staff Assessment and Hearing Topics

- Staff Assessment, Section 4.2
- Biological Resources

4.0 CULTURAL RESOURCES

4.1 Introduction

A. Name: Jeremy Hollins, M.A.

B. Qualifications: Mr. Hollins' qualifications are as noted in his resume contained in Appendix A.

C. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- AFC dated March 2009 (Volume I, Section 5.7) [Exhibit 1]
- AFC dated March 2009 (Volume II, Appendix J [previously submitted under confidential cover])
- Comments on the Preliminary Staff Assessment, dated January 2011 (Comment 4.3) [Exhibit 16]

4.2 Summary of Testimony

To the best of my knowledge, all of the facts contained in this Section of the Applicant's testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are my own based upon my professional judgment. I make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

A. Affected Environment

The Watson Project is a 2.5-acre brown field site located within the boundary of the existing Watson Cogeneration Facility, which is a 21.7-acre area within the 428-acre parcel further described as APN 7315-006-003, 1801 Sepulveda Boulevard, Carson, California, 90745 and is integral to BP's existing Carson Refinery (BP Refinery). The Project Area consists of two components: the Project Site (which is the proposed location of project improvements or the area of direct impact) and the Construction Laydown and Parking Area. The Construction Laydown and Parking Area is a paved 25-acre parcel located approximately 1 mile southeast of the Project Site, at the northeast corner of East Sepulveda Boulevard and South Alameda Street. URS Corporation Americas (URS) was retained to conduct cultural resources studies, including a 100 percent archaeological and historic architectural survey in support of preparation of an Application of Certification, required by the CEC for power generating plants that produce an excess of 50 MW of energy. The archaeological area of potential effect (APE) includes the Project Area (Project Site and Construction Laydown and Parking Area), and an additional 200 feet around it. The historic architecture APE includes the Project Area parcels and extends one full parcel's distance from the Project Area (Project Site and Construction Laydown and Parking Area).

Consultation with local Native American groups and interested parties included a letter sent to the Native American Heritage Commission (NAHC) requesting information on sacred lands and traditional cultural properties, and a list of Native American individuals and organizations

that might have knowledge of or concerns with cultural resources within the Project area. The records search by the NAHC of the Sacred Lands File did not reveal any specific site information or specific sites in the Project area. Attempts were made to contact the Native American representatives identified by the NAHC both in writing and by phone. The Native American consultation results generally conveyed concern regarding the project's potential to impact buried prehistoric deposits, including burials. Three of the five respondents were concerned about this possibility, and two of them expressed a desire to be kept informed as the project progresses. One recommended construction monitoring. A fourth respondent was severely critical of the project as a trespass on Native American rights. The fifth respondent provided no details of his group's concerns. None of the respondents identified any cultural resources known by them to be located on the proposed project site.

Prior to field work, archival research was conducted, including a records search, performed at the South Central Coastal Information Center in 2008, of an area encompassing the Project area and a 1-mile radius. The purpose of the search was to identify all previously recorded cultural resources and previous cultural resources investigations completed within a one-mile radius of the project areas. The records search included a review of the California Points of Historical Interests, the California Historical Landmarks, the California Register of Historical Resources (CRHR), the National Register of Historic Places, the California State Historic Resources Inventory, and the City of Los Angeles Historic-Cultural Monuments listings.

The records search identified 26 previously conducted investigations and 11 previously recorded cultural resources within the Project area and/or within a 1-mile radius. None of the previously conducted investigations identified cultural resources in the Project area. Of the 11 previously recorded cultural resources, none were within the Project Area and only five were within 500 feet of the Project Area. Of the 11 previously recorded cultural resources, seven were recorded as archaeological sites and four were recorded as historic resources. None of the sites are listed on the Archaeological Determination of Eligibility list, and no archaeological isolates have been identified within a one-mile radius of the project areas.

Additional primary and secondary research on the history of the project area was completed at the following repositories: Los Angeles County Library, Carson Branch; City of Carson Planning and Building Departments; California State University, Fullerton, Library; Los Angeles County Assessor-Recorder; Historical Society of Long Beach; *Los Angeles Times* photographic archives; San Diego State University Library; University of California, San Diego, Geisel Library and Mandeville Special Collections; and San Diego Public Library. In addition, various online resources, such as Calisphere: A World of Digital Resources and the California Historic Topographic Map Collection were consulted. Historic-period aerial photographs were obtained from Environmental Data Resources, Inc. The research results from the literary research, from historic maps and aerial images, were used to provide insight into the historical background of the proposed project site, to refine the historical themes for the historical resources context, and to provide specific information about properties within the project vicinity, but no additional cultural resources were identified as a result of this research.

Historical societies and potentially interested parties were contacted requesting any pertinent information regarding historic or other cultural resources within the records search boundary (Project area and 1-mile radius). Those contacted included the City of Carson Planning Department and the Wilmington Historical Society. There was no response from the

Wilmington Historical Society. There are no locally listed cultural or historical resources in a 1-mile radius, according to the City of Carson.

No archaeological sites were identified during the archaeological survey, though it is possible that there may be buried archaeological resources associated with prehistoric sites common around what are now the port areas of Los Angeles County.

The historic architecture field survey identified a total of three properties within the historic architecture APE. One property was within the Project Site parcel (1801 Sepulveda Boulevard [APN 7315-006-003]), and two properties were located one parcel past the Project Area. The property within the Project Site parcel is the BP Refinery. The two properties located one parcel past the Project Area are a portion of the Southern Pacific Railroad (P-36-010330, CA-SBR-10330H) and a portion of the Dominguez Canal. None of the properties identified and recorded as a result of the intensive survey were determined eligible for the CRHR or determined to be historical resources for purposes of California Environmental Quality Act (CEQA).

B. Direct Effects

Direct effects are typically associated with construction activity and have the potential to immediately alter, diminish, or destroy all or part of the character and quality of historic architecture and archaeological resources. No significant or unique cultural resources were found in the APEs during the archaeological pedestrian survey and historic architecture survey. The construction of the Project is not expected to result in direct effects to historic architecture or archaeological resources.

C. Indirect Effects

Indirect effects are related to the primary consequences of the completed Project and can cause a change in the character or use of a resource by the introduction of undesirable auditory or visual intrusions. The operation and maintenance of the Project are not expected to result in indirect effects to historic architecture or archaeological resources.

D. Cumulative Impacts

The Project, when assessed with other projects, is not anticipated to have any foreseeable cumulative effects to cultural resources. No significant or unique cultural resources were found in the APEs during the archaeological pedestrian survey and historic architecture survey. Cumulative effects from the Project on local and regional cultural resources are limited because mitigation measures have been provided that would reduce potential effects to a less than significant level in the event that an archaeological site is identified within the Project boundaries during construction. In the event that a significant buried archaeology site is encountered during construction, data recovery, and/or site avoidance would ensure that the information content of the site would be retained. These measures would limit the cumulative effects the Project would have on cultural resources in the region.

E. Mitigation Measures

Based on the present cultural resources analysis, staff concludes that the proposed project would have no direct or indirect significant impacts to any historical resources. The three newly recorded resources within the built-environment project area of analysis have not been found to

be historical resources for purposes of CEQA, as they have not been found to be eligible to the CRHR. There are no archaeological or cultural resources in the project's area of analysis. The construction of the fifth cogeneration unit and its operation would not result in an indirect impact to any historical or cultural resources.

4.3 Proposed Licensing Conditions

The Staff Assessment included eight conditions of certification. The Applicant is in agreement with these conditions.

4.4 Correlation to Staff Assessment and Hearing Topics

- Staff Assessment, Section 4.3
- Cultural Resources

5.0 HAZARDOUS MATERIALS

5.1 Introduction

A. Name: Tricia Winterbauer and Gregory S. Darvin (for the Off-Site Consequence Analysis for aqueous ammonia)

B. Qualifications: The qualifications of the team members listed above are as noted in their resumes contained in Appendix A.

C. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- AFC dated March 2009 (Volume I, Section 5.15) [Exhibit 1]
- Aqueous Ammonia Off-Site Consequence Analysis, dated March 2010 [Exhibit 11]
- Aqueous Ammonia Off-Site Consequence Analysis, Revised April 2010 [Exhibit 13]

5.2 Summary of Testimony

To the best of our knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are our own. We make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

A. Affected Environment

The Project Site is a 2.5-acre brown field site located within the boundary of the existing Watson Cogeneration Facility, which is a 21.7-acre area within the a 428-acre parcel further described as APN 7315-006-003, 1801 Sepulveda Boulevard, Carson, California, 90745 and is integral to BP's existing Carson Refinery (BP Refinery). The street address of the Project Site is located within the boundary of the existing Watson Cogeneration Facility at 22850 South Wilmington Avenue, Carson, California. An existing warehouse/maintenance shop on a portion of the site will be removed as part of the Project. A new warehouse/shop will be constructed at an alternate location on refinery property. The Project Site is located approximately 0.7 mile south of the 405 Freeway, roughly bounded by Wilmington Avenue to the west, East Sepulveda Boulevard to the south, and South Alameda Street to the east.

The site is located within the existing refinery property boundary, the Project Site and surrounding areas are highly developed, and have been subject to disturbance for many years.

The Construction Laydown and Parking Area is a paved 25-acre parcel located approximately 1 mile southeast of the Project Site, at the northeast corner of East Sepulveda Boulevard and South Alameda Street. The area is owned by BP and is currently used as a truck parking and staging area.

No off-site improvements associated with the Project, such as water supply, natural gas or wastewater pipelines, are currently planned for the Project. The Project will connect to the existing supply pipelines currently located at the facility.

B. Construction Impacts

The hazardous materials to be used during Project construction include gasoline, diesel fuel, oil, and lubricants as well as minimal amounts of cleaners, solvents, adhesives, and paint materials. However, no acutely hazardous materials will be used or stored on-site during construction. A summary of the hazardous materials to be used and stored for construction is provided in AFC Table 5.15-1, Hazardous Materials Usage and Storage During Construction Based on Title 22 Hazardous Characterization, and AFC Table 5.15-2, Hazardous Materials Usage and Storage During Construction Based on Material Properties.

A Hazardous Materials Business Plan (HMBP), which outlines hazardous materials handling, storage, spill response, and reporting procedures will be prepared before the start of construction activities. To comply with the HMBP, construction contractors will be required to ensure that they use, store, and handle these materials in a way that complies with applicable federal, state, and local LORS, including licensing, personnel training, accumulation limits, reporting requirements, and recordkeeping. Each general contractor will also be responsible for maintaining a Material Safety Data Sheet (MSDS) for each chemical used or stored on-site, and construction workers will be made aware of the location and content of the MSDSs.

Contractors will be expected to implement Best Management Practices (BMPs) that are consistent with the hazardous materials storage, handling, emergency spill response, and reporting procedures specified in the HMBP. The most probable accidents involving hazardous materials during construction would likely occur from small-scale spills during cleaning or use of other materials in the storage areas or during refueling of equipment. Such materials generally have a low relative risk to human health and the environment. Such spills will be immediately cleaned up, and the materials containing hazardous substances will be properly disposed in accordance with the HMBP and BMPs.

If a large spill were to occur, the spill area would be bermed or controlled as quickly as practical to minimize the footprint of the spill in accordance with the HMBP and BMPs. Contaminated soil materials produced during cleanup of a spill would be stored, transported, and disposed of in accordance with local, state, and federal regulations. If a spill or leak into the environment were to involve hazardous materials equal to or greater than the specific reportable quantity, federal, state, and local reporting requirements would be adhered to. In particular, the Health Hazardous Materials Division of the Los Angeles County Fire Department would be notified.

The effects associated with the use of hazardous materials during construction will be less than significant as a result of Watson implementing the above procedures and mitigation measures HAZMAT-1 through HAZMAT-4, as discussed in AFC Section 5.15.4, Mitigation Measures.

C. Operation and Maintenance Impacts

The hazardous materials to be used or stored on-site during Project operation include natural gas and welding gases, transformer and lubricating oils, aqueous ammonia and minimal quantities of paints, oils, solvents, and cleaners and other maintenance chemicals. Hazardous materials are listed in AFC Table 5.15-3, Hazardous Materials Usage and Storage During Operation Based on Title 22 Hazardous Characterization, and AFC Table 5.15-4, Hazardous Materials Usage and Storage During Operation Based on Material Properties. The existing Watson Cogeneration Facility utilizes anhydrous ammonia. The filed AFC for the Watson Project described the Applicant's intent to use additional anhydrous ammonia for the Project. However, subsequent to

the filing of the AFC, the Applicant agreed to a request from SCAQMD to change to aqueous ammonia for the Project. As a result, the Applicant prepared and filed an Off-site Consequence Analysis for the aqueous ammonia in 2010.

Hazardous materials will be stored and used in vessels, tanks or containers specifically designed for their individual characteristics. Flammable materials that will be used during Project operation include natural gas and welding gases and transformer and lubricating oil. The risk of a fire or explosion will be minimized through adherence to applicable codes and the implementation of effective safety management practices.

Aqueous ammonia is used in the selective catalytic reduction technology to control nitrogen oxide emissions. The ammonia used for this system will be stored in a 12,000-gallon tank at the Project Site. The maximum expected demand for aqueous ammonia is approximately 496 gallons per day. The number of ammonia truck deliveries to the Watson Cogeneration Facility will increase by 31 per year to accommodate the aqueous ammonia for the Project.

A Risk Management Plan (RMP) has already been prepared and implemented to manage and minimize the risks associated with the storage and use of anhydrous ammonia and flammable gases at the Watson Cogeneration Facility. This RMP will be updated as necessary for the Project's aqueous ammonia and will be used during Project operation.

An HMBP has already been prepared and implemented for the use and storage of hazardous materials at the Watson Cogeneration Facility. This HMBP will be updated as necessary for the Project and will be used during Project operation. An additional HMBP will be required for the Construction Laydown and Parking Area. The Project will implement BMPs that are consistent with the hazardous materials handling, emergency spill response, and reporting procedures specified in the HMBPs.

With the implementation of the HMBPs and BMPs, the long-term and cumulative effects associated with spills or releases of hazardous materials would be avoided. Therefore, the effects of hazardous materials handling associated with the Project will be less than significant.

D. Cumulative Effects

Given the land uses in the area surrounding the Project Site and the limited incremental increase in the amount of hazardous materials that will be used as part of the Project, no significant cumulative effects are expected to result from hazardous materials handling for the Project in combination with known future projects.

E. Mitigation Measures

As outlined in the Project AFC, potential impacts during construction and operational phases of the project will be mitigated through implementation of engineered controls, training BMPs, and the development of plans and procedures.

Mitigation Measures HAZMAT-1 through HAZMAT-4 of the Project AFC include the use of an on-site safety officer to implement health and safety guidelines, and the development of standard operating procedures for fueling and maintenance of equipment, spill response and disposal, emergency response, and container storage requirements for hazardous materials.

Mitigation Measures HAZMAT-5 through HAZMAT-9 of the Project AFC include standard operating procedures for containerized hazardous materials in accordance with applicable LORS;

MSDSs being available for hazardous materials used onsite, training in the proper handling and the procedures for emergency response to chemical spills or accidental releases; update of existing Watson Cogeneration Facility plans and procedures to address hazardous materials management at the Project Site for hazardous materials storage, hazardous materials emergency response, hazardous materials employee training, hazard recognition, fire safety, first-aid/emergency medical response, hazardous materials release containment/control procedures, hazard communication training, personal protective equipment (PPE) training, and release reporting requirements (i.e. HMBP, RMP, Process Safety Management, worker safety program, fire response program, facility safety program, and standard operating procedures); and spill response procedures.

5.3 Proposed Licensing Conditions

The Staff Assessment included eight conditions of certification. The Applicant agrees with these certifications.

5.4 Correlation to Staff Assessment and Hearing Topics

- Staff Assessment, Section 4.4
- Hazardous Materials

6.0 LAND USE

6.1 Introduction

A. Name: Jean Sanson, AICP

B. Qualifications: Ms. Sanson's qualifications are as noted in her resume contained in Appendix A.

C. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- AFC dated March 2009 (Volume I, Section 5.9; Volume II, Appendix Q) [Exhibit 1]
- Supplement in Response to CEC Data Adequacy Review, dated June 2009 (Land Use Data Adequacy Worksheet and Appendix C) [Exhibit 2]
- Response to Questions from CEC Staff, dated June 2010 (Land Use) [Exhibit 15]

6.2 Summary of Testimony

To the best of my knowledge, all of the facts contained in this Section of the Applicant's testimony (including all referenced documents) are true and correct. To the extent this testimony is based on opinions, such opinions are my own based upon my professional judgment. I make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

A. Affected Environment

The Project Site is located within the boundary of the BP Refinery in the City of Carson. The Project Site is designated Heavy Industrial by the City of Carson General Plan (GP), and is accordingly zoned Manufacturing, Heavy (MH) by the City of Carson Zoning Ordinance. The study area is comprised of the land uses within a 1-mile radius of the Project Site. Portions of the study area, outside of the Project Site, are located within the City of Los Angeles and the City of Long Beach.

For the purposes of environmental review and permitting, the CEC is the lead state agency for compliance with the CEQA.

B. General Description of Study Area

The Project Site is adjacent to industrial uses and located within the industrial zoned 428-acre boundary of the existing BP Refinery. Specifically, existing land uses immediately adjacent to, and nearby, the Project Site include the following:

- North: the Watson Cogeneration Facility, BP Refinery, a light industrial business park; and an automobile dealership. The closest residential area to the Project Site is located 0.61 mile northwest of the Project Site.
- South: the BP Refinery and commercial uses. A residential area is located approximately 0.79 mile from the Project Site.
- East: the Watson Cogeneration Facility and the Dominguez Channel

- West: the Watson Cogeneration Facility and the "Watson Center," a light industrial office complex.

Community facilities within the study area include residential units, ten schools, three parks, four day care centers, twelve places of worship, one nursing home and a fire station. No agricultural uses exist within the study area and the proposed Watson Project would not convert any farmland with Farmland Mapping and Monitoring Program (FMMP) designations of Prime Farmland, Unique Farmland, or Farmland of Statewide or Local Importance to non-agricultural use. No other potentially sensitive land uses are located within the study area.

C. Environmental Analysis

The Watson Project was evaluated against CEQA Guidelines Appendix G, CEQA Checklist to evaluate the potential land use impacts associated with implementation of the project. For each of the appropriate checklist criteria, it was determined that implementation of the Watson Project would not result in any unmitigable land use impacts. Specifically, it was determined that:

1. The Watson Project would not result in conversion of any Farmland (as classified by the FMMP) to non-agricultural use, conflict with existing agricultural zoning or Williamson Act contracts or convert forest land to non-forest use.
2. The Watson Project would not physically divide or disrupt an established community because the Project Site is adjacent to industrial uses and located within the industrial zoned 428-acre boundary of the existing BP Refinery.
3. The Watson Project would not require construction of new parks or expansion of recreational facilities nor substantially increase the use of existing and regional parks.
4. The Watson Project would not conflict with applicable land use plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect. The Project would be consistent with the City of Carson GP and the MH zoning designation and is consistent with the character of these permitted uses and development in the area. Further, the Watson Project would not be incompatible with existing on-site or nearby land uses with the implementation of Condition of Certification VIS-1, which would require a landscape plan to implement landscaping along the BP Refinery property line on Wilmington Avenue.
5. The proposed Project Site is not subject to any habitat conservation plan or natural community conservation plan or within the boundaries of any wildlife preserve or critical habitat area. Based on the historic and current industrial use on site and the surrounding industrial zoning the Project Site is devoid of native vegetation and as a result would not conflict with any habitat, natural community conservation plan or biological opinion as there are no listed threatened or endangered species on site.
6. The Watson Project would not create a significant adverse impact on low income and minority populations with the implementation of staff's proposed conditions of certification in the Air Quality, Hazardous Materials Management, Noise and Vibration, Public Health, Traffic and Transportation, and Visual Resources sections of this staff assessment.

D. Cumulative Impacts

The Watson Project is consistent with the applicable plans and policies and, therefore, would not result in significant land use, recreation, or agricultural impacts. The Project Site does not lie

within critical habitat, and therefore, would not result in a cumulative conflict with any habitat conservation plan. Further, it is expected that the reasonably foreseeable projects considered in the cumulative analysis would also not contribute to a significant impacts on land use, recreation, or agricultural impacts because each of these projects will receive development approvals that could not be issued without a determination that these projects are consistent with applicable plans and policies, including development, farmland, and habitat conservation policies.

E. Mitigation

The land use impacts of the proposed project are less than significant, and therefore do not require any specific land use conditions to help mitigate project impacts.

6.3 Proposed Licensing Conditions

The Staff Assessment for the project filed by the CEC proposed no conditions of certification. The Applicant accepts this assessment.

6.4 Correlation to Staff Assessment and Hearing Topics

- Staff Assessment, Section 4.5
- Land Use

7.0 NOISE AND VIBRATION

7.1 Introduction

A. Name: Ronald E. Reeves

B. Qualifications: Mr. Reeves has 20 years of technical, managerial, and supervisorial experience in the field of applied engineering acoustics and noise control. Mr. Reeves's expertise includes environmental/ community noise modeling, predictive noise analyses, noise monitoring/measurement, preparation of CEQA/National Environmental Policy Act noise assessment documentation, and industrial facility noise analysis, mitigation, and control. Additional information regarding Mr. Reeves' experience is presented in his resume contained in Appendix A.

C. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- AFC dated March 2009 (Volume I, Section 5.12; Volume II, Appendix M) [Exhibit 1]

7.2 Summary of Testimony

To the best of my knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are my own. I make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

A. Opening Statement

The Project Site is a 2.5-acre brown field site located within the boundary of the existing Watson Cogeneration Facility, which is a 21.7-acre area within the 428-acre parcel further described as APN 7315-006-003, 1801 Sepulveda Boulevard, Carson, California, 90745 and is integral to BP's existing Carson Refinery (BP Refinery). The street address of the Project Site is located within the boundary of the existing Watson Cogeneration Facility at 22850 South Wilmington Avenue, Carson, California. An existing warehouse/maintenance shop on a portion of the site will be removed as part of the Project. The Project Site is located approximately 0.7 mile south of the 405 Freeway, roughly bounded by Wilmington Avenue to the west, East Sepulveda Boulevard to the south, and South Alameda Street to the east.

The Project Area is zoned MH and is surrounded by existing refineries, intermodal transit yards, several freight rail lines, and other industrial facilities. Land uses of adjoining and nearby properties within 1 mile of the Project Site are varied, consisting of industrial, commercial, and residential properties.

Noise sources in the vicinity of the Project Site consist of roadways, airports (Compton and Long Beach Airports), stationary sources (including industrial, commercial, and construction activity), and railways (including Union Pacific Railroad, Burlington Northern Santa Fe, the Alameda Corridor, and the Los Angeles Metro Blue Line). According to the City of Carson General Plan Noise Element (2006), the most pervasive noise source within the city, including the Project Area, is vehicular traffic due to large volumes of truck traffic and rail line operations. Field

noise measurements, conducted in 1999 and documented in the GP, indicate noise levels from vehicular traffic greater than 65 dBA L_{eq} at all measured locations.

Generally, the design basis for noise control is the most stringent noise level required by any of the applicable LORS. This design philosophy will ensure that the noise from this project will comply with local ordinances as well as the CEC's guideline for the late-night noise increase increment. These local requirements and CEC guidelines will be met with a combination of inherent operational principles, project design features that provide noise reduction from the expected major noise sources, and the intrinsic benefit of large propagation distances. These noise reduction features involve both architectural and equipment considerations. Architectural considerations involve the sound isolation performance of the architectural components, including the walls, roof, doors, windows, and louvers, of buildings housing equipment. Equipment considerations involve reduced noise emissions from the equipment sources themselves, as well as potential sound treatment systems including enclosures, silencers, and/or localized barriers. During the Project's detailed engineering phase, each equipment component will be evaluated to determine and update the noise control strategies necessary to support the overall project acoustical design.

B. Summary

The Project involves increasing generating capacity at the existing Watson Cogeneration Facility. The maximum potential increase in far field noise levels (i.e., where the sound field is spreading spherically and hence dissipating with increasing distance from the source) due to Project operation is 0.8 A-weighted decibels (dBA) above existing operational noise levels. In the context of the existing ambient noise environment, off-site noise levels as a result of the Project will be essentially unchanged from existing conditions. In summary, the results of this analysis indicate that the noise associated with the Project will wholly conform to limits established by the City of Carson General Plan Noise Element (2006), the City of Carson Noise Control Ordinance, and siting standards promulgated by the CEC.

To assure and confirm that noise impacts remain less than significant, the noise production characteristics of the Project equipment will be re-evaluated during the detailed design phase and appropriate noise level specifications will be issued for plant equipment.

7.3 Proposed Licensing Conditions

The Staff Assessment recommends eight Conditions of Certification to address noise and vibration issues for the project. These conditions are acceptable to the Applicant.

7.4 Correlation to Staff Assessment and Hearing Topics

- Staff Assessment, Section 4.6
- Noise

8.0 PUBLIC HEALTH

8.1 Introduction

A. Name: Richard B. Booth

B. Qualifications: Mr. Booth is a Senior Air Quality Consultant and Project Manager with over thirty-five years of consulting experience conducting air quality permitting assessments for new and modified industrial and energy related sources. Additional details on his qualifications are presented on his resume contained in Appendix A.

C. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- AFC dated March 2009 (Volume I, Section 5.16; Volume II, Appendix O) [Exhibit 1]
- Watson Cogeneration Steam and Electric Reliability Project, Addendum Application for Using Aqueous Ammonia in Watson Cogeneration Steam and Electric Reliability Project, AA/Ns 496922, 496924, and 496925 [Reference: Watson Cogeneration Company, Electric Generation (Process 17), BP Carson Refinery, Facility ID 131003] and Application for Change of Condition to Watson Cogeneration Units 1-4 (Watson Cogeneration Steam and Electric Reliability Project) [Reference: Watson Cogeneration Company at the BP Carson Refinery (Facility ID 131003; Process 17, Systems 1-4), dated February 24, 2010 [Exhibit 10]
- Authority to Construct Permit Application [SCAQMD ATC Application], dated March 23, 2009 [Exhibit 21]
- Responses to CEC Data Requests #1-39, dated September 2009 (Responses 10, 11, 13) [Exhibit 3]
- Remainder of Responses to CEC Data Requests #1-39, dated October 2009 (Response 12) [Exhibit 5]

8.2 Summary of Testimony

To the best of my knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinion, such opinion is my own. I make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

A. Affected Environment

As proposed by the Applicant, the Project is situated on the site of the existing Watson Cogeneration Facility, which has been providing process steam and electric power to the adjacent BP Refinery for over 20 years. The Project Site is a 2.5-acre brown field site located within the boundary of the existing Watson Cogeneration Facility, which is a 21.7-acre area within the 428-acre parcel further described as APN 7315-006-003, 1801 Sepulveda Boulevard, Carson, California, 90745, and is integral to the existing BP Refinery. The street address of the Project Site is located within the boundary of the existing Watson Cogeneration Facility at 22850 South Wilmington Avenue, Carson, California. An existing warehouse/maintenance shop on a

portion of the site will be removed as part of the Project. The Project Site is located approximately 0.7 mile south of the 405 Freeway, roughly bounded by Wilmington Avenue to the west, East Sepulveda Boulevard to the south, and South Alameda Street to the east. The Project Site elevation is approximately 32 feet above mean sea level. Because the site is located within the existing refinery property boundary, the Project Site and surrounding areas are highly developed, and have been subject to disturbance for many years. There are several hundred identified sensitive receptors located within a 6-mile radius of the project site (as described in the AFC, Appendix O).

B. Construction Impacts

Construction will occur at the proposed project. Construction impacts to public health as a result of air quality impacts will be in the form of fugitive dust and vehicle exhaust emissions. Fugitive dust emissions will result from construction equipment disturbing (excavating, grading, and dumping) soils on the proposed project site and from the movement of vehicles on unpaved soils. Vehicle exhaust emissions are associated with burning ultra-low sulfur diesel and gasoline in the construction equipment, construction vehicles, and construction worker's automobiles traveling to and from the construction site. These construction impacts will be temporary and finite in duration with construction activities expected to be completed within approximately 20 months.

A screening health risk assessment (SHRA) was performed for the construction activities, primarily exhaust emissions associated with the use of onsite diesel construction equipment. The SHRA for construction was conducted consistent with the *Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Emissions, South Coast AQMD, December 2002*. The results of the screening level health risk assessment (HRA) indicated the following:

- Cancer risk $\leq 1.26\ E^{-6}$ (9 year exposure)
- Cancer risk $\leq 0.23\ E^{-6}$ (20 month exposure)
- Chronic HI ≤ 0.00084 (9 year exposure)
- Chronic HI ≤ 0.000155 (20 month exposure)
- Acute HI = n/a (no Acute REL has been established for diesel PM)

These values are well below the significance thresholds established by the SCAQMD. It should be noted that the SCAQMD does not require HRAs for construction activities, and the district significance thresholds are not applied to construction related activities. No significant public health effects are expected during construction.

C. Operations Impacts

Potential public health impacts from onsite stationary source operations were determined by performing air dispersion modeling coupled with the latest version of the California Air Resources Board Hot Spots Analysis Reporting Program (CARB HARP) model. The air modeling input and output were used in the HARP On-Ramp pre-processor and made ready for use in HARP. HARP was supplemented via the use of device and process specific emissions files. Emissions of combustion by-products from stationary sources (proposed new turbine), as well as direct emissions from the proposed cooling tower were evaluated in the facility HRA.

Emissions values and operational scenarios for the facility were evaluated using HARP. The HRA values for the facility expansion are as follows:

Table Public Health-1

New Turbine and Modified Cooling Tower		
Risk Category	**MIR Project Values**	**Applicable Significance Threshold**
Cancer Risk	3.82 E^{-6}	See Table 5.16-5 in AFC Section 5.16 (Public Health)
Chronic Hazard Index	0.104	
Acute Hazard Index	0.129	
Cancer Burden	~0.028	
MIR Receptor #: 9882 Acute MIR, Receptor #1053, HI=0.026		

D. Cumulative Impacts

In September 2009 a comprehensive HRA for the refinery (which included the existing cogeneration facility) was performed by AECOM Inc. The analysis performed was an updated HRA pursuant to AB2588 and was submitted to the SCAQMD for review. The results of this refinery wide analysis were combined with the HRA results for the proposed project and are presented below. No other sources beyond the refinery boundaries were included in the cumulative impacts assessment. The combined results indicate that the cumulative cancer health risks from the expansion project in conjunction with the refinery wide risks as per the September 2009 AB2588 HRA are below the 10 in a million level, and the chronic and acute hazard indices are well below the significance level of 1.0.

Table Public Health-2

Cumulative Impacts (Refinery plus Project)		
Risk Category	**MIR Project Values**	**Applicable Significance Threshold**
Cancer Risk	8.69 E^{-6}	See Table 5.16-5 in AFC Section 5.16 (Public Health)
Chronic Hazard Index	0.156	
Acute Hazard Index	0.0402	
Cancer Burden	na	
MIR Receptor #: 282		

E. Mitigation

Fugitive dust and tailpipe emissions from construction activities will be controlled through the applicant proposed and CEC recommended mitigation measures which include fugitive dust control, use of Tier 2 and 3 off-road engines, and the implementation of an on-site construction mitigation manager. The use of these mitigation measures is expected to reduce construction health related impacts to levels below or less than significance.

Federal, state, and local air district rules and regulations do not require the project to mitigate the operational air quality impacts as the emissions of these pollutants will be less than significant. Mitigation will be utilized that will reduce the non-stationary source emissions through the use of new on-road and off-road vehicles that meet California emission standards in addition to the development of a site Operations Dust Control Plan which will minimize fugitive dust emissions during operation and maintenance activities. In addition, the various stationary devices and processes, i.e., turbine and cooling tower systems are proposed with BACT.

8.3 Proposed Licensing Conditions

The Staff Assessment includes one condition of certification. The Applicant is in agreement with this condition.

8.4 Correlation to Staff Assessment and Hearing Topics

- Staff Assessment, Section 4.7
- Public Health

9.0 SOCIOECONOMIC RESOURCES

9.1 Introduction

A. Name: Katie Carroz

B. Qualifications: Ms. Carroz's qualifications are as noted in her resume contained in Appendix A.

C. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- AFC dated March 2009 (Volume I, Section 5.10) [Exhibit 1]
- Supplement in Response to CEC Data Adequacy Review, dated June 2009 (Socioeconomic Resources Data Adequacy Worksheet) (Exhibit 2]
- Responses to CEC Data Requests #1-39, dated September 2009 (Responses 14 and 15) [Exhibit 3]

9.2 Summary of Testimony

To the best of my knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are my own. I make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

A. Affected Environment

The Project Site is a 2.5-acre brown field site located within the boundary of the existing Watson Cogeneration Facility, which is a 21.7-acre area within the 428-acre parcel further described as APN 7315-006-003, 1801 Sepulveda Boulevard, Carson, California, 90745 and is integral to BP's existing Carson Refinery (BP Refinery). The street address of the Project Site is located within the boundary of the existing Watson Cogeneration Facility at 22850 South Wilmington Avenue, Carson, California. The Project Site is located approximately 0.7 mile south of the 405 Freeway, roughly bounded by Wilmington Avenue to the west, East Sepulveda Boulevard to the south, and South Alameda Street to the east.

The Project Site elevation is approximately 32 feet above mean sea level. Because the site is located within the existing refinery property boundary, the Project Site and surrounding areas are highly developed, and have been subject to disturbance for many years.

B. Construction Impacts

The on-site construction workforce for the Project will consist of laborers, craftsmen, supervisory personnel, support personnel, and construction management personnel. The peak construction workforce will number about 80 workers and is expected to occur during Month 12 of construction. The average size of the workforce over the 26-month site preparation, construction, commissioning and startup period will be 41 workers. Construction is forecasted to begin in May 2010 and end in January 2012. Commissioning and startup is forecasted to begin in January 2012 with full-scale operation to initiate in June 2012.

Peak construction employment will represent less than 0.1 percent of construction jobs in Los Angeles County in 2007. The majority of the workforce (approximately 80 percent) is expected to be hired from within Los Angeles County.

Given the available construction labor force in Los Angeles County, it is expected that an adequate labor force within daily commute distance will be found to supply the workforce needed to construct the Project. Given the wide availability of construction workers within a daily commute of the Project Site, the Project would not result in an influx of a significant number of construction workers to the Project Area. The effects of Project construction on the local labor force would be less than significant.

Construction of the Project is estimated to cost between $140 million and $170 million. The total payroll for construction is projected to be approximately $14.5 million. The capital cost would be approximately $125.5 million to $155.5 million, including equipment, materials, and supplies. An estimated $6.5 million (4 to 5 percent of non-labor construction cost) will be spent within Los Angeles County on materials and supplies. The remaining materials (comprising approximately 95 percent of non-labor cost), including the turbines, will be purchased outside of Los Angeles County.

Businesses in the local area surrounding the Project Site could experience effects due to construction nuisances (noise, dust, and traffic). Due to the temporary nature of construction, no substantial and long-term disruptions to businesses will occur. As a result, the effects of Project construction on businesses would be less than significant.

C. Operational Impacts

Watson expects that the Project will be staffed by existing employees of the BP Refinery. No new employees (permanent or contract) will be hired for Project operation. Materials and supplies for Project operation and maintenance would cost approximately $3 million annually, not including fuel costs. Approximately 10 percent ($300,000) of the operations and maintenance materials would be purchased in Los Angeles County. No relocations would occur due to Project operation.

Similar to construction, operation of the Project would result in indirect and induced economic impacts that would occur within Los Angeles County. Indirect and induced impacts were estimated using IMPLAN for Los Angeles County. Unlike indirect and induced impacts from construction, indirect and induced impacts from operation would represent permanent increases in area economic variables.

Estimated indirect and induced effects of annual operation that would occur within Los Angeles County would result in approximately: 0.5 additional jobs, $28,000 in labor income, and $85,000 in output.

Project operation will not require new employees. Effects to population and permanent and temporary housing due to Project operation will be less than significant.

D. Cumulative Impacts

Los Angeles County has a large enough construction labor supply to meet demand resulting from simultaneous construction of the Project and the 13 nearby projects. When analyzed skill by skill, the Los Angeles County labor supply is large enough to meet demand for each type of

skilled construction worker at peak demand if the Project and the 13 other nearby projects are constructed simultaneously. The proposed projects could temporarily deplete certain types of trade labor and equipment. However, these effects would likely be less-than-significant due to (1) the specialized nature of power facility construction, and (2) the large supply of construction workers and laborers within Los Angeles County and the labor force in surrounding counties.

E. Mitigation

No significant adverse socioeconomic effects were identified for the Project. Therefore, no mitigation measures are necessary.

9.3 Proposed Licensing Conditions

The Staff Assessment for the project recommends one Condition of Certification to address socioeconomic resource issues. The Applicant concurs with this condition.

9.4 Correlation to Staff Assessment and Hearing Topics

- Staff Assessment, Section 4.8
- Socioeconomics

10.0 SOIL AND WATER RESOURCES

A. WATER RESOURCES

10A.1 Introduction

A. Name: Bob Collacott, Omar Olivares, Stephen Moore, and Stephen Garrett.

B. Qualifications: Qualifications of the team members listed above are as noted in their resumes contained in Appendix A.

C. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- AFC dated March 2009 (Volume I, Section 5.5; Volume II, Appendices P, R, and S) [Exhibit 1]
- Supplement in Response to CEC Data Adequacy Review, dated June 2009 (Water Resources Data Adequacy Worksheet and Appendix F) [Exhibit 2]
- Responses to CEC Data Requests #1-39, dated September 2009 (Responses 18, 22, and 32) [Exhibit 3]
- Remainder of Responses to CEC Data Requests #1-39, dated October 2009 (Responses 16, 17, and 19 through 31) [Exhibit 5]
- Responses to CEC Data Request Set 1 (32) and Set 2 (40-48), dated January 2010 (32, and 40 through 48) [Exhibit 8]
- Responses to Questions from the January 20, 2010 Issues Resolution Workshop, dated February 2010 [Exhibit 9]
- Supplement to Responses to Questions from the January 20, 2010 Issues Resolution Workshop, dated April 2010 [Exhibit 12]
- Comments on the Preliminary Staff Assessment, dated January 2011 (Section 4.9) [Exhibit 16]
- Responses to CEC Requests from the February 3, 2011 PSA Workshop Continuation, dated March 2011 (this document includes the Revised Section 5.5 [Water Resources]) [Exhibit 17]
- Responses to June 15, 2011 CEC Data Requests, dated July 2011 (Introduction and Responses 1 through 12) [Exhibit 18]
- Comments on the Final Staff Assessment, dated September 2011 [Exhibit 20]

10A.2 Summary of Testimony

To the best of our knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are our own. We make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

A. Project Overview

The Watson Project is a proposed expansion of a steam and electrical generating (cogeneration) facility that is located in the City of Carson in Southern California. The Project will increase the overall reliability of the steam delivered from the existing Watson Cogeneration Facility and complete its original design.

B. Affected Environment

1. Site History

The proposed project would be constructed within the boundary of the existing Watson Cogeneration Facility, at 22850 South Wilmington Avenue, Carson, California. Surface water from the area surrounding the Project Site currently flows to the Dominguez Channel.

2. Drainage and Flood Control

Relative to the Project Site, the Dominguez Channel is located approximately 0.4 mile to the east. Within the Project vicinity, surface runoff flows into a network of storm drains that are pumped into the BP Refinery's existing treatment system onsite. During rain events, stormwater runoff can be discharged to the Dominguez Channel under a state General Industrial National Pollutant Discharge Elimination System (NPDES) stormwater permit.

The Project Site is designated as a "C" zone for flood management and there are no Flood Insurance Rate Maps for incorporated areas of Carson. The "C" zone designation indicates that the area does not require flood insurance and that the potential for flooding is low.

3. Groundwater

The Project site is located in the West Coast Subbasin of the Coastal Plain of the Los Angeles Basin, which is adjudicated and commonly referred to as the "West Coast Basin." The Silverado aquifer, underlying most of the West Coast Subbasin, is the most productive aquifer in the subbasin. It yields 80 to 90 percent of the groundwater extracted annually. The flow direction of shallow groundwater is to the southwest beneath the northern part of the BP Refinery (including the Watson Cogeneration Facility), to the west beneath the eastern part of the refinery. The storage capacity of the primary water producing aquifer, the Silverado aquifer, is estimated to be 6,500,000 acre-feet. Specific yield values range from one percent to 26 percent, with a subbasin average of 13 percent.

4. Water Supply

The annual average of daily water usage by the existing Watson Cogeneration Facility (the existing Watson configuration) for the period 2000 through 2010 in millions of gallons per day (mgd) is summarized in Table Water-1 below. Based on this data, the existing Watson configuration requires an annual average total raw water supply of 4.1 mgd 1 (4,609 acre-feet per year [afy]). The raw water, after suitable treatment, is utilized for makeup supply to the HRSG boilers, cooling tower cells, utility water, and fire water system. All water supplies for the Watson Cogeneration Facility are provided by the BP Refinery. Of the total raw water intake requirements, 2.7 mgd (3,075 afy) is obtained by the BP Refinery from the California Water

[1] The water use rate of the existing Watson configuration fluctuates on a daily basis, but it averages 4.1 mgd.

Services Company and the remaining 1.4 mgd (1,534 afy) is obtained from onsite wells at the BP Refinery.

Table Water-1
Annual Average of Daily Water Usage 2000–2010 (mgd)

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Avg
4.0	4.4	4.5	4.4	4.2	4.3	4.0	4.1	3.8	3.8	3.7	4.1

Source: Watson Cogeneration Steam and Electric Reliability Project Team, 2011.

5. Wastewater

Wastewater streams generated at the existing facility include process wastewater, cooling tower cell blowdown, boiler blowdown, boiler feedwater treatment system, stormwater runoff, and sanitary sewage. The BP Refinery employs three separate wastewater management systems: process (oily) water, clean segregated stormwater, and sanitary wastewater.

The process wastewater from the existing facility flows to the existing oily water treatment system at the BP Refinery where it is commingled with refinery process wastewaters. The treated wastewater is then directed to a holding tank, from which it is released to the Los Angeles County Sanitation Districts (LACSD) joint treatment facility located in the City of Carson. This release to the LACSD facility is regulated by the terms of an industrial waste discharge permit issued by the LACSD. LACSD provides additional treatment of the refinery's wastewater in combination with wastewaters from other sources. The treated effluent from the LACSD facility is directed through an outfall extending offshore into the Pacific Ocean.

The existing clean water system at the BP Refinery is designed to collect only clean stormwater runoff. This system discharges runoff from the Refinery directly to the Dominguez Channel at five points. A portion of this discharge includes commingled runoff from the existing Watson Cogeneration Facility. The discharge is regulated under the terms of an individual NPDES permit issued to the BP Refinery by the California Regional Water Quality Control Board (RWQCB), Los Angeles Region (Order No. R4-2007-0015, NPDES No. CA0000680), and state General Industrial NPDES stormwater permit.

During normal dry weather operation, a valve in the main sewer line near the point of discharge is maintained in the closed and locked position. During storm conditions, the Cogeneration foreman checks the sewer box upstream of this valve to determine the condition of any accumulated water. If the water is clear and clean, the valve to the Dominguez Channel is opened. If the water quality is questionable, a vacuum truck is used to remove water from this sewer box until it is running clean and clear.

C. Project Impacts

1. Water Supply Needs

Water will be used at the Project Site for industrial and potable uses. The primary uses in order of volume of use will be for steam supply to the BP Refinery, cooling tower cell makeup, and CTG fogger.

Under normal operating conditions, on an annual basis the Project's average water requirement will be approximately 2.4 mgd (1,689 gallons per minute [gpm]), and the maximum daily water consumption will be approximately 2.7 mgd (1,849 gpm). The Project will use the existing water supply provided by the BP Refinery with no net increase in use of the combined supply of municipal water and groundwater from the existing annual average baseline of 4.1 mgd for the existing four cogeneration trains. If and when the BP Refinery completes the reclaimed water supply conversion, the Project will utilize reclaimed water provided by the BP Refinery to the extent possible and without limitation.

As summarized in Table Water-2 below, annual water use by the facility may increase by up to 1,718 acre-feet, or 37 percent above the water use without the addition of the fifth train. Current operations at the BP Refinery are constrained by the available steam supply from the existing four units at the Watson Cogeneration Facility. Optimization and enhancement of operations using steam is integral to the continued operations at the BP Refinery. As such, the Project will incorporate heavily fired duct burners in the HRSG to maximize steam production for refinery use. Prior to the availability of reclaimed water supplies, steam production of the existing Watson Cogeneration Facility and the Project will be curtailed as needed to ensure that water consumption does not exceed the combined municipal water and groundwater annual average supply baseline of 4.1 mgd. When available, reclaimed water will be used without limitation to meet the steam requirements of the BP Refinery. The Project will be able to operate at the permitted energy output level (i.e., 85 MW) with the curtailed water use.

Table Water-2
Watson Water Sources and Uses/Wastewater Production

	Average Daily[1] mgd		Maximum Daily mgd		Average Annual acre/feet		Percent Increase from Fifth Train
	Existing Watson Facilities	With Fifth Train	Existing Watson Facilities	With Fifth Train	Existing Watson Facilities	With Fifth Train	
Sources:							
Existing Water Supply[2]	4.11	4.11	5.65	≤7.41	4,609	4,609	
Reclaimed Water	0	1.53	0	≥0	0	1,718	
Total Sources	4.11	5.64	5.65	7.41	4,609	6,327	37%
Uses:							
BFW	2.92	4.06	3.78	4.95	3,274	4,519	
Foggers	0.14	0.14	0.14	0.14	160	194	
Cooling Tower	1.05	1.44	1.73	2.32	1,175	1,614	
Total Uses	**4.11**	**5.64**	**5.65**	**7.41**	**4,609**	**6,327**	**37%**
Wastewater to Sewer	0.81	0.94	1.21	1.41	904	1,054	17%

Source: Kiewit Power Engineers Co., 2008; Watson Cogeneration Steam and Electric Reliability Project Team, 2011.

Notes:

[1]The average daily use is computed by dividing the average annual use by 365 days per year.

[2]Existing water supply = sum of municipal water supply and groundwater supply.

≤ = less than or equal to

≥ = greater than or equal to

BFW = boiler feed water

mgd = million gallons per day

2. Construction Supply

Water supply for the construction of the Project will be provided by existing water systems at the BP Refinery. It is estimated that dust suppression water and other miscellaneous construction uses will require 20,000 gallons per month over a 15-month construction period. During construction the small quantity of potable water (domestic consumption by the Project's construction workforce) will be provided from the existing facility from a bottled water purveyor.

The Project will have no impact on water supply as it will use the existing water supply provided by the BP Refinery with no net increase in the annual use of the combined blend of municipal water and groundwater from the existing baseline of the existing four cogeneration trains. If and when available, the Project will convert the existing primary water supply consisting of municipal and groundwater to nitrified and reverse osmosis reclaimed water supplies that otherwise would be discharged to the ocean and the existing sources of supply will be used as backup.

D. Project Water Treatment

1. Cooling Tower Cell Makeup Water

Two cells will be added to the existing cooling tower cell for the Project. The tower will provide heat rejection for the lube oil coolers connected to the Project's GE 7EA CTG for gas compressor cooling and for generator cooling.

Cooling tower cell makeup water will be provided by second-pass reverse osmosis treatment reject augmented by raw water supplied by the BP Refinery, or nitrified reclaimed water supplies if and when they become available. Makeup is provided to the cooling tower cell basin as required to replace water lost from evaporation, blowdown and drift. This use of internal waste streams for cooling tower cell makeup conserves significant quantities of water, significantly reducing the need for additional makeup supplies.

A chemical feed system supplies water-conditioning chemicals to the circulating water in the cooling tower cell system to minimize corrosion and control the formation of mineral scale and bio-fouling.

2. CTG Inlet Air Foggers Makeup Water

The makeup water to the CTG foggers will be provided by the treated water supply. The makeup water to the CTG foggers will be provided by second-pass reverse osmosis reclaimed water supply if and when this supply becomes available.

E. Wastewater Management

Wastewater streams generated at the existing facility include process wastewater, cooling tower cell blowdown, boiler blowdown, boiler feedwater treatment system, stormwater runoff, and sanitary sewage. The primary source of wastewater will be from cooling tower cell blowdown. The BP Refinery employs three separate wastewater management systems: process (oily) water, clean segregated stormwater, and sanitary wastewater. The Watson Project will use the BP Refinery's oily water treatment system for process wastewater and storm runoff.

The average daily wastewater volume will be approximately 133,920 gallons; the maximum daily wastewater volume will be 198,720 gallons. It is anticipated that the quality of the wastewater from the cooling tower cell system will be unchanged with the two additional cells.

A letter has been provided to Watson by the BP Refinery acknowledging that adequate wastewater treatment capacity is available to support the Project Site operations and that the process wastewater and storm runoff will not prevent the discharge to the LACSD facilities from meeting discharge requirements specified in the BP Refinery's industrial waste discharge permit.

The Project wastewater will be conveyed to the process wastewater treatment system operated by the BP Refinery. This system discharges to the LACSD collection sewer. The LACSD WWTP provides wastewater treatment services for the greater Los Angeles County metropolitan area. Treatment consists of two major steps; primary and secondary treatment, and a process to treat solids removed in the process at the plant. Treated wastewater is discharged to the Pacific Ocean under a NPDES permit issued by the Los Angeles RWQCB. These discharges must comply with the discharge limits established in the NPDES permit and which are protective of all beneficial uses of the receiving water established in the Ocean Plan.

The Project Site will be located within a drivable berm to prevent run-on from adjacent areas and runoff from the Project. Stormwater from the Project Site generation system site will be conveyed by overland flow and swales to a sump located near the center of the site. The runoff collected in the sump will be discharged to the oily water system at the BP Refinery. Runoff from the Project Site will not be discharged to receiving waters.

A construction-phase SWPPP will be prepared prior to construction. This SWPPP will be implemented at the site to control and minimize contamination of stormwater during the construction of the Project. The SWPPP will employ BMPs such as stabilized construction entrances, silt fencing, berms, hay bales, and detention basins to control runoff from all construction areas. The Project will comply with requirements of the Los Angeles County Standard Urban Stormwater Mitigation Plan as applicable.

F. Mitigation

In relation to water resources, mitigation measures for the Project would be applied in situations where the Project has or would have an unmitigated significant impact. The evaluation of water resources impacts considered both the occurrence and the quality of water in the area. For the occurrence of groundwater in the area, the Project will have no significant impact on the depth to water in the aquifer, or water resources in the area as a result of limiting the supply to the existing use and the use of reclaimed water supplies, if and when they become available. Process wastewater and Project Site runoff disposed to the existing oily water disposal system will not impair the ability of the discharge to the sanitary sewer to comply with pretreatment requirements of the WWTP. Thus, no mitigation is required for water resources.

10A.3 Proposed Licensing Conditions

The analysis of the effect of the Project on water resources indicates that the Project will have no significant effect on the water resources in the West Coast Subbasin. Implementation of the following Conditions of Certification will help ensure that the project complies with the LORS as identified in Section 5.5.9, Water Related Laws, Ordinances, Regulations and Standards.

The Staff Assessment included four Conditions of Certification pertaining to erosion control and stormwater management (SOIL&WATER-1 through 4) and SOIL&WATER-6, which pertains to metering water use. The Applicant concurs with these conditions.

The Staff Assessment contained four conditions pertaining to water use and the acquisition of recycled water (SOIL&WATER-5, 7, 8, and 9). The Applicant requested revision of these conditions, as presented in the Applicant's Comments on the Final Staff Assessment, dated September 2011 [Exhibit 20].

Changes to these conditions reflect, in part, Applicant's position that imposition of a freshwater cap at 4,609, representing average use for the period of record, results in the Project having no significant impact on the depth to water in the aquifer, or water resources in the area. Revisions to SOIL&WATER-9 are necessary as the Watson Cogeneration facilities are not the sole steam supply source for the BP Refinery, and the BP Refinery's condensate system contains condensate that did not originate as steam from Watson Cogeneration Facility.

The requested edits are reiterated below in track changes:

SOIL&WATER-5: Total use of raw freshwater by ~~BP Watson~~the Watson Project and the Watson Cogeneration Project (all five trains), including raw groundwater pumped from wells at the BP Refinery and raw potable water supplied by the California Water Services Company, shall not exceed ~~4,219~~4,609 AFY for the life of the project. All water used above the cap of ~~4,219~~4,609 AFY shall be reclaimed water.

Prior to commercial operation of ~~BP Watson~~the Watson Project, the project owner shall install and maintain metering devices as part of the project water supply and distribution system, to monitor and record in gallons per month the total volumes of water supplied to the project from each water source (nitrified reclaimed water, reverse osmosis reclaimed water, raw municipal water, and raw groundwater). The metering devices shall be operational for the life of the project.

The project owner shall prepare an Annual Water Use Summary, which will include the monthly range and monthly average of daily non-potable water usage in gallons per day, and total water used by the project on a monthly and annual basis in acre feet. Potable water use on-site shall be recorded on a monthly basis. For subsequent years, the Annual Water Use Summary shall also include the yearly range and yearly average water use by the project. The annual summary shall be submitted to the Compliance Project Manager (CPM) as part of the annual compliance report.

~~Prior to commencing operation of BP Watson (the fifth train), the project owner shall submit a fully executed agreement between either the project owner or the BP Carson Refinery and the reclaimed water purveyor West Basin Municipal Water District or its successor to provide new reclaimed water, above and beyond that already being supplied to either Watson Cogeneration or the BP Refinery.~~ Prior to using water in excess of the cap, the ~~new~~ reclaimed water supply must be online and plumbed to supply ~~BP Watson~~the Watson Project and the Watson Cogeneration Project (all five trains).

Verification: ~~At least 30 days prior to commencing operation, the project owner shall submit documentation to the CPM of a fully executed agreement between the project owner or BP Carson Refinery and a reclaimed water purveyor to implement a new reclaimed water project to supply the project.~~ At least 30 days prior to commercial operation of ~~BP Watson~~the Watson

Project, the project owner shall submit documentation to the CPM that metering devices for the project have been installed on each water source (raw municipal water and raw groundwater).

At least 30 days prior to the project owner using water in excess of the cap, the project owner shall submit documentation to the CPM indicating that the ~~new~~ reclaimed water supply project is completed and plumbed to deliver reclaimed water to the Watson Cogeneration Project/~~BP Watson Project~~Watson Project. If prior to the project owner using water in excess of the cap, the project owner demonstrates to the CPM's satisfaction that reclaimed water is not available or is not available at a reasonable cost, then the CPM may adjust the freshwater cap on a temporary or permanent basis. At least 30 days prior to delivery of reclaimed water, the project owner shall submit documentation to the CPM that metering devices have been installed on each source or reclaimed water (nitrified reclaimed water and single-pass reverse osmosis reclaimed water).

The project owner shall submit the Water Use Summary to the CPM in the annual compliance report. The summary report shall distinguish between recorded water use of nitrified reclaimed water, reverse osmosis reclaimed water, municipal water, and groundwater. ~~Included in the summary report of water use, the project owner shall submit copies of meter records from the West Basin Municipal Water District documenting the quantities of tertiary treated recycled water provided (in gallons per day) by the West Basin Carson Regional Facility.~~The project owner shall provide a report on the annual servicing, testing, and calibration of the metering devices.

SOIL&WATER-7: At least 30 days prior to the project owner using recycled water~~No later than one year following a fully executed agreement between the project owner or BP Carson Refinery and a reclaimed water purveyor to implement a new reclaimed water project to supply the project~~, the project owner shall submit a Dual Plumbing Plan for utilizing disinfected tertiary treated recycled water for plant process and cooling uses to the California Department of Public Health for review and comment and to the Chief Building Official (CBO) for review and approval. The Dual Plumbing Plan shall be prepared in accordance with Title 17 of the State Water Code. This plan may be consolidated with the Engineer's Report for the Production, Distribution and Use of Recycled Water as specified in **SOIL&WATER-8**. The project owner shall comply with any reporting and inspection requirements set forth by the California Department of Public Health to fulfill statutory requirements.

Verification: At least 30 days prior to the project owner using recycled water~~No later than one year following a fully executed agreement between the project owner or BP Carson Refinery and a reclaimed water purveyor to implement a new reclaimed water project to supply the project~~, the project owner shall submit the Dual Plumbing Plan to the California Department of Public Health and the CBO. The project owner shall submit copies to the CPM of all correspondence between the project owner and the California Department of Public Health related to the Dual Plumbing Plan within 10 days of its receipt or submittal. Copies of correspondence shall include the California Department of Public Health approval of the Dual Plumbing Plan.

SOIL&WATER-8: The project owner shall submit an Engineer's Report for the Production, Distribution and Use of Recycled Water at ~~BP Watson~~the Watson Project to the California Department of Public Health and Los Angeles RWQCB for review and approval. The Engineer's Report for the Production, Distribution and Use of Recycled Water at ~~BP Watson~~the Watson Project shall be prepared in accordance with Titles 17 and 22 of the California Code of Regulations, the Health and Safety Code, and the Water Code. The project shall comply with

any reporting and inspection requirements set forth by the California Department of Public Health and Los Angeles RWQCB.

Verification: At least 30 days prior to the project owner using recycled water~~No later than one year following a fully executed agreement between the project owner or BP Carson Refinery and a reclaimed water purveyor to implement a new reclaimed water project to supply the project~~, the project owner (in conjunction with West Basin Municipal Water District) shall submit an updated Water Recycling Requirements permit from the Los Angeles RWQCB and approval of the Engineer's Report for the Production, Distribution and Use of Recycled Water at ~~BP Watson~~the Watson Project from the California Department of Public Health to the CPM. The project owner shall submit copies to the CPM of all correspondence between the project owner and the California Department of Public Health and/or the Los Angeles RWQCB related to the Water Recycling Requirements permit or the Engineer's Report for the Production, Distribution and Use of Recycled Water at ~~BP Watson~~the Watson Project within 10 days of its receipt or submittal.

SOIL&WATER-9: Water added to the c~~C~~ondensate return to ~~BP Watson~~the Watson Project from Watson Cogeneration or the BP Refinery shall be metered~~from steam supplied from BP Watson or Watson Cogeneration, and shall not be augmented with additional water at Watson Cogeneration or the BP Carson Refinery~~.

Verification: The project owner shall include the recorded use of water added to the condensate return in ~~submit~~ the Water Use Summary that will be prepared and submitted to the CPM per **SOIL&WATER-5**. ~~to the CPM in the annual compliance report. The summary report shall distinguish between recorded water use of nitrified reclaimed water, reverse osmosis reclaimed water, municipal water, condensate return, and groundwater. Included in the summary report of water use, the project owner shall submit copies of meter records from the West Basin Municipal Water District documenting the quantities of tertiary treated recycled water provided (in gallons per day) by the West Basin Carson Regional Facility.~~The project owner shall provide a report on the annual servicing, testing, and calibration of the metering device~~s~~.

10A.4 Correlation to Staff Assessment and Hearing Topics

- Staff Assessment, Section 4.9
- Soil and Water (Water Resources)

10.0 SOIL AND WATER RESOURCES

B. SOIL RESOURCES

10B.1 Introduction

A. Name: Andrea Parker

B. Qualifications: Qualifications of Ms. Parker are as noted in her resume contained in Appendix A.

C. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- AFC dated March 2009 (Volume I, Section 5.4) [Exhibit 1]

10B.2 Summary of Testimony

To the best of my knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are my own. I make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

A. Project Overview

The Watson Project Site is located within the existing BP Refinery property boundary, is highly developed, and has been subject to disturbance for many years.

The Construction Laydown and Parking Area is a paved 25-acre parcel located approximately 1 mile southeast of the Project Site, at the northeast corner of East Sepulveda Boulevard and South Alameda Street. The area is owned by BP and is currently used as a truck parking and staging area.

No off-site improvements associated with the Project, such as water supply, natural gas or wastewater pipelines, are currently planned for the Project. The Project will connect to the existing supply pipelines currently located at the facility.

B. Soils Resources

Two soil-mapping units consisting of four soil series were identified in the Project Area: Hanford, Ramona, Sorrento, and Zamora. In addition to these soil series, Urban Land soils were also identified by the State Soil Geographic Database.

The native soils present at the Project Site consist of Zamora and Ramona series soils and Urban Land soils; however, most soils in the Project Area consist of fill material with native soils below the fill. There are no major limitations and few overall limitations for these soils. Permeability of Zamora series soils is moderately slow with slow to medium runoff rates. Permeability of Ramona series soils is moderately slow with slow to rapid runoff rates. Since the Project Site is relatively flat, the hazard of water erosion for these soils is slight. Before Project construction activities are started, a site-specific geotechnical investigation will be performed at the Project Site. Appendix L, Geotechnical Report, contains a site-specific geotechnical investigation that was performed at the site in 1986, before the construction of the Watson Cogeneration Facility.

C. Agriculture and Prime Farmland

The Project Site is in a portion of Los Angeles County designated as "Urban and Built-Up Land," which is defined as land occupied by structures with a building density of at least 1 unit to 1.5 acres, or approximately six structures per 10-acre parcel. The State of California Department of Conservation's FMMP does not identify any important farmlands in the Project Area (California Department of Conservation 2002). The Natural Resources Conservation Service (NRCS) also confirmed that no important farmlands exist in the Project Area (NRCS 2007a). The Project is consistent with existing land use zoning and does not convert farmland to non-agricultural uses.

D. Construction-Related Effect

The total acreage to be disturbed during Project construction will be approximately 2.5 acres**.** No land disturbance will be necessary for the Construction Laydown and Parking Area, as it is an existing paved lot. Also, no land disturbance will be necessary for any off-site linear facilities.

The use of erosion control BMPs to control water and wind erosion during construction activities and the placement of impervious surfaces on and/or the implementation of BMPs for disturbed areas within the Project Site will effectively control soil loss during and after construction. Consequently, quantitative calculations of potential soil loss using the Universal Soil Loss and Chepil Wind Erosion Equations, which are typically used to quantify water- and wind-induced soil loss for agricultural operations, were not considered appropriate for the Project. The potential effects of the Project on soil resources can be divided into those related to Project construction and those related to Project operation.

10B.3 Proposed Licensing Conditions

The Staff Assessment did not include any recommended Conditions of Certification that specifically pertained to soil without also pertaining to water. The Applicant concurs with the Staff Assessment.

10B.4 Correlation to Staff Assessment and Hearing Topics

- Staff Assessment, Section 4.9
- Soil and Water (Soil Resources)

11.0 TRAFFIC AND TRANSPORTATION

11.1 Introduction

A. Name: Noel Casil, PE, TE, PTOE

B. Qualifications: Qualifications of Mr. Casil are as noted in her resume contained in Appendix A.

C. Purpose: This testimony addresses traffic and transportation issues associated with the Watson Project.

D. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- AFC dated March 2009 (Volume I, Section 5.11; Volume II, Appendix T) [Exhibit 1]
- Supplement in Response to CEC Data Adequacy Review, dated June 2009 (Traffic and Transportation Data Adequacy Worksheet) [Exhibit 2]
- Comments on the Preliminary Staff Assessment, dated January 2011 (Comment 4.10) [Exhibit 16]

11.2 Summary of Testimony

All the facts contained in this testimony are accurate and true to the best of my knowledge. I make this statement freely and under oath for the purpose of constituting sworn testimony in this proceeding.

A. Affected Environment

The Project Site is a 2.5-acre brown field site located within the boundary of the existing Watson Cogeneration Facility, which is a 21.7-acre area within the a 428-acre parcel further described as APN 7315-006-003, 1801 Sepulveda Boulevard, Carson, California, 90745 and is integral to BP's existing Carson Refinery (BP Refinery). The street address of the Project Site is located within the boundary of the existing Watson Cogeneration Facility at 22850 South Wilmington Avenue, Carson, California. The Project Site is located approximately 0.7 mile south of the 405 Freeway, roughly bounded by Wilmington Avenue to the west, East Sepulveda Boulevard to the south, and South Alameda Street to the east.

B. 2011 Construction Impact

The Project construction schedule is 26 months. The average construction workforce will be about 41 workers over this period. However, during month 12 of construction (the peak month), the construction workforce may reach up to 80 workers.

The 2011 No-Project baseline traffic volume projections were developed in consultation with City of Carson staff through the application of an ambient growth factor to existing traffic volume, to account for background traffic growth and traffic generated by pending development projects that would potentially occur by 2011. The 1 percent ambient growth rate used in this study is consistent with the growth assumptions used in recent studies within the City.

For the purposes of this analysis, month 12 of the 26-month Project construction schedule was used to conduct the construction traffic effect analysis for the Project. This assumption presents the worst-case scenario and the most conservative estimate of Project construction traffic.

Typically, construction work starts before the 7:00 a.m. to 9:00 a.m. peak-hour traffic and ends before the 4:00 p.m. to 6:00 p.m. peak-hour traffic on the streets adjacent to the Project Site. However, for the purposes of the traffic effect analysis, it was conservatively assumed that the Project construction workers would commute to work within the 7:00 a.m. to 9:00 a.m. and from work within the 4:00 p.m. to 6:00 p.m. peak hours. Also, it was assumed that all construction workers would commute alone to work.

In addition to the construction workforce trips, construction equipment deliveries and construction-related truck traffic will contribute additional trips during Project construction. Truck and heavy equipment traffic were estimated using a passenger car equivalent factor of three cars per truck.

Table Traffic-1 presents the peak Project construction trip generation estimates for the Project.

Table Traffic-1
Peak Project Construction Trip Generation

	Daily Trips	A.M. Peak-Hour Trips		P.M. Peak-Hour Trips	
		In	Out	In	Out
Construction worker vehicles[1]	160	80	0	0	80
Construction worker buses[2]	36	9	9	9	9
Delivery vehicles (truck/van)[3]	42	21	0	0	21
Delivery vehicles (heavy truck)[3]	42	21	0	0	21
Total trips	**280**	**131**	**9**	**9**	**131**

Source: Watson Cogeneration Steam and Electric Reliability Project Team, 2008.

Notes:

[1] Peak workforce was conservatively analyzed at 80 worker trips driving alone. During the peak hours of the peak month of construction, 100 percent of workers are projected to commute during the morning and evening peak hours.

[2] Three buses are assumed to transport workers from off-site parking to the Project Site, and this value is adjusted into Passenger Car Equivalent (1 bus = 3 PCE) vehicles in the traffic effects analysis.

[3] Delivery vehicles were adjusted into Passenger Car Equivalent (1 heavy vehicle = 3 PCE) vehicles in the traffic effects analysis. Peak construction delivery trips were conservatively analyzed. During the peak month of construction, 100 percent of delivery trucks are projected to commute during the morning and evening peak hours.

A.M. = morning
P.M. = evening
PCE = passenger car equivalent

Consistent with the City of Carson Traffic Impact Analysis Guidelines, the 2011 No-Project Conditions serve as the baseline conditions in the evaluation of Project construction traffic effects. The 2011 No-Project Conditions baseline traffic volume projections were developed through the application of an ambient growth factor to existing traffic volume to account for background traffic growth and traffic generated by pending development projects that could potentially occur by 2011.

By 2011, the following cumulative projects are assumed to be completed and any applicable roadway and intersection improvements have been incorporated in the 2011 baseline conditions.

1. The 405 Freeway at Wilmington Avenue Improvement Project (directly north of the Project Site).

2. East 223rd Street ("Auto Row") Capital Improvement Project (directly north of the Project Site).

Improvements at the intersection of Wilmington Avenue and 223rd Street were also accounted for during this analysis period.

Table Traffic-2 summarizes the results of the 2011 No-Project Conditions roadway segment analysis. As shown, all of the study roadway segments are forecast to operate at an acceptable LOS D or better under 2011 No-Project Conditions.

Table Traffic-2
Roadway Segment LOS – No-Project Conditions (2011)

Roadway	Segment	Average Daily Traffic	A.M. Peak Hour	A.M. Peak Hour V/C Ratio	A.M. Peak Hour LOS	P.M. Peak Hour	P.M. Peak Hour V/C Ratio	P.M. Peak Hour LOS
405 Freeway	Between Alameda Street and Wilmington Avenue	302,820	7140/7386	31.9/33.9 Density (pc/mi/ln)	D/D	7260/6263 Density (pc/mi/ln)	32.8/26.4	D/D
East 223rd Street	Between Alameda Street and Wilmington Avenue	17,955	641/502	0.43/0.33	A/A	1229/681	0.82/0.45	D/A
Alameda Avenue	Between 223rd Street and Sepulveda Boulevard	23,870	777/750	0.35/0.33	A/A	1347/871	0.60/0.39	A/A
Wilmington Avenue	Between 223rd Street and Sepulveda Boulevard	21,525	758/663	0.51/0.44	A/A	741/865	0.49/0.58	A/A
East Sepulveda Boulevard	Between Alameda Street and Wilmington Avenue	18,200	624/685	0.42/0.46	A/A	709/627	0.47/0.42	A/A

Source: Watson Cogeneration Steam and Electric Reliability Project Team, 2008.
Notes:
A.M. = morning
LOS = level of service
P.M. = evening
pc/mi/ln = passenger car per mile per lane
V/C = volume-to-capacity

Table Traffic-3 displays the intersection LOS and V/C ratios under 2011 Peak No-Project Conditions. As shown, all study intersections are forecast to operate at LOS B or better with the exception of the intersection of 223rd Street and Wilmington Avenue, which is forecast to operate at LOS E during the p.m. peak hours.

Table Traffic-3
Peak-Hour Intersection LOS – No-Project Conditions (2011)

Intersection	A.M. Peak Hour		P.M. Peak Hour	
	V/C Ratio	LOS	V/C Ratio	LOS
1. 223rd Street/405 Freeway southbound on-/off-ramps	0.46	A	0.5	A
2. 223rd Street/Wilmington Avenue	0.67	B	0.91	E
3. Wilmington Avenue/Sepulveda Boulevard	0.65	B	0.64	B
4. Sepulveda Boulevard/Alameda Street ramp	0.56	A	0.57	A
5. Alameda Street/Sepulveda Boulevard ramp	0.51	A	0.56	A
6. Alameda Street/223rd Street connector	0.42	A	0.61	B
7. Alameda Street/405 Freeway northbound ramp	0.55	A	0.69	B

Source: Watson Cogeneration Steam and Electric Reliability Project Team, 2008.
Notes:
A.M. = morning
LOS = level of service
P.M. = evening
V/C = volume-to-capacity

Table Traffic-4 displays the directional LOS analysis results for the study area roadway segments for 2011 with Peak Project Construction Conditions. As shown, all of the study roadway segments are forecast to operate at an acceptable LOS D or better under 2011 Peak Project Construction Conditions.

Table Traffic-4
Roadway Segment LOS – Peak
Project Construction Conditions (2011)

Roadway	Segment	Average Daily Traffic	A.M. Peak Hour	A.M. Peak Hour V/C Ratios	A.M. Peak Hour LOS	P.M. Peak Hour	P.M. Peak Hour V/C Ratios	PM Peak Hour LOS
405 Freeway	Between Alameda Street and Wilmington Avenue	302,920	7157/7418	32.1/34.1 Density (pc/mi/ln)	D/D	7292/6280	33.1/26.5 Density (pc/mi/ln)	D/D
223rd Street	Between Alameda Street and Wilmington Avenue	17,970	645/505	0.43/0.34	A/A	1232/685	0.82/0.46	D/A
Alameda Avenue	Between 223rd Street and Sepulveda Boulevard	24,015	793/823	0.35/0.37	A/A	1420/887	0.63/0.39	B/A
Wilmington Avenue	Between 223rd Street and Sepulveda Boulevard	21,610	770/674	0.51/0.45	A/A	752/877	0.50/0.58	A/A

Table Traffic-4
Roadway Segment LOS – Peak
Project Construction Conditions (2011)

Roadway	Segment	Average Daily Traffic	A.M. Peak Hour	A.M. Peak Hour V/C Ratios	A.M. Peak Hour LOS	P.M. Peak Hour	P.M. Peak Hour V/C Ratios	PM Peak Hour LOS
East Sepulveda Boulevard	Between Alameda Street and Wilmington Avenue	18,250	637/695	0.42/0.46	A/A	719/640	0.48/0.43	A/A

Source: Watson Cogeneration Steam and Electric Reliability Project Team, 2008.
Notes:
A.M. = morning
LOS = level of service
P.M. = evening
pc/mi/ln = passenger car per mile per lane
V/C = volume-to-capacity

Table Traffic-5 displays the intersection LOS and V/C ratio results under for 2011 with Peak Project Construction Conditions. As shown, all study intersections are forecast to operate at LOS B or better with the exception of the intersection of 223rd Street and Wilmington Avenue, which is forecast to operate at LOS E during the p.m. peak hour.

Table Traffic-5
Peak-Hour Intersection LOS – Peak
Project Construction Conditions (2011)

Intersection	A.M. Peak Hour		P.M. Peak Hour	
	V/C Ratio	LOS	V/C Ratio	LOS
1. 223rd Street/405 Freeway southbound on-/off-ramps	0.48	A	0.51	A
2. 223rd Street/Wilmington Avenue	0.67	B	0.93	E
3. Wilmington Avenue/Sepulveda Boulevard	0.66	B	0.65	B
4. Sepulveda Boulevard/Alameda Street ramp	0.57	A	0.58	A
5. Alameda Street/Sepulveda Boulevard ramp	0.52	A	0.57	A
6. Alameda Street/223rd Street connector	0.45	A	0.62	B
7. Alameda Street/405 Freeway northbound ramp	0.57	A	0.69	B

Source: Watson Cogeneration Steam and Electric Reliability Project Team, 2008.
Notes:
A.M. = morning
LOS = level of service
P.M. = evening
V/C = volume-to-capacity

A comparison of the results of the traffic analysis for 2011 conditions with the City of Carson's criteria of significance for traffic effects indicates that no Project study area roadway segments or intersections would be significantly affected during the peak Project construction activity in 2011.

C. 2012 Operation Impact

No additional manpower will be needed for Project operation. The current workforce for the Watson Cogeneration Facility will operate the Project without addition of new staff. No further analysis of traffic effects from Project operation is warranted because Project operation will not change the number of worker trips.

D. Cumulative Project Impact

Based on information provided by City of Carson staff, the Project's construction and operational traffic would not coincide with any potential future development project (i.e., large scale industrial, commercial or office uses) within the Project study area, so its contribution to cumulative traffic effects during construction would not be cumulatively considerable, and cumulative effects of the Project would therefore be less than significant.

The two capital improvement projects described in Section I, 2011 Construction Impact, will not contribute to any new or long term cumulative traffic effects, but rather, will improve the roadway and operational performance of the improved and upgraded roadway and intersection facilities.

Additional nearby projects are either short-term or expansion projects that would generate minimal trips during operations. The intermodal container facility expansion will increase truck traffic.

The results of the traffic analysis for this Project showed that the Project's construction and operational traffic combined with future ambient traffic growth only, would not be cumulatively considerable, and cumulative effects of the Project would therefore be less than significant.

Based on the above findings, it is anticipated that the Project will not result in cumulative construction and operational Project effects.

E. Mitigation

1. Project Construction

The results of the Project construction traffic analysis showed that no study intersection will be significantly affected during peak Project construction activities in 2011.

Watson will provide, where warranted and required, the following mitigations either as part of the construction activity requirements, or as proactive measures to minimize construction-related trip making and the resultant increases in traffic in the surrounding roadway circulation system. Some proposed mitigation measures may require monitoring to maintain their effectiveness.

TRA-1: Construction Traffic Route

During Project construction, the Applicant will designate a construction worker, equipment, and material delivery/haul route from their points of origin to Alameda Avenue and toward the off-site Construction Laydown and Parking Area. Construction workers will be shuttled to and from the off-site parking area to the Project Site. Construction materials and equipment will be transported as needed from the Construction Laydown and Parking Area to minimize crowding and traffic at the Project Site.

TRA-2: Traffic Control Plan

If required, the Applicant will prepare a traffic and transportation control plan in coordination with the City of Carson and the California Department of Transportation (Caltrans) to address potential short-term construction traffic activities on city or state rights-of-way. The Applicant will secure all required permits needed for work on city and state roadways and intersections before the start of Project construction.

2. Project Operation

Project operation will not have any effects on traffic or transportation. Therefore, no mitigation measures are proposed.

11.3 Proposed Licensing Conditions

The Staff Assessment includes three Conditions of Certification. The Applicant concurs with these conditions.

11.4 Correlation to Staff Assessment and Hearing Topics

- Staff Assessment, Section 4.10
- Traffic and Transportation

12.0 TRANSMISSION LINE SAFETY AND NUISANCE

12.1 Introduction

A. Name: Stephen Garrett

B. Qualifications: The qualifications of the team members listed above are as presented in their resumes contained in Appendix A.

C. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- AFC dated March 2009 (Volume I, Section 3) [Exhibit 1]

12.2 Summary of Testimony

To the best of my knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are my own. I make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

A. Power Transmission

Watson proposes to transmit the power from the proposed Watson Project to SCE's 230kV transmission grid through the existing 1.6-mile overhead 230kV transmission line. No new off-site overhead transmission lines would be built as the existing line would be adequate for transmitting the additional power from the proposed Watson Project.

B. Audible Noise and Radio and TV Interference

Corona may result in the production of audible noise from a transmission line and typically becomes a design concern for transmission lines having voltages of 345kV and above. It is therefore, not generally expected at significant levels from lines of less than 345kV as proposed to be used for the Watson Project.

Radio and TV interference, known as gap-type noise, is caused by a film on the surface of two hardware pieces that are in contact. This results in small electric arcs that produce noise and interference. The existing 230kV line is presently operated and maintained according to SCE's guidelines which comply with existing health and safety LORS on radio-frequency interference.

C. Electromagnetic Fields

Since the existing transmission line would be used without upgrade or change in applied voltage, the existing environmental impacts of the facility's electric fields would remain the same when the proposed Watson Project is operating.

D. Aviation Safety

The existing 230kV line to be used for the proposed Watson Project is an existing SCE line sited according to SCE guidelines on aviation safety as required by current LORS.

E. Fire Hazards

Standard fire prevention and suppression measures will continue to be implemented on the existing 1.6-mile overhead line.

F. Hazardous Shocks

The existing 230kV line was designed, erected, and is currently operated according to the required SCE guidelines for preventing shock hazards.

G. Mitigation Measures

No significant transmission line-related impacts will occur as a result of the construction and operation of the Watson Project. No additional mitigation is required for this area.

12.3 Proposed Licensing Conditions

The Staff Assessment for the project recommends two Conditions of Certification to address transmission line safety and nuisance issues. The Applicant concurs with these conditions.

12.4 Correlation to Staff Assessment and Hearing Topics

- Staff Assessment, Section 4.11
- Transmission Line Safety and Nuisance

13.0 VISUAL RESOURCES

13.1 Introduction

A. Name: Brian Madigan and Angela Leiba

B. Qualifications: The qualifications of the team members listed above are as noted in their resumes contained in Appendix A.

C. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- AFC dated March 2009 (Volume I, Section 5.13) [Exhibit 1]
- Supplement in Response to CEC Data Adequacy Review, dated June 2009 (Visual Resources Data Adequacy Worksheet and Appendix E) [Exhibit 2]
- Remainder of Responses to CEC Data Requests #1-39, dated October 2009 (Responses 33 and 34) [Exhibit 5]
- Comments on the Preliminary Staff Assessment, dated January 2011 (Comment 4.12) [Exhibit 16]

13.2 Summary of Testimony

To the best of our knowledge, all of the facts contained in this testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are our own. We make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

A. Regional Setting

The proposed project is located in the southeast corner of the City of Carson (City), in Los Angeles County, California. The project would be located within the regional landscape province of the Los Angeles Basin: an elongated topographic depression consisting of a fairly flat coastal plain that stretches roughly 35 miles north to south, and 15 miles east to west. The basin is bounded by the Santa Monica and San Gabriel Mountains to the north, the Santa Ana Mountains to the east and south, and the Palos Verdes Peninsula to the west. The area experiences Mediterranean-type weather with cool, somewhat rainy winters, and warm, dry summers with ocean breezes and fog from the west predominating. Precipitation flows south across the plain in fixed concrete channels to the Pacific Ocean at Long Beach.

The City of Carson lies at the southern end of the Los Angeles Basin, surrounded by the cities of Torrance, Compton, Lakewood and Long Beach. The City is relatively flat with elevations ranging from sea level to 195 feet amsl (City of Carson 2002). Most of the City (83%) is developed, with the vast majority (54%) consisting of industrial land uses, followed by residential (roughly 30%) and commercial (6%) (City of Carson, 2004). There are no natural open space areas within the city. Open space in the city consists of parks, play fields, golf courses, and the open space associated with utility corridors, drainages, flood control projects and street medians. The Los Angeles River and the Dominguez Canal flow through the city in

concrete channels. The Dominguez Channel bisects the BP Refinery just to the east of the Watson Cogeneration Facility and is not open to the public (City of Carson 2002).

B. Project Location

The project consists of a 2.5-acre site, and a 25-acre off-site construction parking and laydown area. The project site is a brown field, located within the boundary of the existing 21.7-acre Facility, within the 428-acre parcel for the refinery. The project site is located at 22850 South Wilmington Avenue, Carson, California. Access to the site is via an entrance road on Wilmington Avenue, approximately 0.7 mile south of the 405 Freeway. The Facility is completely surrounded by the refinery and is bounded by Wilmington Avenue to the west, 223rd Street to the north, South Alameda Street to the east, and East Sepulveda Boulevard to the south. No off-site improvements are currently planned for the Watson Project. Both the Facility and the refinery are zoned for heavy manufacturing.

The refinery dominates the project area landscape. Numerous exhaust stacks, piping, railings, vapor plumes, cooling towers, siren posts, and high voltage transmission lines and towers protrude into the sky above the refinery grounds. The interior is devoid of trees and dominated by industrial structures, equipment, machines, and paved surfaces. There are some clusters of trees and shrubs around the perimeter of the site. Storage tanks rise above chain link and barbed wire fencing and walls that surround the refinery site. The refinery is seen from the 405 Freeway and the streets that surround it. The Facility, within the refinery, cannot be seen from the 405 Freeway, or the streets that surround the refinery, except for Wilmington Avenue. The Facility can be seen from Wilmington Avenue but is not readily noticeable due to the small scale of the cogeneration equipment (trains and cooling towers) compared to the Refinery.

Streets bordering the refinery, Wilmington Avenue, Alameda Street, Sepulveda Boulevard, and 223rd Street, support well-maintained landscaped medians and shoulders with trees and plants. These streets have four lanes of traffic with turn lanes and medians. Most of these streets support relatively large volumes of truck and vehicular traffic. The City of Carson maintains all landscaping in the public right-of-way, including all center medians.

On Wilmington Avenue, west of the refinery and across from the entrance to the Facility, is "Watson Center" a multiple-block, light-industrial, commercial office complex that supports landscape plantings, including green lawn areas, flower beds, and mature palm and other trees. To the north on 223rd Street and the 405 Freeway, there is a coffee shop, light-industrial office complex, car dealerships, gas stations, quick marts and fast food restaurants. The nearest residential area is 0.6 miles northwest of the Facility at the intersection of 223rd Street and Lucerne Avenue. To the east and south of the refinery are Alameda Street and Sepulveda Boulevard, respectively, beyond which are other industrial land uses. To the southeast, at the intersection of Sepulveda Boulevard and Wilmington Avenue, is the nearest residential area (0.8 mile).

C. Project Facilities

The existing facility has four GE 7EA CTGs, four HRSGs and two steam turbine generators. The project would add a fifth CTG with a single-pressure HRSG to the existing configuration. The new CTG would also be a GE 7EA, which would add a nominal 85 MW to the existing facility. The HRSG would be equipped with a supplementary duct burner with up to 447.9 MMBtu/hr heat input.

The most visually prominent feature of the Project would be the 100-foot high HRSG. All other facilities would be 50 feet and shorter. The new HRSG, pipe racks and cooling towers would replicate the existing on-site structures in their dimensions, colors and textures. The two cooling tower cells would be added to each end of the existing row of seven cooling tower cells. Both the HRSG and exhaust stack and the cooling towers would be constructed out of non-reflective materials. The existing maintenance shop would be demolished and a new one constructed to the west of the control building, which would be painted white. The new 69kV GIS would be constructed in an existing parking lot adjacent to the existing office building and surrounded with unpainted masonry walls. Two new 230kV/69kV transformers would be surrounded by tan metal walls located in an existing parking lot northwest of the control building, and across the parking lot from two existing transformers.

D. Project Cooling

For project cooling the applicant has proposed an addition of two new cells to the existing mechanical draft seven-cell cooling tower. The cooling tower is a linear design, oriented in a north to south direction, and a new cell will be added to each end of the cooling tower. The applicant has not proposed to use any methods to abate visible plumes from the cooling tower, which is discussed in greater depth in the Project Impact section below.

E. Project Construction

Construction would begin with demolition or removal of existing above and underground structures: warehouse, foundations, piping systems, and maintenance access roads. Foundation excavations would occur for the HRSG, CTG, transformers and other heavy equipment and would require removal and stockpiling of approximately 7,000 cubic yards of fill material.

Mobile trailers and suitable facilities would be used as construction offices where applicable. A variety of construction equipment would be required: however, no cranes or other equipment that could protrude into the sky are proposed (Watson 2009a).

F. Plant Night Lighting

The existing lighting system would be expanded to cover the new equipment areas at the HRSG and cooling tower platforms and walkways, the transformer and GIS, and along new roads associated with the new facilities. Lighting would be designed and installed to minimize light emissions by shielding light sources, while meeting Occupational Safety and Health Administration lighting standards.

G. Landscaping

The AFC does not propose landscaping as the project since is internally located within the refinery. It should also be noted there is no landscaping at the entrance road.

H. Off-Site Construction

Existing water, sewer and gas utilities will connect to the project. Therefore, the project does not include any new off-site facilities. During construction, a paved 25-acre parcel located approximately one mile southeast of the Watson Project site at 219 East Sepulveda Boulevard, near the northeast corner of East Sepulveda Boulevard and South Alameda Street, will be used for construction parking and laydown of equipment and supplies. The parcel is part of the

refinery and is currently used as a truck parking and staging area for the refinery. During the 26 months of project construction, the parking and laydown site will be used for construction-worker parking and storage of equipment and supplies.

I. Impact of the Project

An impact of the project as portrayed from one Key Observation Point (KOP) is summarized below.

We agree with Staff that the proposed Watson Project would not be viewed from any sensitive viewing areas. Following this logic, we also agree that an assessment from at least one KOP (as provided in the AFC) conveys an adequate assessment of the potential visual impacts resulting from the Project. In turn, the visual assessment of impacts created by the project as simulated from this KOP were assessed according to the CEQA Thresholds of Significance Criteria (Appendix G). The following offers an analysis of the potential visual impacts associated with the project as viewed from KOP 1.

The effective viewshed associated with the project is extremely limited and centers around the Wilmington Avenue travel corridor (sidewalk and roadway), in the vicinity of East Watson Center Road. Since the Watson Project site is nearly surrounded by the existing Watson Cogeneration Facility and the Refinery, views of the site from other directions are not available.

As shown from the KOP analysis, the Project will have a low degree of visual effect due to the highly modified viewshed that currently exists in the immediate Project vicinity (presence of existing cogeneration stacks, industrial facilities, commercial development, and other cultural modifications). The analysis also shows that the addition of a fifth stack to the existing four stacks at the Watson Cogeneration Facility is expected to be virtually undetectable in a landscape already filled with industrial stacks and other features

In terms of impacts resulting from lighting associated with the project, we agree with Staff and believe the additional lighting mitigation measures required by staff will reduce off-site light impacts by preventing direct illumination of the night sky and direct light trespass. We also agree with Staff that the Watson Project construction activities would result in less-than-significant visual effects due to the location of the project site within the refinery. Furthermore the industrial and commercial land uses that surround the refinery, and the over half-mile distance from the nearest residential area also indicate that the project would result in less-than-significant impacts.

We agree with Staff that with implementation of Staff recommended conditions of certification, aesthetic, light and glare impacts from the project should be implemented and that potential cumulative impacts of the project would be less-than-significant.

J. Visible Plume Modeling Analysis

The Combustion Stack Visible Plume model was used to estimate the worst-case potential plume frequency for the new gas turbine/HRSG stack proposed. Visible water vapor plumes from the proposed 9-cell cooling tower, which is comprised of an existing 7-cell cooling tower with two cells added for this project, are predicted to occur less than 20 % of seasonal daylight clear hours. Therefore, no further visual impact analysis of the predicted gas turbine/HRSG exhaust plumes has been completed. However, it is predicted that when plumes do form the additional two cells would increase the visible plume dimensions.

A ground fogging plume analysis was also prepared and indicates that the cooling tower will not create ground fogging plumes that could reach area roads. Therefore, there would be no impact on ground traffic safety.

We agree with Staff, and the findings of the AFC, that no visible water vapor plumes will occur under normal weather conditions. Accordingly, we also agree that no further visual impact analysis of possible plumes is required.

13.3 Proposed Licensing Conditions

Staff recommends four conditions of certification for the project. The Applicant concurs with these conditions.

13.4 Correlation to Staff Assessment and Hearing Topics

- Staff Assessment Section 4.12
- Visual Resources

14.0 WASTE MANAGEMENT

14.1 Introduction

A. Name: Tricia Winterbauer and David Bernal

B. Qualifications: The qualifications of the team members listed above are as noted in their resumes contained in Appendix A.

C. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- AFC dated March 2009 (Volume I, Section 5.14; Volume II, Appendix A) [Exhibit 1]
- Responses to CEC Data Requests #1-39, dated September 2009 (Responses 35, 36, and 38) [Exhibit 3]
- Remainder of Responses to CEC Data Requests #1-39, dated October 2009 (Responses 37 and 39) [Exhibit 5]
- Response to Questions from CEC Staff, dated June 2010 (Waste Management and Appendix A) [Exhibit 15]
- Comments on the Preliminary Staff Assessment, dated January 2011 (Comment 4.13) [Exhibit 16]
- Responses to June 15, 2011 CEC Data Requests, dated July 2011 (Responses 13 through 15 and Appendix A) [Exhibit 18]
- Responses to June 30, 2011 Los Angeles RWQCB Response to CEC Participation Request, dated July 2011 [Exhibit 19]
- Comments on the Final Staff Assessment, dated September 2011 [Exhibit 20]

14.2 Summary of Testimony

All the facts contained in this testimony are accurate and true to the best of our knowledge. To the extent this testimony contains opinions, such opinions are our own. We make this statement freely and under oath for the purpose of constituting sworn testimony in this proceeding.

A. Affected Environment

The Project Site is a 2.5-acre brown field site located within the boundary of the existing Watson Cogeneration Facility, which is a 21.7-acre area within the a 428-acre parcel further described as APN 7315-006-003, 1801 Sepulveda Boulevard, Carson, California, 90745 and is integral to BP's existing Carson Refinery (BP Refinery). The street address of the Project Site is located within the boundary of the existing Watson Cogeneration Facility at 22850 South Wilmington Avenue, Carson, California. An existing warehouse/maintenance shop on a portion of the site will be removed as part of the Project. A new warehouse/shop will be constructed at an alternate location on refinery property. The Project Site is located approximately 0.7 mile south of the 405 Freeway, roughly bounded by Wilmington Avenue to the west, East Sepulveda Boulevard to the south, and South Alameda Street to the east.

The Construction Laydown and Parking Area is a paved 25-acre parcel located approximately 1 mile southeast of the Project Site, at the northeast corner of East Sepulveda Boulevard and South Alameda Street. The area is owned by BP and is currently used as a truck parking and staging area.

No off-site improvements associated with the Project, such as water supply, natural gas or wastewater pipelines, are currently planned for the Project. The Project will connect to the existing supply pipelines currently located at the facility.

A Phase I Environmental Site Assessment (ESA) has been prepared for the Project Site in accordance with American Society for Testing and Materials Practice E 1527-05. The objective of the Phase I ESA was to identify Recognized Environmental Conditions (RECs) that may exist on the Project Site. A site reconnaissance was conducted on July 10, 2008. The Phase I ESA identified RECs on the Project Site. Areas of potential subsurface impacts were reported to be associated with current and historical refinery and maintenance operations. Prior to the property's use as a maintenance area, the property was developed with a refinery retention basin. In addition, there are known and potential subsurface impacts associated with current Watson Cogeneration Facility and historic refinery operations. A limited soil investigation was conducted on the property on February 8, 1985. According to the report, evidence of hydrocarbons was encountered in several borings within the fill soils and underlying natural soils. Additional assessment to determine the type and quantity of hydrocarbons present were not performed. Contaminants of concern were reported to be hazardous substances used in petroleum operations. See Appendix A, Phase I ESA, for more detail.

The Project will generate hazardous and non-hazardous wastes typical of a cogeneration power plant during the construction and operation of the Project.

B. Summary of Waste Disposal

Non-hazardous waste generated at the Project will be handled in accordance with applicable regulations and the practices and procedures that the refinery and Watson currently follow for the existing facility. Where applicable, the on-site hazardous waste transporter will take the hazardous waste generated at the Project Site off-site for recycling or disposal. These activities will be conducted in accordance with applicable regulations and current practices and procedures. Non-hazardous and hazardous will be disposed of at applicable solid waste disposal facilities identified in AFC Table 5.14-1, Waste Recycling/Disposal Facilities.

C. Construction Impacts

The Project will generate wastes typical of the demolition of light industrial structures and the construction of a cogeneration power facility. AFC Table 5.14-2, Summary of Construction Waste Streams and Management Methods, summarizes the anticipated waste streams generated during demolition and construction, along with appropriate management methods for treatment or disposal.

Typical wastes produced during construction activities include packing materials and dunnage and surplus excavated materials.

Inert solid wastes resulting from construction activities may include recyclable items such as concrete, glass, insulation, lumber, metals, dunnage, palettes, excess materials trimmed from standard dimension materials (whether wood, metal, wire, or other basic building materials),

concrete spoils, temporary weather covers, consumable abrasive and cutting tools, broken tools, parts and electrical and electronic components, construction equipment maintenance materials, empty containers, paper, plastic and foam packing materials, strapping, wrappers, food/beverage containers, office materials, office product packaging, waste paper, and other solid wastes, including the typical refuse generated by workers. Non-recyclable items include oily rags and oil absorbent mats, packing materials, food waste, and other construction wastes which will be handled according to the BP Refinery and Watson practices.

Typical wastes from demolition activities include roof and steel siding, insulation, guttering, garage doors, foundation cement and rebar, glass, scrap metal and metal doors, fence posts, lighting, wiring, wood products, and miscellaneous wastes. The Project will reuse structural support and steel, electrical conduits, copper piping, electrical wiring and fixtures, internal ducting, and fencing.

When managed and disposed of properly, these wastes will not cause significant environmental or health and safety effects. Most of the non-hazardous waste generated during demolition and construction can be recycled. The quantities of non-hazardous waste that cannot be recycled are not expected to significantly impact the capacity of the Class III landfills in California.

Small quantities of hazardous wastes will likely be generated over the course of construction. These wastes may include adhesives, used alkaline batteries, used antifreeze, CTG cleaning waste, empty hazardous material containers, used lead-acid batteries, lube oil from combustion turbine lube oil flushes, used motor oil, transmission fluid and hydraulic fluid, oil absorbent mats, oil absorbents, oily waste, used grease, aerosol can waste, sanitary waste, solvents, waste paint, welding rods, and wood preservatives. Hazardous wastes generated during Project construction will be handled and disposed of in accordance with applicable LORS. Hazardous wastes will be either recycled or disposed of, as appropriate, at a licensed Class I disposal facility.

When managed and disposed of properly, these wastes will not cause significant environmental or health and safety effects. Most of the hazardous waste generated during construction, such as used oil, can be recycled. The small quantities of hazardous waste that cannot be recycled are not expected to significantly impact the capacity of the Class I landfills in California.

The wastewater generated during Project construction will include sanitary wastes, equipment wash water, and stormwater runoff. Sanitary wastes, equipment wash water, and stormwater runoff will be managed and disposed of appropriately. Construction-related wastewater will be managed according to appropriate LORS.

A Construction SWPPP will be prepared so that storm water discharges from construction activities are subject to BMPs. If one acre of more of soil will be disturbed for the construction site, a Notice of Intent will be submitted for the Construction Stormwater Permit. Any required monitoring and storm water discharges that may occur will be in compliance with applicable LORS.

D. Operation and Maintenance Impacts

Project operation will generate process wastes, routine facility maintenance, and office activities typical of a cogeneration power plant. The operation waste streams and management methods are summarized in AFC Table 5.14-3, Summary of Operation Waste Streams and Management Methods.

The Project will produce wastes typical of a cogeneration facility. The following types of non-hazardous solid waste are anticipated: paper, wood, plastics, cardboard, deactivated equipment and parts, defective or broken electrical materials, empty non-hazardous containers, and other miscellaneous solid wastes, including the typical refuse generated by workers.

The non-hazardous waste generated during Project operation will be combined with the existing waste streams from the refinery and Watson Cogeneration Facility. The overall increase in the amount of waste as a result of the Project is anticipated to be minimal; waste will be recycled to the greatest practical extent. The remainder of the waste will be removed on a regular basis by the refinery on-site waste-handling contractor, which also serves the Watson Cogeneration Facility.

The hazardous waste generated during Project operation will include used oils from equipment maintenance, oil-contaminated materials, such as spent rags, and other cleanup materials. Used oil will be recycled back to the refinery. Hazardous waste that cannot be recycled will be disposed of at a Class I waste disposal facility. AFC Table 5.14-3, Summary of Operation Waste Streams and Management Methods, summarizes the anticipated hazardous waste to be generated during Project operation.

The hazardous waste generated by the Project will be accumulated and handled according to the existing practices and procedures at the BP Refinery and Watson Cogeneration Facility and Title 22 Code of Federal Regulation (CCR) requirements for waste. A licensed hazardous waste hauler will collect the hazardous wastes and dispose of them at a licensed hazardous waste facility. Hazardous wastes will be transported off-site using a hazardous waste manifest. Copies of manifest reports, waste analysis, exception reports, destruction certifications, etc., will be kept on-site by the refinery's environmental department, also responsible for the Watson Cogeneration Facility and made accessible for inspection for 3 years after disposal. Land disposal restriction notices/certificates will be kept on-site and accessible for inspection for 5 years after disposal. All necessary hazardous waste generator reporting will be covered under the refinery's reporting program and submitted to the California Department of Toxic Substances Control and respective Certified Unified Program Agency.

The Project will generate process wastewater streams that are typical of a combustion turbine cogeneration facility. Wastewater streams generated at the existing facility include process wastewater, cooling tower cell blowdown, boiler blowdown, boiler feedwater treatment system, storm water runoff, and sanitary sewage. The BP Refinery employs three separate wastewater management systems: process (oily) water, clean segregated storm water, and sanitary wastewater.

The process wastewater from the existing facility flows to the existing oily water treatment system at the BP Refinery where it is commingled with refinery process wastewaters. Free oil and suspended solids recovered from this equipment are further processed by the refinery for reclamation and reprocessing of hydrocarbons.

Solids remaining after recovery of the hydrocarbons are considered to be Resource Conservation and Recovery Act of 1976 (RCRA) hazardous waste because they are so listed by the EPA. The BP Refinery currently uses a licensed waste hauler to transport these residual solids to RCRA-approved incineration facilities.

Process wastes are also generated in the boiler feedwater treatment system. This system utilizes the hot lime/hot zeolite softening process. A spent lime slurry stream is generated. This stream

is routed to holding tanks wherein the solids are allowed to settle and water is decanted for return to the process. The solids are a non-hazardous byproduct that is usable in the manufacture of concrete products. An additional wastewater stream is generated through the process of regenerating the hot zeolite softeners, using sodium chloride (salt) brine as the regenerant. The spent regenerant is routed to the process wastewater system.

The treated wastewater is then directed to a holding tank, from which it is released to the LACSD joint treatment facility located in the City of Carson. This release to the LACSD facility is regulated by the terms of an industrial waste discharge permit issued by the LACSD. LACSD provides additional treatment of the refinery's wastewater in combination with wastewaters from other sources. The treated effluent from the LACSD facility is directed through an outfall extending offshore into the Pacific Ocean.

The existing clean water system at the BP Refinery is designed to collect only clean storm water runoff. This system discharges runoff from the Refinery directly to the Dominguez Channel at five points. A portion of this discharge includes commingled runoff from the existing Watson Cogeneration Facility. The discharge is regulated under the terms of an individual NPDES permit issued to the BP Refinery by the California RWQCB, Los Angeles Region (Order No. R4-2007-0015, NPDES No. CA0000680) and state General Industrial NPDES stormwater permit.

There will be no off-site runoff from the Project Site during operations as it will be constructed to contain runoff from areas of industrial activities for discharge to the BP Refinery oily water system. Therefore, the Project will not be required to obtain coverage under the General Industrial Activity Stormwater Permit and a SWPPP will not be required for operation of the Project.

E. Cumulative Effects

The Project will produce small amounts of construction and demolition waste during construction of the Project. The Project will produce incremental increases of hazardous and non-hazardous waste during operation of the Project. Most of the hazardous and non-hazardous waste generated during demolition, construction and operation can be recycled. The quantities of non-hazardous waste that cannot be recycled will be disposed of in Class I and Class III landfills in California.

Capacity of Class I and Class III landfills is listed in AFC Table 5.14-1, Waste Recycling/Disposal Facilities. It is considered that the Project Site has adequate recycling and disposal capacities for the Project. Therefore, cumulative effects from the Project and other projects in the region are not expected to be significant.

F. Mitigation Measures

As outlined in the Project AFC, potential impacts during construction phases of the project will be mitigated through Mitigation Measures WM-1 through WM-7 of the Project AFC. These include preparation of a Construction Waste Management Plan, construction waste-related and hazardous materials training, procedures regarding hazardous waste accumulation, labeling, inspections, disposal, and recordkeeping, and spill response procedures.

The operation-related procedures for handling hazardous and non-hazardous wastes that are currently implemented at the Watson Cogeneration Facility will be implemented for Project

operation. These procedures will mitigate effects from hazardous and non-hazardous waste to a less-than-significant level.

14.3 Proposed Licensing Conditions

The Staff Assessment includes nine Conditions of Certification. The Applicant concurs with these conditions.

14.4 Correlation to Staff Assessment and Hearing Topics

- Staff Assessment, Section 4.13
- Waste Management

15.0 WORKER SAFETY

15.1 Introduction

A. Name: Tricia Winterbauer

B. Qualifications: Ms. Winterbauer's qualifications are as stated in her resume contained in Appendix A.

C. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- AFC dated March 2009 (Volume I, Section 5.17) [Exhibit 1]

15.2 Summary of Testimony

All the facts contained in this testimony are accurate and true to the best of my knowledge. To the extent this testimony contains opinions, such opinions are my own based upon my professional judgment. I make this statement freely and under oath for the purpose of constituting sworn testimony in this proceeding.

A. Affected Environment

The Project Site is a 2.5-acre brown field site located within the boundary of the existing Watson Cogeneration Facility, which is a 21.7-acre area within the a 428-acre parcel further described as APN 7315-006-003, 1801 Sepulveda Boulevard, Carson, California, 90745 and is integral to BP's existing Carson Refinery (BP Refinery). The street address of the Project Site is located within the boundary of the existing Watson Cogeneration Facility at 22850 South Wilmington Avenue, Carson, California. An existing warehouse/maintenance shop on a portion of the site will be removed as part of the Project. A new warehouse/shop will be constructed at an alternate location on refinery property. The Project Site is located approximately 0.7 mile south of the 405 Freeway, roughly bounded by Wilmington Avenue to the west, East Sepulveda Boulevard to the south, and South Alameda Street to the east.

The Construction Laydown and Parking Area is a paved 25-acre parcel located approximately 1 mile southeast of the Project Site, at the northeast corner of East Sepulveda Boulevard and South Alameda Street. The area is owned by BP and is currently used as a truck parking and staging area.

No off-site improvements associated with the Project, such as water supply, natural gas or wastewater pipelines, are currently planned for the Project. The Project will connect to the existing supply pipelines currently located at the facility.

The Applicant will take safety precautions and implement emergency systems as part of the design and construction of the Project and to ensure safe and reliable Project operation. The design of the Watson Cogeneration Facility includes—and the design of the Project will include—controls and monitoring systems to minimize the potential for upset conditions that could result in public exposure to acutely hazardous materials.

The Applicant will implement the existing programs for the Watson Cogeneration Facility for the Project to ensure and maintain compliance with federal and state occupational safety and

health program requirements. These programs will protect both worker health and safety and public health and safety.

The Project will use the existing perimeter fence for the Watson Cogeneration Facility, and site access will remain unchanged. Temporary security fencing between the cogeneration facility and the refinery will be installed. Security will be maintained on a 24-hour basis with either surveillance devices or security personnel. No additional security systems or features will be required for the Project.

B. Construction Impacts

Construction activities may expose workers to the hazards identified in AFC Table 5.17-1, Potential Worker Hazards During Project Construction. Exposure to these hazards can be minimized through adherence to appropriate engineering design criteria and administrative controls, use of applicable PPE, and compliance with all applicable health and safety LORS. To protect the health and safety of workers during construction, the Applicant or general contractor will ensure compliance with the Construction Health and Safety Program, and all federal, state, and local health standards that pertain to worker health and safety.

C. Operation and Maintenance Impacts

Operation and maintenance activities may expose workers to the hazards identified in AFC Table 5.17-3, Potential Worker Hazards During Project Operation and Maintenance. Exposure to these hazards can be minimized through adherence to appropriate engineering design criteria and administrative controls, use of applicable PPE, and compliance with all applicable health and safety LORS. The existing facility maintains an Operation Health and Safety Program for the current operation of the facility. This program will be updated where appropriate and will continue to be used during operation of the Project. The Project will be incorporated into the existing program.

D. Cumulative Effects

As the various projects in the cumulative impact evaluation will be responsible for complying individually with applicable worker safety requirements, no cumulative impacts on worker safety are expected as a result of the Project.

E. Mitigation Measures

No environmental consequences related to worker safety are foreseen at this time; therefore, no additional measures beyond the implementation of the Construction and Operation Health and Safety Programs discussed above are considered necessary. No significant unavoidable adverse effects to worker safety are anticipated from the Project. Additional measures may be necessary should the Project change in a manner that affects worker safety.

15.3 Proposed Licensing Conditions

The Staff Assessment included five Conditions of Certification. The Applicant concurs with these conditions.

15.4 Correlation to Staff Assessment and Hearing Topics

- Staff Assessment, Section 4.14
- Worker Safety

ENGINEERING ASSESSMENT
16.0 FACILITY DESIGN, POWER PLANT EFFICIENCY, AND POWER PLANT RELIABILITY

16.1 Introduction

A. Name: Stephen Garrett, Omar Olivares, Gene Amrhein, Joe Landwehr, Philip French, and Charles Schwartze

B. Qualifications: Qualifications of the team members listed above are as noted in their resumes contained in Appendix A.

C. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- AFC dated March 2009 (Volume I, Section 3 [Design-related content]; Volume II, Appendices C, D, E, F, G, and H) [Exhibit 1]

16.2 Summary of Testimony

All the facts contained in this testimony (including all referenced documents) are accurate and true to the best of our knowledge. To the extent this testimony contains opinions, such opinions are our own based upon our professional judgment. We make this statement freely and under oath for the purpose of constituting sworn testimony in this proceeding.

A. Summary

The Watson Project will be designed and constructed to the 2007 California Building Standards Code (CBSC), also known as Title 24, California Code of Regulations, which encompasses the California Building Code, California Building Standards Administrative Code, California Electrical Code, California Mechanical Code, California Plumbing Code, California Energy Code, California Fire Code, California Code for Building Conservation, California Reference Standards Code, and other applicable codes and standards in effect when the design and construction of the project actually begin. If the initial designs are submitted to the CBO for review and approval after the update to the 2007 CBSC takes effect, the 2007 CBSC provisions will be replaced with the updated provisions.

16.3 Proposed Licensing Conditions

The Facility Design section of the Staff Assessment recommends the adoption of 20 Conditions of Certification. The Applicant concurs with these conditions. The other reviewed sections of the Staff Assessment contain no Conditions of Certification.

16.4 Correlation to Staff Assessment and Hearing Topics

- Staff Assessment, Sections 5.1, 5.3, 5.4
- Facility Design, Power Plant Efficiency, and Power Plant Reliability

17.0 GEOLOGY AND PALEONTOLOGY

A. GEOLOGIC RESOURCES

17A.1 Introduction

A. Name: Casey Lee Jensen and Arnel Bicol

B. Qualifications: The qualifications of the team members listed above are as noted in their resumes contained in Appendix A.

C. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- AFC dated March 2009 (Volume I, Section 5.3; Volume II, Appendix L). [Exhibit 1]

17A.2 Summary of Testimony

To the best of our knowledge, all of the facts contained in this Section of the Applicant's testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are our own based upon our professional judgment. We make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

A. Affected Environment

The Project Site is a 2.5-acre brown field site located within the boundary of the existing Watson Cogeneration Facility, which is a 21.7-acre area within the 428-acre parcel further described as APN 7315-006-003, 1801 Sepulveda Boulevard, Carson, California, 90745 and is integral to BP's existing Carson Refinery (BP Refinery). The Project Site elevation is approximately 32 feet amsl. Because the site is located within the existing refinery property boundary, the Project Site and surrounding areas are highly developed, and have been subject to disturbance for many years. The Project Site is underlain by late to middle Pleistocene alluvial floodplain deposits and is within an active seismic region. According to regional mapping (Dibblee 1999), the surficial deposits are underlain by Pleistocene-age San Pedro sand and pebble gravel; Pliocene-age Fernando Formation consisting of sandy shale, sandy siltstones, and claystones; and Mesozoic Catalina schist.

The most significant geologic hazard at the Project Site is seismic ground shaking. The closest known seismic sources designated by the California Geological Survey are the Newport-Inglewood and Palos Verdes faults, which are located approximately 3 miles to the northeast and 4 miles to the southwest of the Project Site, respectively (Blake 1998). The Project Site is in one of the most seismically active areas in the United States and California. At least two-thirds of the relative motion between the North American plate and the Pacific plate in California occurs in the San Andreas Fault system (Hutton et al. 1991; Sieh and Jahns 1984). Geologic resources of recreational, commercial, or scientific value that are located in the area of the Project Site include oil and gas reserves. Construction of the Project would not prevent the recovery of oil and gas reserves in the Project Area; therefore, the Project does not represent a significant effect to the geologic resources of the region.

B. Construction Impacts

Construction-related effects to geologic resources primarily involve grading operations and operations for foundation support. The Project slopes and the temporary construction slopes and excavations should be properly designed to be stable. Project construction is not anticipated to result in significant adverse effects to geologic resources. Geologic impacts at the Project Site include the potential for dust generation, changes in drainage, cuts, and fills. Grading at the relatively level Project Site is not expected to adversely impact the geologic environment. The Project Site and associated linear facilities will be designed and constructed in accordance with the requirements of all applicable federal, state, regional, and local LORS.

C. Operational Impacts

No significant adverse effects to geologic resources were identified as a result of Project operation. The potential effects of geologic hazards on Project operation include seismic shaking. To mitigate the potential effects of seismic shaking the Project Site will be designed and constructed in accordance with the requirements of all applicable federal, state, regional and local LORS.

D. Summary of the Cumulative Impacts

The construction and operation of the Project Site in accordance with requirements of all applicable federal, state, regional and local LORS will limit the effects by the Project Site on geologic or mineral resources; therefore, cumulative effects to the geologic resources are considered to be negligible.

E. Mitigation

The potential exists for strong ground shaking at the Project Site from a variety of nearby sources. However, the mitigation measures described in the AFC and the Conditions of Certification presented in the Staff Assessment will mitigate these potential effects to less than significant levels and the project will comply with all applicable LORS.

17A.3 Proposed Licensing Conditions

The Staff Assessment includes a design-level geotechnical investigation required by the California Building Code and three proposed Conditions of Certification relating to geologic resources found in the Facility Design section. The Applicant concurs with these conditions.

17A.4 Correlation to Staff Assessment and Hearing Topics

- Staff Assessment, Section 5.2
- Geology and Paleontology (Geologic Resources)

17. GEOLOGY AND PALEONTOLOGY

B. PALEONTOLOGICAL RESOURCES

17B.1 Introduction

A. Name: Stephen Blakely and Lanny H. Fisk, PhD

B. Qualifications: The qualifications of the team members listed above are as noted in their resumes contained in Appendix A.

C. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- AFC dated March 2009 (Volume I, Section 5.8) [Exhibit 1]
- AFC dated March 2009 (Volume II, Appendix K [previously submitted under confidential cover])

17B.2 Summary of Testimony

To the best of our knowledge, all of the facts contained in this Section of the Applicant's testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are our own based upon our professional judgment. We make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

A. Affected Environment

To develop a baseline paleontological resource inventory of the Project site and surrounding area and to assess the potential paleontological productivity of each stratigraphic unit present, the published as well as available unpublished geological and paleontological literature was reviewed, and stratigraphic and paleontologic inventories were compiled, synthesized, and evaluated. These methods are consistent with CEC (2007) and the Society of Vertebrate Paleontology (SVP) (1995) guidelines for assessing the importance of paleontological resources in areas of potential environmental effect.

Geologic maps and reports covering the bedrock and surficial geology of the Project vicinity were reviewed to determine the exposed and subsurface rock units, to assess the potential paleontological productivity of each rock unit, and to delineate their respective areal distribution in the Project area. In addition, aerial photographs of the area were examined to aid in determining the areal distribution of distinctive sediment and soil types. No subsurface exploration was conducted.

A field survey, which included visual inspection of exposures of potentially fossiliferous strata in the Project vicinity, was conducted to document the presence of sediments suitable for containing fossil remains and the presence of any previously unrecorded fossil sites. During the field survey, stratigraphy was observed in numerous road cuts, drainage ditch banks, and trenches and other excavations at nearby construction sites. Excavations at construction sites

within the refinery containing up to 15 feet (4.6 meters) of exposed sediments were present within 1 mile of the Project site.

Although no fossils are known to directly underlie the Project site, the presence of fossil sites in alluvial deposits of the Quaternary older alluvium and alluvial or marine deposits of the Palos Verdes Sand within 1 mile of the Project site and elsewhere, suggests a potential for additional similar fossil remains to be uncovered by excavations in these formations during Project construction. Under SVP (1995) criteria, these stratigraphic units have a high sensitivity for producing additional paleontological resources. Identifiable fossil remains recovered from these stratigraphic units during Project construction could be scientifically important and significant.

Identifiable fossil remains recovered during Project construction could represent new taxa or new fossil records for the area, for the State of California, or for a formation. They could also represent geographic or temporal range extensions. Moreover, discovered fossil remains could make it possible to more accurately determine the age, paleoclimate, and depositional environment of the sediments from which they are recovered. Finally, fossil remains recovered during Project construction could provide a more comprehensive documentation of the diversity of animal and plant life that once existed in Los Angeles County, and could result in a more accurate reconstruction of the geologic and paleobiologic history of the Los Angeles Basin.

B. Construction Impacts

Potential effects on paleontological resources resulting from construction of the Project primarily involve terrain modification (excavations and drainage diversion measures). Paleontological resources that could be adversely impacted by ground disturbance and earth moving include an undetermined number of fossil remains and unrecorded fossil sites, associated specimen data and corresponding geologic and geographic site data, and the fossil-bearing strata. Direct effects could result from grading and any other earth-moving activity that would disturb or bury previously undisturbed fossiliferous sediments, making those sediments and their paleontological resources unavailable for future scientific investigation.

The planned grading and deeper excavation at the Project site could result in significant adverse effects to paleontological resources if those excavations involve disturbance of previously undisturbed sediment. Also, the construction of supporting facilities, such as temporary construction offices, laydown yards, and parking areas, has potential to cause adverse effects on significant paleontological resources, if they also involve extensive new ground disturbance. Thus, any Project-related ground disturbance could have adverse effects on significant paleontological resources. However, with a properly designed and implemented mitigation program, these effects will be reduced to less-than-significant effects.

C. Operational Impacts

No effects on paleontological resources are expected to occur from the continuing operation of the Project.

D. Summary of the Cumulative Impacts

If the Project were to encounter paleontological finds during construction, the potential cumulative effects would be low, as long as mitigation measures were implemented to recover

the resources. Mitigation measures will effectively recover the value to science of any significant fossils uncovered during Project-related excavations.

E. Mitigation

Mitigation measures are necessary because of potential adverse effects of Project construction on significant paleontological resources within the Quaternary older alluvium and Palos Verdes Sand. The proposed paleontological resource mitigation program will reduce to an insignificant level the direct, indirect, and cumulative adverse environmental effects on paleontological resources that could result from Project construction. The mitigation measures proposed are consistent with SVP standard guidelines for mitigating adverse construction-related effects on paleontological resources (SVP 1995, 1996).

17B.3 Proposed Licensing Conditions

The Staff Assessment includes one Condition of Certification. The Applicant concurs with this condition.

17B.4 Correlation to Staff Assessment and Hearing Topics

- Staff Assessment, Section 5.2
- Geology and Paleontology (Paleontological Resources)

18.0 TRANSMISSION SYSTEM ENGINEERING

18.1 Introduction

A. Name: Charles Schwartze, Stephen Garrett, and Ross Metersky

B. Qualifications: The qualifications of the team members listed above are as noted in their resumes contained in Appendix A.

C. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- AFC dated March 2009 (Volume I, Section 3 [Design-related content]; Volume II, Appendices B and F) [Exhibit 1]
- Supplement in Response to CEC Data Adequacy Review, dated June 2009 (Transmission System Design Data Adequacy Worksheet and Appendix D) [Exhibit 2]

18.2 Summary of Testimony

To the best of our knowledge, all of the facts contained in this Section of the Applicant's testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are our own based upon our professional judgment. We make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

A. Transmission System Evaluation (System Impact Study)

Watson submitted an Interconnection Request to California Independent System Operator (CAISO) as required per Federal Energy Regulatory Commission's Order No. 2003 for Large Generating Facility interconnections to the CAISO-Controlled Grid. The Interconnection Request was submitted on 28 May 2008 along with a $10,000 initial deposit. Following the Scoping Meeting on 5 August 2008, the Project executed a Large Generator Interconnection Study Process Agreement on 20 November 2008 and submitted an additional deposit of $240,000. The Project is included in CAISO's Transition Cluster. Subsequent to filing the AFC, the Applicant filed the results of the Phase I Interconnection Study with the CEC.

B. Transmission System Reliability Criteria

A transmission line analysis was performed for the Applicant by TriAxis Engineering, Inc., and a copy of this study is included as AFC Appendix B, Transmission Line Analysis. No evaluation of the existing transmission system has been performed by SCE thus far. The Transmission Line Analysis did not identify any effects associated with the Project.

C. Facilities Study

At this time, a facilities study has not been completed by SCE. This study would identify any mitigation measures for transmission facility overloads and upgrades that may be necessary due

to the added generation from the Project. However, the aforementioned Transmission Line Analysis did not identify any effects associated with the Project.

D. Electric Effects

The electric effects of the high voltage lines fall into two categories: corona effects and field effects. Corona is the ionization of the air that occurs at the surface of the energized conductor and suspension hardware due to very high electric field strength at the surface of the metal during certain conditions. Corona may result in radio and television reception interference, audible noise, light, and production of ozone. A transmission line's field effects are the voltages and currents that may be induced in nearby conduction objects. As there are no off-site transmission facilities lines, this is not considered to be an issue.

18.3 Proposed Licensing Conditions

The Staff Assessment included eight Conditions of Certification. The Applicant concurs with these conditions.

18.4 Correlation to Staff Assessment and Hearing Topics

- Staff Assessment, Section 5.5-1
- Transmission System Engineering

19.0 ALTERNATIVES

19.1 Introduction

A. Name: Ross Metersky

B. Qualifications: The qualifications of Mr. Metersky are as noted in his resume contained in Appendix A

C. Prior Filings: In addition to the statements herein, this testimony includes by reference the following documents submitted in this proceeding:

- AFC dated March 2009 (Volume I, Section 4; Volume II, Appendix R) [Exhibit 1]
- Responses to CEC Requests from the February 3, 2011 PSA Workshop Continuation, dated March 2011 (see Appendix A for the Revised AFC Section 5.5 Water Resources) [Exhibit 17]

19.2 Summary of Testimony

To the best of my knowledge, all of the facts contained in this Section of the Applicant's testimony (including all referenced documents) are true and correct. To the extent this testimony contains opinions, such opinions are my own based upon my professional judgment. I make these statements, and render these opinions freely and under oath for the purpose of constituting sworn testimony in this proceeding.

A. Background

1. Regulatory Background

Title 20 of the California Code of Regulations requires an applicant to discuss "the range of reasonable alternatives to the project, including the no project alternative which would feasibly attain most of the basic objectives of the project, but would avoid or substantially lessen any of the significant effects of the project, and an evaluation of the comparative merits of the alternatives." According to the CEQA Guidelines [14 CCR 15126.6 (c)], further analysis on a given alternative is not necessary if:

1. The alternative fails to meet most of the basic project objectives, or

2. The alternative would not avoid or substantially lessen significant environmental impacts of the proposed project, or

3. The alternative is not "feasible." Per 14 CCR 15126.6(f)(1), the factors that should be taken into account in determining whether an alternative is feasible are:

a) Site suitability

b) Economic viability

c) Availability of infrastructure

d) Land use/land use plan consistency or regulatory jurisdictional limitations, and

e) Site Control

2. Project Objectives

Project objectives are presented in Section 2.0 of the AFC and are restated here as follows:

1. Improve reliability of steam supplies to the BP Refinery;
2. Supply additional steam to the BP Refinery;
3. Produce electrical energy for export to the power grid that benefits the reliability of the broader transmission grid in California by adding generation capacity and voltage support near existing loads; and
4. Conserve natural gas and reduce environmental impacts from emissions and contributions to global climate change.

B. Alternatives

1. No Project Alternative

As proposed by the Applicant, the Project will supply reliable steam, which is critical to the safe and efficient operation of the BP Refinery. If the Project were not licensed and constructed, the refinery would be forced to achieve the required process steam flow by other means, most likely by using auxiliary boilers, which would generate higher levels of air emissions than those of the Project.

2. Alternative Site Location

The Watson Cogeneration Facility was originally designed with provisions for future expansion. The original project took into consideration engineering constraints, site geology, environmental effects, water, waste and fuel constraints, and electric transmission constraints. A plot space was allocated to accommodate a fifth train. If the Project were to be constructed at an alternative location, the alternative site would require extensive additional infrastructure (such as a switchyard, an electrical system, piping, a fuel gas system, a fire water system, a water treatment system, a compressed air system, etc.) to support the operation of a new unit. The infrastructure needed to support the Project is already in place at the existing facility and will be used for the Project.

3. Alternate Project Configurations

The Project could be designed to use CTGs other than the GE 7EA. However, the four existing units at Watson are also GE 7EA CTGs, and the allocated space for the fifth train is ideally suited for the addition of an identical unit. Any other type of a combustion turbine would require a different configuration of the steam systems and would have a significant effect on the existing operation of the facility.

4. Alternative Technologies

As previously discussed, the Project design is based on the use of a new GE 7EA CTG. This turbine was selected over other technologies principally because of its environmental effectiveness, fuel conversion efficiency, and ease of integration with the existing Watson Cogeneration Facility. The Applicant considered and ruled out alternative technologies, such as generating units that use fuels such as coal, oil, nuclear, and renewables. None of these fuels or technologies would be able to meet the refinery's needs for reliable steam supply within the

constraints of the existing facility. Therefore, no alternative technologies would meet the goals and objectives of the Project.

5. Alternate Linear Routes

The Project is an expansion of the existing Watson Cogeneration Facility, and as such, does not require any new off-site linear facilities. Therefore, no alternate linear routes are applicable to this Project.

6. Water Supply Alternatives

The Applicant considered numerous potential sources of water supply for the Project. The Watson Cogeneration Facility receives its entire water supply from the BP Refinery. When and if sufficient supplies of reclaimed water become available to the BP Refinery, the Project will utilize the reclaimed water. In designing the Project, the Applicant considered water source options, water supplies, and the water policies of relevant agencies and water districts. The Applicant also considered State Water Resources Control Board Resolution 75-58, which prioritizes water sources for use for inland power facility cooling.

A discussion on the various water supply alternatives and the Applicant's analysis of these alternatives is presented in AFC Section 5.5.2.1, Alternative Water Supplies (as revised in the Responses to CEC Requests from the February 3, 2011 PSA Workshop Continuation, dated March 2011).

7. Wastewater Management Alternatives

Given the physical and policy relationships between source water and wastewater, the Applicant identified and evaluated wastewater options with source water implications in mind. As with source water, the viability of wastewater management options is largely driven by several water efficacy policies. Wastewater disposal alternatives are described in AFC Section 5.5.2.2. The existing wastewater treatment system at Watson is permitted for discharge to the Los Angeles Sanitation District under an existing Industrial Wastewater Discharge Permit. On review, the Applicant has determined that the existing wastewater treatment system and permit are adequate to accommodate the fifth train without modification. A copy of the existing permit was provided in AFC Appendix R.

19.3 Proposed Licensing Conditions

The Staff Assessment recommends no Conditions of Certification related to alternatives. The Applicant concurs with this assessment.

19.4 Correlation to Staff Assessment and Hearing Topics

- Staff Assessment, Section 6
- Alternatives

APPENDIX A
Resumes

F. Gene Amrhein, P.E.

Manager of Civil/Structural Engineering

Job Function
Gene serves Kiewit as manager of civil/structural engineers. He has many years of structural design experience, as well as six years as an instructor at Oklahoma State University in Stillwater, Oklahoma, teaching Strength of Materials, Statics and Dynamics. Much of Gene's structural design experience has been power plant related on projects such as electrical substations, coal-fired power stations, simple and combined cycle combustion turbine projects, and modification design for the electrostatic precipitator. He served as the chief resident engineer for a 127 MW coal-fired power plant where he was responsible for monitoring construction of foundations and erection of steel, plus all aspects of construction to insure compliance with regulations, plans, specifications and client requests. He has experience involving reinforced masonry seismic design and design of wood structures. Gene's design experience utilizing various codes (UBC, BOCA, SBC, IBC, SEAOC, ANSI, etc.) is extensive. He has also conducted several dynamic and static seismic analyses utilizing classical design procedures and STADD III computer program and has conducted several seismic surveys and analyses of existing buildings for GSA. Gene also has experience in value engineering studies with the Corps of Engineers.

Kiewit Experience

Project Name	Description
Marsh Landing Generating Station Contra Costa County, California Owner: Mirant Marsh Landing, LLC Scope: EPC	800-megawatt natural gas-fired power plant with four 200-megawatt simple cycle units. Project equipment includes four Siemens 5000F(4) combustion turbines, four emissions control systems complete with selective catalytic reduction (SCR) and oxidation catalysts, exhaust gas-tempering air fan systems, three fuel gas compressors and balance of plant equipment. SCR/carbon monoxide (CO) catalyst units will be used to reduce the nitrogen oxide and CO emissions coming from the exhaust gas of the combustion turbines while operating in a simple cycle configuration. Services provided for this EPC project include engineering, procurement and construction. Gene is serving as a structural engineer and resident engineer for the project.
Manager of Structural Engineering Department	Responsible for administration of structural engineers in support of power projects. In addition to project work and consultation, Gene is responsible for project staffing and department technical resources, training, project assignments, department guide specifications and design guide procedures.

Project Name	Description
Palomar Energy Project Escondido, California Owner: Sempra Energy Resources Contractor: Kiewit Industrial Co.	554 MW combined cycle power plant with two (2) GE 7FA combustion turbines, two (2) Nooter/Eriksen heat recovery steam generators, and one (1) GE D11 steam turbine. This project is located in an urban area with stringent noise, aesthetic and permitting requirements. The facility burns natural gas. Kiewit was responsible for providing engineering services, including design, procurement, training, testing and field engineering services. This project won *Environmental Protection Magazine's* Facility of the Year Honorable Mention, *Combined Cycle Journal's* Pacesetter Plant Award and Adobe's Success Story of the Year. Gene was the Civil Resident Engineer for this project.
Haynes Station Units 3&4 Repowering Project Long Beach, California Owner: Los Angeles Department of Water and Power Contractor: Kiewit Industrial Co.	Nominal 571 MW combined cycle power project utilizing two (2) GE 7FA combustion turbine generators, two (2) Alstom heat recovery steam generators and one (1) condensing steam turbine. Project included once through sea water cooling. Engineering services provided for the EPC project included design, procurement, field engineering, training and testing. This project won the Los Angeles Council of Engineers & Scientists Project Achievement Award. Gene served as lead resident engineer for the project.
Valley Generating Station Los Angeles, California Owner: Los Angeles Department of Water and Power Contractor: Kiewit Industrial Co.	533 MW combined cycle power project. The EPC scope included the complete design, construction, start-up, commissioning and staff training of the two (2) General Electric 7FA combustion turbines, two (2) heat recovery steam generators and one (1) condensing steam turbine. The plant was designed and constructed to the stringent requirements of its "Essential Facility" classification. This project won the Los Angeles Council of Engineers & Scientists Project Achievement Award. Gene was project structural engineer for most of the design period and then was resident engineer at the construction site.
High Desert Power Project Victorville, California Owner: Constellation Energy Contractor: Kiewit Industrial Co.	Nominal 750 MW combined cycle project utilizing three (3) Siemens Westinghouse 501F combustion turbine generators, three (3) fired Alstom heat recovery steam generators and one (1) Toshiba condensing reheat steam turbine. This project adheres to California Energy Commission requirements, meets strict emissions limitations and includes a zero liquid discharge water treatment system. This project was named *POWER Magazine's* Plant of the Year. Gene was the project structural engineer for this project.

Project Name	Description
Los Medanos Energy Center Pittsburg, California Owner: Calpine Contractor: Kiewit Industrial Co.	568 MW combined cycle power project. Project included two (2) gas-fired General Electric 7FA combustion turbine generators, one (1) GE Type D11 down flow exhaust steam turbine generator and related balance of plant equipment. Kiewit was an EPC joint venture partner with KIC and provided engineering services for the project, including detailed design and performance testing services. This project was named one of *Power Magazine's* Top Plants. Gene was the project structural engineer for this project.
Mustang Generating Station Denver City, Texas Owner: LS Power Contractor: Gilbert Industrial	500 MW combined cycle engineering services for EPC project, including technical and commercial effort for 2 x GE PG7231FA CTGs plus one reheat STG. Project produces electrical energy at two (2) supply voltages for the grid. The plant is a zero discharge facility. Gene was the project civil/structural engineer for this project.
Termovalle Project Cali, Colombia Owner: KMR Power Contractor: National Power Development, Inc., a subsidiary of Marubeni Corporation	200 MW combined cycle power project including a dual fuel-fired Westinghouse 501 combustion turbine, Nooter-Ericksen HRSG and Westinghouse steam turbine. Kiewit provided engineering services for EPC project including design, procurement, training and field engineering services. Gene was the project civil/structural engineer for the project.
Piney Creek Project Clarion County, Pennsylvania Owner: Piney Creek Limited Partnership Contractor: FruCon Construction Company	30 MW waste coal power plant. Kiewit provided engineering and design services to the EPC contractor. This project was named the EPC Contractor's Project of the Year. Gene was the project civil/structural engineer for the project.
North Branch Project Grant County, West Virginia Owner: EASE/NMI, a subsidiary of Energy America, Inc. Contractor: North Branch Constructors	80 MW waste coal CFB power plant. EPC contract with a value of approximately $120 MM. Kiewit provided design, controls programming, resident engineering, O&M manual preparation and test reports. Gene was the project civil/structural engineer for the project.

Other Relevant Experience

Project Name	Description
125 MW R.D. Nixon Power Plant	Gene was the project structural engineer and chief resident engineer for this coal project.
100 MW Platte Generating Station	Gene was the civil/structural resident engineer for this coal project.

Publications

"Which Design Concept for Prestressed Steel?" with M. Tochacek, Engineering Journal, AISC, January 1971, Vol. 8, No. 1.

"Limit States Design of Prestressed Steel Structures," in cooperation with M. Tochacek & C. L. Mehta, Technical Publication No. T-18, 1970, Oklahoma State University.

Education and Experience
M.S. Civil Engineering – Oklahoma State University, 1968
B.S. Civil Engineering – Drexel University, 1966

Registrations and Organizations
Professional Engineer – registered in 41 states including Kansas, Texas, California (63044), Illinois, Washington, Alaska and two Canadian providences, Ontario and Saskatchewan
Honor Society – Chi Epsilon
American Society of Civil Engineers
American Concrete Institute
Structural Engineers Association of Kansas and Missouri
American Institute of Steel Construction

David M. Bernal, V.P.

Principal Geologist

Areas of Expertise

Environmental Site Assessments

Soil and Groundwater Remediation

Geological Investigations

Years of Experience

With URS: 10 Years
With Other Firms: 21 Years

Education

MA/Geology/1982

BA/Geology/1978

Overview

Mr. Bernal is a California Professional Geologist with over 30 years of professional experience and training. He has managed and performed over 200 geological and environmental projects. He has expertise in Phase I and Phase II Environmental Site Assessments (ESA) in support of property development, property transactions, and Brownfields property redevelopments.

Mr. Bernal has a thorough knowledge of the CERCLA, RCRA, Cal-HSC, and CEQA processes. Mr. Bernal has performed management and technical roles for government agencies including U.S. EPA, U.S. Navy, California Regional Water Quality Control Board, Office of the State Architect, CALTRANS, City and County of Santa Barbara, County of Ventura, and County of San Luis Obispo.

Project Specific Experience

Project Manager for the Site Restoration Program at the former Shell Oil (Aera Energy) Hercules Gas Plant located in Canada de la Huerta on the Gaviota Coast, Santa Barbara County, California. The restoration program is ongoing and consists of remediating PCBs, mercury, and fuel hydrocarbons in sediment, surface water and groundwater; civil engineering of slope stability, road, and drainage system improvements within the 80-acre canyon; and restoring native vegetation to the canyon side slopes and creek.

Aspects of the program include hydrogeological characterization of the local geologic units; soil vapor extraction of methane gas and fuel hydrocarbon vapors in the fill pad beneath the former plant; treatment of groundwater discharge into the creek; and human health and ecological risk assessments of post-remediation site conditions.

The California Department of Toxic Substance Control (DTSC) is the lead oversight agency for site of a multi-agency team that includes the Central Coast Regional Water Quality Control Board (RWQCB), County of Santa Barbara Planning Department, Fire Department, and Air Pollution Control District, Army Corp of Engineers, and California Department of Fish and Game and State Coastal Commission.

Task Manager responsible for developing and implementing a Preliminary Endangerment Assessment (PEA) for the Burbank Magnolia Power project. The project was conducted on a fast track basis in order to satisfy the California Energy Commission's Condition of Certification Waste -5. The chemicals of potential concern included volatile organic compounds (VOCs), polyaromatic hydrocarbons (PAHs), and Title 22 metals including hexavalent chromium. Findings of the PEA supported a determination of No Further Action by the DTSC.

Task Manager for the Assessment and Remediation relating to Contaminated Materials Relevant to Construction Activities, Santa Barbara Airfield Safety Project. The remediation report was submitted to the County of Santa Barbara Fire Prevention Department (FPD) and the Central Coast Regional Water Quality Control Board (RWQCB) for their review and approval in accordance with RWQCB Water Quality Certification Condition No. 8.

Task Manager for the Programmatic Phase 1 Environmental Site Assessment for the Ellwood-Devereux Open Space and Proposed Residential Development Projects. Responsible for the Hazardous Materials Section of the Ellwood-Devereux EIR in regards to the environmental history of the various properties within the Joint Proposal Area (JPA). The JPA had been impacted by the past operation of the Ellwood Oil Field.

Program Manager for a Brownsfields Redevelopment Project of the Golden West Refinery in Santa Fe Springs, California. The program involved site-wide soil assessment, soil excavation of hot spots, soil vapor extraction of deep soils, Risk Base Corrective Action (RBCA) analysis of post-remediation conditions, and agency negotiation support.

Principal Investigator for the County of Santa Barbara Old Town Goleta Brownfields Revitalization project. The Phase I ESA involved assessing historic and current agricultural and light industrial properties in support of redeveloping old town Goleta. A Phase II ESA was conducted on public roads and private property to confirm the presence or absence of environmental contamination in designated areas of planned road improvements.

Contact Information

URS Corporation
130 Robin Hill Road, Suite 100
Santa Barbara, CA 93117
Tel: 805.692.0602
david.bernal@urs.com

Arnel M. Bicol, P.E., G.E.

Principal Geotechnical Engineer

Areas of Expertise

Geotechnical Engineering
Project Management

Years of Experience

With URS: 27 Years
With Other Firms: 0 Years

Education

BS/Civil Engineering/1982/
University of Edinburgh, Scotland

Registration/Certification

1996/Civil Engineer
CA No. 55338/Exp.12-31-12
2004/Geotechnical Engineer
CA No. 2646/Exp. 12-31-12
2007/URS Certified Project Manager

Overview

Principal Engineer with over 27 years experience in geotechnical engineering projects involving site explorations and investigations, laboratory testing, site characterization, field instrumentation, site improvements, and construction quality assurance.

He has conducted and supervised geotechnical investigations and studies for numerous commercial structures, refineries, school and hospital developments, port structures including dikes, wharves and marine terminals, and airports. Mr. Bicol is a certified Project Manager within the URS Corporation.

Project Specific Experience

Public Agencies

Principal Engineer/Contract Manager, On-Call Geotechnical and Environmental Services, City of Los Angeles Geotechnical Engineering Division, (1995 – Present), approx. $20M: Project Manager and Point-of-Contact for 3 consecutive On-call Geotechnical and Environmental Services contracts for City of Los Angeles since 1995. The contract scope involves responding to various requests for proposals from the City of Los Angeles pertaining to geotechnical and contamination investigations for new sewer infrastructure, libraries, police stations, fire stations and other publicly funded projects. Key projects during the last 15 years, task orders have included:

Major Los Angeles Infrastructures

- East Central Interceptor Sewer
- North Central Interceptor Sewer
- Eagle Rock Interceptor Sewer
- North Outfall Sewer
- Vermont Avenue Sewer Replacement
- Venice Force Main
- Marina Interceptor Sewer
- Farmdale Storm
- Santa Monica Canyon Low Flow

Police Facilities

- Emergency Operations Center -
- Mid City Police Headquarters – Vermont Avenue and
- Rampart PS – 6th and
- Hollenbeck PS - 1st and
- Harbor PS, San Pedro
- Metro Bomb Squad

Fire Stations

- Fire Station No. 4 - Temple Street and Alameda Avenue
- Fire Station No. 7 - Arminta Street and Nolan Place
- Fire Station No. 21 - 52nd Street and 51st Street
- Fire Station No. 43 - Motor Avenue and West Regent Street
- Fire Station No. 59 - 11505 West Olympic Boulevard
- Fire Station No. 62 - 11970 West Venice Boulevard
- Fire Station No. 64 - 118 West 108th Street
- Fire Station No. 65 - 1807 East Century Boulevard
- Fire Station No. 77 - 9224 Sunland Boulevard
- Fire Station No. 78 - Whitsett Avenue and Valleyheart Drive
- Fire Station No. 83 - Moorpark Street and Addison Street
- Fire Station No. 84 - 21050 West Burbank Boulevard
- Fire Station No. 87 - 10124 Balboa Boulevard

Landslide Studies

- Via de Las Olas, Pacific Palisades
- Asilomar, Los Angeles
- Potrero Canyon, Pacific Palisades
- Tramonto, Pacific Palisades
- Chautaqua, Pacific Palisades
- Laurel Canyon, Los Angeles

Principal Engineer/Contract Manager, LAC+USC Medical Center Replacement Project and Marengo Avenue Parking Structure, Los Angeles, CA, Los Angeles County Department of Public Works, 1991 to 2008, approx. $6M: Performed a comprehensive geotechnical investigation in accordance with California Code of Regulations Title 24. Over 50 borings were drilled within and outside the hospital building and parking structure footprints. Extensive surface reconnaissance and mapping were performed by our engineering geologists to support the geologic and seismic hazards evaluation. Complex geotechnical testing and analyses were performed to support an aggressive structural foundation design.

Principal Engineer/Geotechnical Task Leader, On-Call Geotechnical Services, County of Los Angeles Geotechnical Engineering and Materials Testing Division, County of Los Angeles, 2006 – Present, approx. $2M: Project Manager and Task Leader for an on-call geotechnical services contract for County of Los Angeles. As Task Leader, the scope involves responding to various task requests from the county pertaining to geotechnical studies for subsurface infrastructures such as storm drains and sewer lines.

Principal Engineer/Geotechnical Task Leader, Architectural and Engineering Services, Proposed Parking Structure C Addition, City of Long Beach, For Engineering Bureau, Department of Public Works, City of Long Beach, 2008 – approx. $600K: Geotechnical

Task Leader for a geotechnical investigation in 2008 in support of an upgrade and 1-story expansion of the City Place Parking Structure C located at 451 Long Beach Boulevard, Long Beach, California. Evaluated bearing capacity of existing footings to bear the new loads due to a 1-story addition, as well as capacity of new and enlarged footings. Bearing and settlement curves were provided for use in as-needed re-sizing of existing footings, for design of new footings, and for estimating differential settlements.

School Districts

Principal Engineer/Contract Manager, On-Call Geotechnical Investigation and Testing Services Contract, Los Angeles Unified School District, CA, 1995-Present, approx. $5M per year: Contract Manager and Principal-in-Charge. Responsible for leading, managing, and coordinating efforts in response to job requests from the Los Angeles Unified School District pertaining to geotechnical, geologic and seismic hazards screening studies for proposed K-12 school sites, comprehensive geotechnical investigations for new schools and **parking structures,** school additions, construction inspection and testing for on-going school construction and special site studies such as geologic and geophysical surveys and fault trenching. He has provided on-call geotechnical services for the following local school districts:

- Los Angeles Unified School District (Over 50 K-12 Schools)
- Glendale Unified School District (2 Middle Schools)
- Centinela Valley High School District (3 High Schools)
- Montebello Unified School District (4 Elementary Schools)
- Santa Ana Unified School District (2 Elementary Schools)
- Chino Valley Unified School District (2 Elementary Schools)
- Fresno Unified School District (1 Elementary School)

Power Plants

Principal Engineer, Haynes Units 5 & 6 Repowering – Long Beach, CA, 2011 - Current, $250K: Performed a geotechnical investigation for the proposed Haynes Units 5 & 6 Repowering Project (Project), located at the LADWP Haynes Generating Station (HGS), in Long Beach. The LADWP is in the process of repowering the HGS with new state-of-the-art combined cycle units. Major components include four (4) General Electric LMS100 natural gas-fired combustion turbine generators (CTGs), a selective catalytic reduction (SCR) and an oxidation catalyst. Auxiliary equipment include inlet air filters with evaporative coolers, turbine compressor section inter-cooler, mechanical draft cooling tower, circulating water pumps, water treatment equipment, natural gas compressors, generator step-up and auxiliary transformers, and water storage tanks. Performed 50 CPTs and 10 borings, static and dynamic pile load test programs for auger cast piles. URS is currently providing construction inspection.

Principal Engineer, Hydrogen Energy California (HECA) – Kern County, CA, 2007, $100K: Performed a geotechnical investigation at a site in Kern County, CA covering approximately 537 acres in surface area. The proposed major Project components included coke, coal and fluxant feedstock handling equipment and storage facilities, air separation unit, gasification facility, syngas cleanup and desulfurization, sulfur recovery unit, cooling towers, CO_2 compression equipment, gasifier solids handling, storage and loading equipment, a combined cycle power block, electrical interconnection facilities, and a wastewater treatment facility. Office buildings and parking spaces will be also be constructed at strategic locations on the Project site, as well as other smaller buildings including a control room, laboratory, medical center, and maintenance and equipment control shelters. Shallow foundations including mat foundations were considered to facilitate efficient interaction between critical equipment components. Deep foundations were also considered for support of some of the more heavily loaded units.

Principal Engineer, Panoche Energy Center – Fresno County, CA, 2005, $80K: Performed a comprehensive geotechnical investigation for a 400 megawatt electrical generating facility within an approximately 13-acre site located in Fresno County. The comprehensive geotechnical investigation involved 20 soil borings. The generating facility will consist of four (4) General Electric LMS100 natural gas-fired combustion turbine generators (CTGs), a selective catalytic reduction (SCR) and an oxidation catalyst. Auxiliary equipment will include inlet air filters with evaporative coolers, turbine compressor section inter-cooler, mechanical draft cooling tower, circulating water pumps, water treatment equipment, natural gas compressors, generator step-up and auxiliary transformers, and water storage tanks. Foundation options included mats, piles, in-situ soil-cement mixing and stone columns.

Principal Engineer, Canyon Power Plant - Anaheim, CA. Providing geotechnical inspection and observation services as the geotechnical engineer-of-record. The project consists of a 200-MW simple-cycle power plant in the City of Anaheim that will be part of the Southern California Public Power Authority (SCPPA) network. The project includes four Combustion Turbine Generators (CTG), four SCRS with stacks, and associated equipment and other buildings such as PDC buildings, gas compressor buildings, transformers, an ammonia tank, boiler feed water pumps, a switchyard, driveways, a parking lot, and screen walls.

Principal Engineer, Wellhead Power, Colton, CA Completed a geotechnical investigation at a proposed electrical generating facility planned south of Agua Mansa Road and West Hopkins Road in Colton, California. The project involves installation of a nominal 48-megawatt (MW) electrical generating facility at the subject property. URS performed a review of seismic and geologic hazards, drilled exploratory borings and conducted a field resistivity survey.

Principal Engineer, Grayson Power Plant, Glendale, CA: Performed a comprehensive geotechnical investigation for a new LM 6000 combustion turbine generator at the existing Grayson Power Plant. The new generator is equipped with pollution control and noise abatement features and includes a selective catalyst reduction/carbon monoxide (SCR/CO) catalyst system, chillers, cooling tower, continuous emission monitoring, and gas compressors. URS completed drilling and sampling of geotechnical borings, laboratory testing and engineering analysis. URS also provided consultation during installation of test piles for support of the major units.

Project Engineer, NRG Power Station, El Segundo, CA : Performed a geotechnical investigation for a Generating Station Upgrade. Our scope involved cone penetration testing to confirm the subsurface conditions and providing updates to existing design recommendations.

Project Engineer, Various Southern California Edison Sites, Los Angeles, CA, California Edison, 1990 - 2000; Project engineer for URS (as Dames & Moore) at numerous Southern California Edison sites in Los Angeles. Performed geotechnical investigations and studies for generating stations, substations and power units.

Treatment Plants

Project Engineer, County Sanitation District of Orange County - Huntington Beach, CA, 2000, $20K: Managed URS operations for a pilot grouting program at the County Sanitation District's Plant 2 in Huntington Beach, California. The project included grouting two pilot test areas utilizing chemical grouting and hydro-fracture grouting techniques. Our tasks included reviewing the contractor's plans and methods of grouting operations, observing the grouting operations and keeping records of pertinent data such as grout material, quantities, concentration, viscosity of grout, reactants, accelerators, pumping pressures, pumping rates, gel time and obtaining and reviewing relevant data from the contractor and monitoring his methods and procedures.

Project Engineer, Hyperion Water Treatment Plant - Los Angeles, CA, City of Los Angeles, 1998, $30K: Managed the geotechnical investigation and construction quality assurance for the City of Los Angeles WCMD Modernization Project. Our scope involved providing up to 4 engineers at the site continuously for 10 months to perform such tasks as inspection of foundation excavations, fills and backfills, shoring installations, tie-back anchor testing, drilled cast-in-place piers and pile-driving. URS also provided technical support related to geotechnical issues as needed.

Project Engineer, Ojai Valley Sanitary Wastewater Treatment Plant - Ojai Valley, CA, Client: Harris & Associates, Ventura, CA, 1997, $20K: URS was retained by Harris & Associates of Ventura, California to investigate an excess groundwater condition in the Influent Pump Station excavation at the Ojai Valley Sanitary Wastewater Treatment Plant

construction site. In addition, we provided consultation related to the compaction grouting performed at the Stand-by generator and the RAS/WAS locations at the project. URS assisted Ojai Valley Sanitary District and Harris & Associates in recommendations for managing the water encountered in the Influent Pump Station excavation and in their overall evaluation of the compaction grouting program performed at the RAS/WAS locations.

Project Engineer, Glendale Water Treatment Plant Relocation - Glendale, CA, City of Glendale, 1996, $50K: This project involved review of design documents for the North Glendale Treatment Plant relocation in Crystal Springs, Glendale, California. The treatment plant was moved from it's originally planned location to make room for the DreamWorks Animation Campus. URS provided assistance to the City of Glendale in developing site preparation parameters and cost estimates to move the treatment plant to another location while keeping the original foundation design. Our services included consultation, field investigations, laboratory testing and quality assurance.

Ports, Harbors and Marinas

Principal Engineer/Task Manager, On-Call Geotechnical Services Contract, POLB, CA – Currently providing geotechnical consulting services for the Pier G Coke Terminal Sewer Repair Project and managing the geotechnical investigation for the Pier J Shore-to-Ship Power Retrofit Project.

Principal Engineer/Geotechnical Task Manager, Pier A West/Area 2 Interim/Source Removal Action, Wilmington, CA – Managed the geotechnical investigation for this POLB project located in the City of Los Angeles. Provided recommendations for remediation and development of this 80-acre site and served as the Geotechnical Engineer-of-Record during design and construction of the project.

Principal Engineer/Geotechnical Task Manager, Proposed Mitsubishi Cement Terminal Expansion, Berth F208, POLB, CA – Managed the geotechnical investigation for proposed expansion that will include four 10,000-ton cement silos, extension of the ship unloader crane rail, and retrofit of the steel-sheet pile-cellular bulkhead.

Principal Engineer/Geotechnical Task Manager, Back Channel Widening, POLB, CA – Will be managing geotechnical investigation for this upcoming project that will include dredging and stabilization of the existing channel dikes using deep-soil-mix technologies. Served as a Principal Engineer for the geotechnical studies performed during the preliminary design of this project.

Principal Engineer, Proposed Catalina Landing Development, Long Beach, CA; For AC-Catalina Landing, LLC: Providing geotechnical services for design of new docking systems, gangways and utilities.

Senior Engineer, Geotechnical Task Manager, Pier S Oil Well Reabandonment, POLB, CA - Provided geotechnical services for reabandonment of 28 oil wells located up to 35 feet below grade within the footprint of the future wharf and expose 22 abandoned wells located up to 30 feet beneath proposed future terminal buildings for leak testing.

Geotechnical Task Manager, Slip-2 Fill & Backland Development, Pier E, POLB, CA - For Port of Long Beach: Provided geotechnical services for reclamation of 25 acres by placing 2M cy of sediments dredged from the West Basin. Evaluated dredge material suitability, hydraulic fill improvement schemes and rock dike seismic stability. Provided pavement subgrade improvement recommendations for development of hydraulic fill backland as a container storage yard.

Geotechnical Task Manager, Pier T, Berths 118 and 119, Long Beach, CA; For Port of Long Beach: Provided geotechnical services for proposed backland development and berthing structure. The project included detailed soil characterization to evaluate site compressibility characteristics and dynamic stability of existing dikes and wharves. Supervised field instrumentation programs including settlement surveys, and slope indicator and pore pressure monitoring, and all laboratory and field testing programs.

Principal Engineer; Cement Facility Upgrades, Pier F, Long Beach, CA; For Mitsubishi Cement: Provided geotechnical services for two new 500 ton cement silos and upgrade of four existing silos from 250 to 400 tons. Developed alternatives for improvement of the backland hydraulic fills to support the proposed silos and seismic retrofit schemes for the bulkhead, including stone columns and cement-deep soil mixing. Developed vibrationless deep foundation system to minimize impacts to terminal operations during construction.

Senior Project Engineer; Proposed Pier Echo LNG Terminal, Long Beach, CA; For Sound Energy Solutions: Provided geotechnical services for proposed LNG terminal, including two 255-foot diameter storage tanks on 80 feet of potentially liquefiable and soft, compressible hydraulic fills and estuarine deposits. Developed foundation support schemes consisting of driven piles and/or stone columns and cement-deep-soil mixing. Developed improvement alternatives for backland hydraulic fills for development. Evaluated seismic deformation of existing pile-supported wharf and steel sheetpile cellular bulkhead confining the site and developed conceptual retrofit alternatives.

Senior Project Engineer; Pier S Site Remediation and Development, Long Beach, CA; For IT Corporation: Provided geotechnical services to raise 160-acre site 25 feet for future port use and onsite remediation of oil drilling residual wastes. Evaluated settlement impacts and static/ seismic stability of existing waterfront and proposed fill slopes. Provided recommendations for fill import and placement, cement-stabilization and pavement design.

Project Manager; California United Terminal Rail, Paving and Utility Improvements, Pier E, Long Beach, CA; For STV, Inc.: Provided geotechnical services for refurbishment of existing roadways, pavements and railway alignments within the CUT container storage area.

Project Manager, New Payload Processing Facility (PPF), Sea Launch Site, Naval Station Mole, Long Beach, CA; For Keller & Gannon: Provided geotechnical services for new PPF and ordinance storage buildings, overhead bridge cranes, and wharf improvements. Evaluated seismic performance of existing rock dikes containing the site and behavior of the hydraulic fills. Developed pile driving criteria and oversight of pile installation.

Airports

Principal Engineer: Alaska Airlines Relocation, LAX, 2011, $100K: Provided geotechnical services for the relocation of Alaska Airlines from Terminal 3 to Terminal 6. Reviewed foundation design using Torque-in Piles. On-going construction involves terminal improvements at baggage and receiving areas and apron facilities.

Project Manager, LAX Wayfinding and Signage Structures, 2001, $50K: Developed foundation design recommendations for signage and wayfinding structures in collaboration with MRH Structural Engineers in 2001. The signage structures are supported on drilled shafts and located along Century Boulevard and World Way, within LAX.

Project Manager, John Wayne Airport Expansion Program, Orange, CA, County of Orange, 2000, approx $1M : Project Manager on a $1 million annual contract to provide materials testing and geotechnical support for various airport modifications including a $25 million **Parking Structure** renovation and miscellaneous taxiway and apron improvements.

Project Manager, United Airlines Terminals 7 and 8 Improvement Programs, Los Angeles International Airport, CA, United Airlines LAX, 1994-2000, approx $100K: Managed the geotechnical investigation and construction quality assurance for United Airline's Terminal 7 and 8 Improvement Program. Our scope involved providing 4 engineers at the site to perform such tasks as inspection of foundation excavations, fills and backfills, shoring installations, tie-back anchor testing, and drilled cast-in-place piers. URS also provided technical support related to geotechnical issues as needed.

Project Manager, American Airlines Terminal 4 Improvement Programs, Los Angeles International Airport, CA, American Airlines LAX, 1994, approx $200K: Managed the geotechnical investigation and construction quality assurance for American Airlines Terminal 4 Improvement Program and miscellaneous additions including the American Eagle Terminal and the High Bay and Low Bay Hangers. Our scope involved providing technical support related to geotechnical issues,

inspection of foundation excavations, fills and backfills, shoring installations, tie-back anchor testing, drilled cast-in-place piers, micro piles, compaction grouting, and pile load testing.

Staff Engineer, Continental Airlines Terminal 6 Expansion, Los Angeles International Airport, CA, Continental Airlines, 1988, approx $50K: Performed geotechnical investigations and construction quality assurance for Continental Airlines Terminal 6 facilities including Continental Airlines Cargo Handling and Kitchen facilities south of LAX. Our scope involved providing technical support related to geotechnical issues, inspection of foundation excavations, fills and backfills, shoring installations, tie-back anchor testing, and drilled cast-in-place piers.

Staff Engineer, Delta Airlines Terminal 5 Expansion, Los Angeles International Airport, CA, Delta Airlines, 1989, approx $50K: Managed the geotechnical investigations and construction quality assurance for Delta Airlines' Terminal 5 facilities. Our scope involved providing site inspection of foundation excavations, fills and backfills and shoring installations. URS also provided technical support related to geotechnical issues as needed.

Staff Engineer, United Airlines Holdroom Facility, Ontario, International Airport, CA, United Airlines, 1995, approx $25K: Manager for a project involving overexcavation and grading for a new Holdroom Facility. Provided geotechnical related inspection during construction. Additional services provided included QA/QC and environmental compliance monitoring.

Staff Engineer, Burbank/Pasadena/Glendale Airport, Burbank, CA, FAA, 1995, approx $15K: Manager for a project involving a geotechnical investigation for a new tower structure within the airport facility. Provided geotechnical services and prepared a foundation investigation report.

Miscellaneous Private Developments

Los Angeles County Museum of Arts, Los Angeles, CA, 2006, $50K: Conducted several investigations at the LACMA facilities in Los Angeles for a proposed museum replacement project.

Union Station Developments, Los Angeles, CA, Catellus Development, 2004, $100K: Managed a geotechnical investigation at Union Station for the development of new apartment building over the MTS Red Line tunnels. Performed numerical analysis to evaluate potential aximetric-unloading of the tunnels due to proposed basement excavations.

South Coast Metro Center, McCarthy-Cook, Santa Ana, CA: 2004, $50K: Provided consultation during the geotechnical investigation of a 50-acre site for construction of 2 parking structures, 1 fitness center and 2 restaurants. The project included detailed soil characterization to evaluate

site compressibility characteristics, laboratory testing and engineering analyses to develop driven pile design recommendations.

Kid Space Museum, Pasadena, CA, Kid Space Museum: 2004, $50K: Supervised the geotechnical investigation for a new exhibition building within the Rose Bowl. The project involved renovation and restoration of an historic building as well of design and construction of a modern museum-type facility with a subterranean level. Supervised field drilling and sampling programs, laboratory testing and engineering analyses.

Forest Lawn and LA Archdiocese, Los Angeles, CA, 1998, $100K: Managed geotechnical investigations at several LA memorial parks to build new mortuary and mausoleum structures.

Animation Campus Project, Glendale, CA, DreamWorks, 1996, $100K: Managed geotechnical investigation, environmental investigation, and construction quality assurance phases for DreamWorks Glendale headquarters. Provided geotechnical services during the conceptual design phase. Managed all construction quality assurance and field activities.

Toon Town, Anaheim CA, 1992, $20K. Performed the original geotechnical investigation at the Anaheim Park for several 1-story buildings at the Toon Town attraction.

Warland Bridge and Warland Drive Alignment Project, Cypress, CA, Warland Enterprises, 1991, $20K - Provided geotechnical consultation during design and construction of a private bridge and roadway alignment. Bridge foundations included 12-inch square, driven piles.

Channel Bridge and Forest Lawn Drive Realignment, Warner Brothers, Burbank, CA, 1991, $30K - Managed a 2-year project involving drilled, cast-in-place concrete pier installations for support of the bridge structure and mass grading for the new road realignment. Provided geotechnical, geologic, and hydrologic-related during construction. Additional services provided included QA/QC, agency communication, schedule/cost control, contract administration, and environmental compliance monitoring.

Product Facilities

Principal Engineer, Miscellaneous Product Facilities, 1985 to Present: Performed and managed hundreds of geotechnical investigations, feasibility-level and site selection studies and construction quality assurance at various production facilities in support of new construction and renovation. Such facilities include:

OIL REFINING and STORAGE

- Tesoro Wilmington Refinery (formerly Texaco, Equilon, Shell)
- Conoco-Phillips Wilmington Refinery (formerly Unocal)
- BP Carson (formerly Arco)
- Shell Carson Refinery
- Chevron El Segundo Refinery
- Shell Dominguez Refinery
- Exxon-Mobil Torrance Refinery
- Kindermorgan Carson (formerly GATX)
- Carson Crude Terminal

PRODUCTS

- Praxair Wilmington (Formerly Union Carbide)
- Dow Chemicals
- Rhodia Dominguez (formerly Stauffer Chemicals)

FOODS AND GOODS

- Kraft Foods, Buena Park
- Coca Cola, Los Angeles
- Anheuser-Busch, Reseda
- Serv-A-Portion, Chatsworth

Professional Societies/Affiliates

American Society of Civil Engineers

Languages

English and Tagalog

Specialized Training

URS Project Management; Troxler Radiation Safety

Contact Information

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F & F GeoResource Associates, Inc.
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info@paleoresource.com

Helping preserve the past for the future

Stephen J. Blakely
Project Manager / Staff Paleontologist

Experience Summary

Stephen J. Blakely is a Project Manager at PaleoResource Consultants, working out of the Auburn office. He is responsible for the management of paleontological resource assessment and monitoring projects, as well as for the preparation of proposals and technical reports. In addition to project management duties, Mr. Blakely performs field surveys for assessments and has worked in the preparation laboratory and as a field paleontologist on monitoring projects.

Mr. Blakely also has several years experience working in the construction industry and experience from working at the University of California at Davis' sedimentology laboratory. He has a background in geology and geochemistry from study at the University of California at Davis. He has contributed on the preparation of several paleontological resource impact assessments and surveys, as well as on the preparation of paleontological mitigation and monitoring plans.

Experience Record

2007 – Present — Project Manager. PaleoResource Consultants, Auburn, California. Manages paleontological resource assessment and mitigation projects. Prepares assessment reports, mitigation plans, and other related documents. Coordinates and performs field assessments and field monitoring activities.

2006 — Research Assistant. Sedimentology Laboratory, University of California at Davis. Processed peat cores from the Sacramento / San Joaquin Delta. Extracted U-Channels for Paleomag analysis; sampled for pollen analysis; archived samples.

Affiliations and Certifications

Geological Society of America - Member
PASSPORT Contractor Oilfield Safety Training
Current BNSF Contractor Railway Safety Training
Current e-RAILSAFE Contractor Railway Safety Training

Education

B.S., Geology with emphasis in Geochemistry, expected 2010, University of California at Davis, Davis, California.

Sierra College of Rocklin, 2000 – 2002, Geology Student of the Year, 2002.

Related Course Work

Sedimentology and Stratigraphy, Paleobiology
Optical Mineralogy and Petrology, Structural Geology
Spring and Summer Field Geology, Writing in Science

Skills

Computer Comfortable in PC or Mac environments. Proficient in applications in Microsoft Office. Proficient with Corel Draw and Photo-Paint. Knowledge of Adobe Illustrator and Photoshop. Minor experience with ArcGIS.

Fieldwork Proficient in geologic field methods including geologic mapping and stratigraphic data collection. Knowledge of paleontological resource monitoring techniques during construction activities. Proficient in identifying fossils and fossiliferous sediments in the field. Knowledge of Total Station operation, GPS, and various geophysical techniques. Has performed numerous paleontological resource assessment surveys and has performed paleontological monitoring in support of paleontological mitigation plans.

Laboratory Proficient with the Petrographic microscope. Proficient in searching screenwashed sediments for microvertebrate remains. Familiar with other paleontological preparation laboratory techniques such as photographing and cataloging laboratory specimens. Familiar with basic chemistry procedures and possesses ability to keep accurate laboratory records.

Communication Ability to write clearly and concisely. Effective public speaker. Report writing ability.

SELECTED REPORTS:

Fisk, L. H., and Blakely, S. J., 2007, Anaheim Municipal Power Station application for certification paleontological resources section: Report prepared for California Energy Commission and URS Corporation, Goleta, CA, by PaleoResource Consultants, Sacramento, CA, 36 p.

Fisk, L. H., and Blakely, S. J., 2007, Ausra-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 evaluation report for the I-215/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 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 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 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 Blakely, S. J., 2008, Hydrogen Energy California application for certification paleontological resources section: Report prepared for California Energy Commission and URS Corporation, Denver, CO, by PaleoResource Consultants, Sacramento, CA, 46 p.

Fisk, L. H., and Blakely, S. J., 2008, Paleontological evaluation report for the Island Park Six Lane Project in Fresno and Madera Counties, California: Report prepared for California Department of Transportation, District 06, Fresno, CA, and Parsons Transportation Group, Inc., San Diego, CA, by PaleoResource Consultants, Auburn, CA, 43 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 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, Auburn, CA, 39 p.

Fisk, L. H., and Blakely, S. J., 2008, SES Solar Two application for certification paleontological resources section: Report prepared for California Energy Commission and URS Corporation, San Diego, CA, by PaleoResource Consultants, Auburn, CA, 58 p.

Fisk, L. H., and Blakely, S. J., 2008, Watson Cogeneration Steam and Electric Reliability Project application for certification paleontological resources section: Report prepared for California Energy Commission and URS Corporation, Denver, CO, by PaleoResource Consultants, Auburn, CA, 43 p.

Fisk, L. H., and Blakely, S. J., 2009, Soda Mountain Solar Project application for certification paleontological resources section: Report prepared for California Energy Commission and Far Western Anthropological Research Group, Inc., Las Vegas, NV, by PaleoResource Consultants, Auburn, CA, 44 p.

Fisk, L. H., and Blakely, S. J., 2009, Paleontological resource survey of portions of the Soda Mountains, San Bernardino County, California: Report prepared for Bureau of Land Management, Barstow, CA, by PaleoResource Consultants, Auburn, CA, 51 p.

Blakely, S. J., Fisk, L. H., and Haasl, D. M., Fresno to Bakersfield paleontological resources technical evaluation, California High-Speed Train Project EIR/EIS: Report prepared for URS Corporation, California High-Speed Rail Authority, and U.S. Department of Transportation Federal Railroad Administration by PaleoResource Consultants, Auburn, CA, 66 p.

RICHARD BOOTH

AEROWEST-Sr. Air Quality Consultant

RESUME OF EXPERIENCE AND STATEMENT OF QUALIFICATIONS

Mr. Booth has over 35 years of experience in the field of air quality engineering and environmental pollution control consulting. He has served as a project manager and team member on a wide variety of air, water, and solid and hazardous waste environmental and regulatory permitting projects for the energy and industrial sectors throughout California and the nation. He has been involved in numerous projects for the utility and independent power producer sectors, as well as the pulp and paper, wood products, and minerals industries. He has extensive experience in the areas of air quality related to minor and major new source permitting, NSR and PSD permitting, RACT-BACT-MACT-LAER determinations, cost effectiveness evaluations, Title IV/V permitting, air toxics evaluations, air dispersion modeling, health risk assessment, emissions inventory preparation (criteria and toxic pollutants, and greenhouse gases), regulatory compliance, rule development, and impact analysis. He has conducted historical ambient air quality assessments; background air quality assessments; detailed emissions calculations for criteria and toxic pollutants; detailed impacts analysis addressing project impacts to NAAQS, SAAQS, PSD increments, Class I area impacts, visibility, regional haze, and deposition; in-depth regulatory compliance analysis; mitigation assessment; and multiple pathway health risk assessments. In addition, he has prepared a wide range of environmental and regulatory documents such as RMP's, SPCC's, SWPPP's, Phase I ASTM site assessments, multi-media environmental compliance audits, acquisition due diligence documents, critical issues analysis documents, and CEQA/NEPA assessments and studies.

TECHNICAL EXPERTISE

Regulatory Permitting

Served as Project Manager and team member on a variety of regulatory permitting projects throughout California and the United States. These projects involved New Source Review and/or Prevention of Significant Deterioration permitting activities, Title III, Title IV, and Title V permitting projects, dispersion modeling, impact analyses, control technology evaluations, and agency liaison. Clients included biomass and fossil fuel-fired power plants, combustion turbine facilities, waste-to-energy plants, pulp and paper mills, resource recovery facilities, vehicle assembly plants, and a wide variety of industrial and commercial operations. Extensive experience in federal, state, and local agency air quality regulation development and analysis, preparation of emissions inventories, air quality planning issues, enforcement and compliance practices. RACT/BACT/LAER determinations, and cost effectiveness evaluations. Excellent knowledge of the Clean Air Act Amendments of 1990 and the implementing regulations issued to date. Participated as the primary author in the preparation of a definitive analysis of the impact of CAA provisions on residual fuel-oil use by electric utilities across the nation.

Air Toxics

Served as Project Manager and primary author for over 30 air toxic and GHG emissions inventory plans and emissions reports pursuant to the California AB2588 Air Toxics Hot Spots Act, and the California GHG regulations. Clients included fossil fuel-fired power plants, biomass and waste-to-energy plants, resource recovery plants, surface coating operations, chemical milling facilities, and petroleum product storage terminals. Supervised and participated in the preparation of a wide variety of multiple pathway health risk assessments. These assessments contained discussions pertaining to hazard identification, exposure assessment, dose-response assessment, and risk characterization. Also included were detailed treatments of acute and chronic health effects, substance toxicity, environmental fate, exposure routes, and environmental transport modeling.

Regulatory Compliance and Environmental Audits
Managed numerous projects dealing with regulatory compliance issues such as permit language negotiation, plume abatement studies, emissions offset acquisition and analysis, and variance preparation. Extensive experience in regulatory rulemaking review and analysis. Prepared a number of source specific environmental audits dealing with cross media impacts, i.e., air, water, solid waste, hazardous materials handling, hazardous waste, land use issues, noise. Conducted numerous Phase I Site Assessments and environmental due diligence reviews for the acquisition of a wide variety of industrial facilities, including power plants, medical services and medical equipment manufacturing facilities, mineral recovery facilities, etc. Extensive team experience in the preparation of Storm Water Pollution Prevention Plans, Spill Containment Countermeasure Control Plans, Risk Management Plans, Risk Reduction Audits and Plans, and source-specific compliance plans.

EDUCATION

A.A. (Associate of Arts), Pre-Engineering, American River College, Sacramento, CA, 1969
B.A. (Bachelor of Arts), Natural Science, California State University, Chico, CA, 1976
Post-graduate coursework, Environmental Impact Analysis, California State University, Chico, CA, 1979-1981

TRAINING

Project Management Training Course: Level 100, October 2001
Project Management Training Course: Level 200, February 2002
Project Management Training Course, Project Management Institute, 1996.
Sales Training Course: March 2002
Loss Control Course: Det Norske Veritas, March 2002
Supervisory Training Course: Supervising in the Matrix, November 2002
ASTM Site Assessment and Transaction Screen: Re-certification, February 2003

PUBLICATIONS & PRESENTATIONS

Contributing Author-Environmental Permitting Handbook, McGraw-Hill Publishing, ISBN 0-07-024824-9, 2000.

Contributing Author-Risk Management Planning Handbook, Government Institutes, ISBN 0-86587-615-0, 1998.

Other publications and presentation references provided upon request.

PROFESSIONAL REFERENCES

Provided upon request.

CURRENT EMPLOYER DATA

AEROWEST
Richard B. Booth, Sr. AQ Consultant/PM (Sole Proprietorship)

RICHARD BOOTH
AEROWEST-Sr. Air Quality Consultant

PAST EMPLOYER DATA

Tetra Tech EC, Inc. – Sr. Air Quality Scientist
ENV Environmental – Sr. Air Quality Consultant
Foster Wheeler Environmental Corporation – Sr. Air Quality Scientist
RTP Environmental Associates, Inc. - Associate
CARNOT Technical Services – Manager, Air Group
Energy Systems Associates – Sr. Regulatory Affairs Analyst
Shasta County Air Quality Management District – Air Pollution Control Officer
Butte County Air Pollution Control District – Deputy Air Pollution Control Officer

RELATED INFORMATION

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PROJECT EXPERIENCE SUMMARIES

The following tables delineate a summary of typical projects and project experience for review and consideration.

AIR TOXICS EMISSIONS INVENTORY PROJECTS

Client	Project	Experience
Southern California Edison	Generation and Support Facilities – San Diego County – Los Angeles County – Orange County – Ventura County – San Bernardino County – Riverside County – Santa Barbara County	Prepared the initial AB2588 air toxics inventory reports for all of SCE's southern California electrical generating and support facilities. Equipment inventoried consisted of gas turbines, utility boilers, IC engines, fuel storage facilities, fugitive VOC emissions sources, and utility support facilities. In addition, assisted in supplying support data for the various AB2588 health risk assessments prepared for the SCE facilities. Facilities inventoried are as follows: ▪ Alamitos Generating Station ▪ El Segundo Generating Station ▪ Long Beach Generating Station ▪ Huntington Beach Generating Station ▪ Etiwanda Generating Station ▪ Redondo Beach Generating Station ▪ Highgrove Generating Station ▪ Coolwater Generating Station ▪ Pebbly Beach Generating Station ▪ Ormond Beach Generating Station ▪ Mandalay Generating Station ▪ San Onofre Nuclear Generating Station ▪ San Bernardino Generating Station ▪ Goleta Generating Station Support facility inventories included: ▪ Westminster Maintenance Facility ▪ Palmdale Tankage Facility ▪ Chino Hills Tankage Facility ▪ Dominguez Hills Tankage Facility ▪ Alhambra Warehouse Facility Also assisted with the 1997 system wide plan and report updates.
State of California	Department of Justice Facility, and, Central Plants Operation Sacramento, CA	Prepared the initial AB2588 air toxics plan and inventory reports for the Department of Justice and Central Plants facilities. These facilities utilized equipment such as gas turbines, boilers, IC engines, and VOC emissions sources such as storage tanks and laboratory units. In addition, a multiple-pathway health risk assessment was prepared for the Central Plants operation located in downtown Sacramento.
Monterey Carpet Co., Inc.	Santa Ana Manufacturing Plant Santa Ana, CA	Prepared the initial AB25888 plan and report for the carpet manufacturing and dyeing facility. The facility consisted of carpet manufacturing processes, backing application and adhesion processes, and carpet dyeing processes utilizing a wide variety of solvent and non-solvent borne dyes and coloring products.
Ricoh Electronics Corp.	Pullman Ave Facility Tustin, CA.	Prepared the initial AB2588 air toxics inventory plan and report for photo-imaging drum manufacturing facility located in Tustin, CA. The facility consisted of boilers, various degreasers, and vacuum metal coating processes. In addition, prepared the initial multiple pathway health risk assessment for the facility. The HRA contained a detailed discussion of emissions, exposure routes, and assessment of cancer risk and acute and chronic health effects.
Mt. POSO Generating Co.	Mt. POSO Generating Plant Bakersfield, CA	Prepared the initial AB2588 air toxics inventory report for the coal fired power plant facility located at Mt. Poso, Bakersfield, CA. The facility consisted of a coal fired fluidized-bed boiler and fuel handling facilities, water treatment and cooling tower processes, and ash handling facilities.
United American Energy Operations Corp.	Oildale Energy LLC Bakersfield, CA	Prepared initial and updated AB2588 air toxics plans and reports for the OELLC cogeneration facility. The facility consists of a gas turbine and heat transfer fluid heater, both of which support the heat needs of the adjacent TriCor refinery.

Client	Project	Experience
Ralph's Grocery Co.	Glendale and Compton Facilities – Glendale, CA – Compton, CA	Prepared the initial AB2588 plans and reports for the Glendale warehousing and bakery facilities, and the Compton dairy and delicatessen production facilities. Facility equipment consisted of bakery ovens, VOC fugitive emission sources, truck maintenance facility, petroleum storage facilities, stationary IC engines, and raw materials storage systems and handling processes.
Silvercrest Industries	Western Homes Corp. – Corona, CA – Woodland, CA	Prepared the initial AB2588 plans and reports for the Corona and Woodland pre-manufactured housing facilities. These facilities consisted of woodworking processes, coating and fugitive VOC processes, under-carriage manufacturing and coating operations.
CPC International, Inc.	Best Foods Division Santa Fe Springs, CA	Prepared the initial AB2588 plans and reports for the Santa Fe Springs plant. This facility manufactures mayonnaise and peanut butter products. Processes consisted of raw material and handling systems, mixing and preparations systems, packaging systems, and refrigeration and steam/hot water production systems.
NEA Corporation	Mesquite Lake RR Facility El Centro, CA	Prepared the initial AB2588 plans and reports for the Mesquite Lake Resource Recovery Facility. The facility consisted of specialized systems for the storage, handling, and combustion of manure for power production.
J.F. Shea Company	Asphalt and Minerals Facilities Redding, CA	Prepared the initial AB2588 plans and reports for the two J. F. Shea facilities located in Redding, CA. These facilities (Clear Creek and Smith Rd) produced a wide variety of asphalt, concrete, and sand and gravel products for regional construction projects.

CRITERIA POLLUTANT EMISSIONS INVENTORY PROJECTS*

Client	Project	Experience
Simpson Paper Co.	Mill Title V Projects -Anderson Mill -Pomona Mill -Ripon Mill -Gilman Mill	Produced a device, process, and facility specific criteria pollutant emissions inventory as part of the Title V permit application development process for each of the individual mills listed. Emissions within the inventory were delineated for particulate matter, nitrogen dioxides, sulfur dioxides, volatile organic compounds, carbon dioxide, and total reduced sulfur species.
CalEnergy Co.	Region 1 Geothermal Power Plants	Produced a device, process, and facility specific criteria pollutant emissions inventory as part of the Title V permit application development process for each of the five (5) geothermal plants in the Region 1 development area. Emissions within the inventory were delineated for particulate matter, nitrogen dioxides, sulfur dioxides, volatile organic compounds, carbon dioxide, and hydrogen sulfide.
ENPOWER , formerly UAE Energy Operations Corp.	Oildale Energy LLC	Produced a device, process, and facility specific criteria pollutant emissions inventory as part of the Title V permit application development process for the gas turbine based cogeneration facility. Emissions within the inventory were delineated for particulate matter, nitrogen dioxides, sulfur dioxides, volatile organic compounds, carbon dioxide.
ENPOWER , formerly UAE Energy Operations Corp.	Wadham Energy LLC	Produced a device, process, and facility specific criteria pollutant emissions inventory as part of the Title V permit application development process for the biomass resource recovery facility. Emissions within the inventory were delineated for particulate matter, nitrogen dioxides, sulfur dioxides, volatile organic compounds, carbon dioxide.
Williams Co.	Gas Distribution Network -State of New Mexico -State of Montana	Produced a device, process, and facility specific criteria pollutant emissions inventory as part of the Title V permit application development process for the individual gas distribution systems. Emissions within the inventory were delineated for particulate matter, nitrogen dioxides, sulfur dioxides, volatile organic compounds, carbon dioxide.
Tractebel Power Inc.	Ripon Cogeneration Facility	Produced a device, process, and facility specific criteria pollutant emissions inventory as part of the Title V permit application development process for the gas turbine based cogeneration facility. Emissions within the inventory were delineated for particulate matter, nitrogen dioxides, sulfur dioxides, volatile organic compounds, carbon dioxide.
Northern California Power Agency	California System GHG Inventory	Prepared a system wide greenhouse gas emissions inventory for seven (7) NCPA power generations facilities within California. The inventory was prepared for input into the California Climate Action Registry and subsequent certification. Facilities included, gas turbines, IC engines, geothermal plants, SF_6 storage, refrigeration units, mobile sources, transmission and distribution system, etc.
City of Roseville, Ca.	California System GHG Inventory	Prepared a system wide greenhouse gas emissions inventory for the City of Roseville, Ca. The inventory was prepared for input into the California Climate Action Registry and subsequent certification. Facilities included, gas turbines, IC engines, mobile sources, transmission and distribution system, electrical and gas use, etc.

* Comprehensive emissions inventories are typically produced for most regulatory permitting projects, regulatory assistance projects, California Energy Commission projects, and emissions reduction credit projects, as listed in the other tables herein.

ENVIRONMENTAL AUDITING-COMPLIANCE AUDITING

Client	Project	Experience
Enpower Corp.	Wadham Energy LP	Prepared a multi-media compliance audit (air, water, solid waste, hazardous waste, hazardous materials) for a 29 MW biomass fired power plant located in northern California. Audit consisted of a plant inspection, records review, and staff interviews. Audit focused on present compliance with regulatory programs, and recommendations to enhance compliance.
Enpower Corp.	Oildale Energy LLC	Prepared a multi-media compliance audit (air, water, solid waste, hazardous waste, hazardous materials) for a 49 MW gas turbine based power plant located in southern California. Audit consisted of a plant inspection, records review, and staff interviews. Audit focused on present compliance with regulatory programs, and recommendations to enhance compliance.
ENRON North America	Various Power Plant Sites in California and Nevada	Prepared environmental due diligence analyses (air quality) for a variety of power plants located in California and Nevada. These analyses were similar in scope to a typical environmental compliance audit. These audits were prepared in support of potential acquisitions of facilities by Enron North America. Facilities evaluated are as follows: • ACE Cogen • Corona Cogen • Ft. Churchill Power Station • Harry Allen Power Station • Longview LLC Power Plant • Midway Kern Power Plant • NP Cogen • Stockton Cogen • Mt. Poso Cogen
City of Rialto, Ca.	Rialto Municipal Airport	Conducted a three-phase Phase I Site Assessment for the impending closure of the airport facility. The assessment considered the main airport complex, adjoining airport tenants, and adjacent airport property included in the sale and transfer. On site sampling was conducted in areas of concern for a variety of organic materials and toxic metals.
See Regulatory Permitting, Title V, and Regulatory Assistance Lists	Various Projects	For a majority of the projects listed, a regulatory compliance analysis was performed for air quality issues (similar to an air compliance audit) which detailed either the present or anticipated compliance status of the facility under evaluation with respect to applicable air quality regulations, i.e., local, state, and federal levels.

HEALTH RISK ASSESSMENT PROJECTS

Client	Project	Experience
Pacific Gas and Electric Co.	Morro Bay Power Plant Health Effects Document Morro Bay, CA	Prepared an analysis of the health effects of particulate matter fallout resulting from combustion of residual oils in the Morro Bay power plant boilers. The study considered the generation of the fallout PM, its morphology, mass emissions potential, fallout effects, and health effects. In addition, the study analyzed potential mitigation measures which could be used to decrease such fallout, including, fuel treatment prior to plant delivery, fuel additives, control equipment, and fuel switching.
Southern California Edison	Mt. View Generating Station	Prepared a full multiple-pathway health risk assessment for the 600 MW combined cycle power facility located in Redlands, Ca. The HRA's consisted of a refined modeling and impacts analysis, emissions identification and quantification, exposure analysis, documentation of health effects data, and a risk assessment for cancer incidence, cancer burden, acute and chronic health effects.
Cogentrix Energy	Quail Brush Power Plant, San Diego, CA	Prepared a full multiple-pathway health risk assessment for the 102 MW Wartsila IC engine power facility located in Santee, Ca. The HRA's consisted of a refined modeling and impacts analysis, emissions identification and quantification, exposure analysis, documentation of health effects data, and a risk assessment for cancer incidence, cancer burden, acute and chronic health effects.
NextEra Energy	Genesis Solar Project, Blythe, Ca.	Prepared a full multiple-pathway health risk assessment for the solar power facility located in Blythe, Ca. The HRA's consisted of a refined modeling and impacts analysis, emissions identification and quantification, exposure analysis, documentation of health effects data, and a risk assessment for cancer incidence, cancer burden, acute and chronic health effects.
Abengoa Inc.	Mojave Solar I, Harper Lake, Ca.	Prepared a full multiple-pathway health risk assessment for the solar power facility located at Harper Lake , Ca. The HRA's consisted of a refined modeling and impacts analysis, emissions identification and quantification, exposure analysis, documentation of health effects data, and a risk assessment for cancer incidence, cancer burden, acute and chronic health effects.
BP Carson Refinery	Watson Cogen Expansion Project	Prepared a full multiple-pathway health risk assessment for the gas turbine based cogeneration facilities expansion project. The HRA's consisted of a refined modeling and impacts analysis, emissions identification and quantification, exposure analysis, documentation of health effects data, and a risk assessment for cancer incidence, cancer burden, acute and chronic health effects.
Ricoh Electronics Corp.	Pullman Ave Facility Tustin, CA	Prepared a full multiple-pathway health risk assessment for the photo drum manufacturing facility. The HRA consisted of a refined modeling and impacts analysis, emissions identification and quantification, exposure analysis, documentation of health effects data, and a risk assessment for cancer incidence, cancer burden, acute and chronic health effects.
State of California	Central Plants Operation Sacramento, CA	Prepared a full multiple-pathway health risk assessment for the central plants facility located in downtown Sacramento. The HRA consisted of a refined modeling and impacts analysis, emissions identification and quantification, exposure analysis, documentation of health effects data, and a risk assessment for cancer incidence, cancer burden, acute and chronic health effects.
Sunlaw Cogeneration Partners	AB2588 Risk Assessments – Growers Facility-Vernon, CA – Federal Facility, Vernon, CA	Prepared a full multiple-pathway health risk assessment for each of the gas turbine based cogeneration facilities. The HRA's consisted of a refined modeling and impacts analysis, emissions identification and quantification, exposure analysis, documentation of health effects data, and a risk assessment for cancer incidence, cancer burden, acute and chronic health effects.

Client	Project	Experience
Calpine Corp.	Russell City Energy Center Hayward, CA	Co-authored a full multiple-pathway health risk assessment for the 600 MW gas turbine based power plant facility. The HRA consisted of a refined modeling and impacts analysis, emissions identification and quantification, exposure analysis, documentation of health effects data, and a risk assessment for cancer incidence, cancer burden, acute and chronic health effects. This analysis was submitted to the CEC as part of the AFC documentation. See CEC Projects above.
Silicon Valley Power	PICO Power Project Santa Clara, CA	Co-authored a full multiple-pathway health risk assessment for the 130 MW gas turbine based power plant facility. The HRA consisted of a refined modeling and impacts analysis, emissions identification and quantification, exposure analysis, documentation of health effects data, and a risk assessment for cancer incidence, cancer burden, acute and chronic health effects. This analysis was submitted to the CEC as part of the AFC documentation. See CEC Projects above.
Tractebel Power Inc.	Ripon Cogeneration Ripon, CA	Prepared a full multiple-pathway health risk assessment for the auxiliary boiler replacement for the facility expansion project. The HRA consisted of a refined modeling and impacts analysis, emissions identification and quantification, exposure analysis, documentation of health effects data, and a risk assessment for cancer incidence, cancer burden, acute and chronic health effects.
Halogenated Solvents Industry Association	Brake Servicing Study Statewide, CA	Prepared a screening (inhalation pathway) health risk assessment for the potential exposure to perchloroethylene from the use of brake cleaning solvents. The HRA consisted of a refined modeling and impacts analysis, emissions identification and quantification, exposure analysis, documentation of health effects data, and a risk assessment for cancer incidence, cancer burden, acute and chronic health effects. In addition, the study included numerous facility surveys conducted in the Los Angeles, San Francisco, and Sacramento urban areas. The study was conducted in support of HSIA's opposition to the further regulation of solvents in aerosol-automotive products.
Edison Mission Energy	Walnut Creek Energy Park and Sun city Energy Centers	Co-authored a full multiple-pathway health risk assessment for each of the 500 MW gas turbine based power plant facilities. The HRA's consisted of a refined modeling and impacts analysis, emissions identification and quantification, exposure analysis, documentation of health effects data, and a risk assessment for cancer incidence, cancer burden, acute and chronic health effects. These analyses were submitted to the CEC as part of the AFC documentation. See CEC Projects above.
RGT/Tierra Energy	Eastshore Power Plant Project	Co-authored a full multiple-pathway health risk assessment for the 126 MW IC engine based power plant facility. The HRA consisted of a refined modeling and impacts analysis, emissions identification and quantification, exposure analysis, documentation of health effects data, and a risk assessment for cancer incidence, cancer burden, acute and chronic health effects. These analyses were submitted to the CEC as part of the AFC documentation. See CEC Projects above.
Enron North America	Las Vegas Cogeneration LP Las Vegas, NV	Co-authored a full multiple-pathway health risk assessment for the 240 MW gas turbine based power plant facility expansion. The HRA consisted of a refined modeling and impacts analysis, emissions identification and quantification, exposure analysis, documentation of health effects data, and a risk assessment for cancer incidence, cancer burden, acute and chronic health effects.
Calpine Corp.	Calpine Geothermal Wildhorse and Buckeye Power Plants, Sonoma County, CA.	Provided the HRA support analysis, using HARP, for the Wildhorse and Buckeye geothermal power plants located in Sonoma County, Ca. The HARP HRA analysis consisted of using the refined modeling input and outputs to conduct the HRA for each facility. The HRAs included emissions identification and quantification, exposure analysis, documentation of health effects data, and a risk assessment for cancer incidence, cancer burden, acute and chronic health effects.

REGULATORY ASSISTANCE PROJECTS

Client	Project	Experience
MacQuarie Energy	Delaware NOx/VOC Offset Analysis	Currently providing regulatory support for a proposed NOx/VOC offset ratio analysis to be used in Delaware. The plant site and the project region lie within the Ozone Transport Region. The analysis goal is to be establish NOx and VOC offset ratios acceptable to the State of Delaware for use by new power production facilities in the state.
San Diego Gas and Electric Co.	CEMS Evaluation San Diego County	Co-authored an analysis of continuous emissions monitoring requirements per the San Diego APCD rules and regulations and the provisions of Title IV (acid rain) of the Clean Air Act of 1990. The evaluation considered each SDG&E generating station, existing operations, future operations, existing CEMS, required new or upgrades to CEMS, and additional monitoring, record keeping, and reporting requirements.
Pacific Gas and Electric Co.	Humboldt Bay and Colusa Generating Stations	Co-authored a detailed permitting "gap" analysis for both facilities. The analyses were prepared to support PG&E staff as they prepared for the initial startup phased for both facilities. The analyses identified any permitting gaps, established permit conditions that potentially required changes or amendments, and first year reporting, notification, and monitoring requirements.
Southwest Generation	Arapahoe and Valmont Generating Stations	Currently providing regulatory support for re-permitting of the turbine facilities to increase the annual emissions limits to provide more operating time and power production for the State of Colorado which has identified the need for the power. Re-permitting includes PSD issues and stationary source coupling issues with Public Services of Colorado (via the power purchase agreements).
Southern California Edison	Goleta Generating Station Goleta, CA	Provided regulatory and compliance assistance to SCE for the Goleta peaker turbine facility concerning air district implementation of permit conditions and impacts on operation and emissions.
Southern California Edison	Compliant Coating Survey System wide	Co-authored a detailed analysis of all coatings used by SCE system wide, the compliance status of each coating per the existing air agency rules, and a manual to be used by maintenance staff to insure that a compliant coating is chosen for each specific type of job and application. Individual manuals were produced for the South Coast AQMD, Ventura APCD, Santa Barbara APCD, and the San Diego APCD.
TransCanada	North Baja Project	Responsible for analysis and project impact evaluation for the North Baja gas pipeline and compressor station construction. A Resource Report was prepared to include applicability and/or compliance analysis of the project against Federal, State, and local requirements.
EEC-Northrop Grumann	Alodining Line Project Los Angeles, CA	Prepared an analysis of emissions and health impacts for the proposed tank modifications for the Building 907 alodining line. The analysis evaluated operational scenarios involving tank mixing by air sparging and pump mixing technology.
Laidlaw Gas Recovery Systems	Coyote Canyon LFG Facility Irvine, CA	Provided regulatory assistance to the LFG power facility in the areas of impacts modeling and permit implementation. Modeling tasks were oriented towards a comparison of the original model used to evaluate facility impacts and the versions of the same model updated over a 5 year period. The intent of the task was to show the local air agency that the new version of the model showed equivalent impacts and negate reliance on the older version. In addition, staff worked with the client on analyzing the original permitting evaluation to insure operations permit issuance.
AirKinetics Inc.	Edwards AFB Thermal Oxidizer Edwards AFB, CA	Provided refined modeling for the thermal oxidizer (TO) located at Edwards AFB. Modeling was accomplished using ISC, approved meteorology, and data on building structures, and TO physical parameters and emissions. Substances of interest were dioxins and related compounds emitted form the TO as a result of the waste materials input. Re-evaluation of the TO was required due to a re-location of the unit within the confines of the air base.

Client	Project	Experience
Calpine Corp.	Air Compliance Issues Analysis Power Plant Sites Various States	Provided a detailed analysis of existing plant data, impacts of existing regulations such as NSR and PSD on proposed site modifications, potential control technologies required, and mitigation requirements. Sites considered in the evaluations were: ▪ Hermiston, OR ▪ Gilroy, CA ▪ Agnews, CA ▪ Monterey, CA ▪ King City, CA ▪ Greenleaf II, CA ▪ South Point, AZ
Evergreen Oil Co.	Used Oil Refining Newport Beach, CA	Provided regulatory and permitting assistance for the used oil refining facility in Fontana, CA, as well as permit application development for the used oil transfer station in south Los Angeles. In addition, prepared the air permitting application and support data for the new waste water treatment system at the Fontana facility. This application consisted of an emissions analysis, control technology determinations, evaluation of operational scenarios, and regulatory compliance analysis.
Biogen Power	Biogen Power I Nipton, CA	Provided regulatory assistance and preparation of the waste fuel study for the existing power plant. The study explored the potential to burn hazardous wastes in the fluid-bed boiler, costs, cost effectiveness, and environmental impacts. Co-authored a technical report on the visible ammonia plume from the power plant resulting from the use of SCR, plume effects, impacts, and potential measures to reduce plume visibility. This report was used by the applicant and the local air agency in variance proceedings. In addition, I provided a PSD applicability analysis for the facility to show that the plant was exempt from PSD, and as a result the PSD permit was withdrawn by EPA Region 9.
NBTY Inc.	Pharmaceutical Plant Compliance Bohemia, NY	Co-authored a regulatory analysis of VOC control technologies for methanol emissions from pharmaceutical formulation use. Also worked on a comprehensive analysis of past compliance using the EPA BEN Model (compliance penalty model) to provide company legal staff with data on potential levels of EPA imposed fines for non-compliance with state VOC emissions regulations.
Energy Services Inc.	Livingstone Generating Station Michigan	Provided regulatory assistance to ESI on the permitting and operations aspects of the newly installed gas turbine peaker units. Issues involved the application of post-construction test data to the units and the impacts on predicted initial permitting operational scenarios and compliance.
Otis Specialty Papers	Otis Paper Co. Jay, ME	Provided regulatory assistance to the mill staff on issues related to the existing boilers and potential NO_x emissions, and achievable reductions related to burner modifications.

CALIFORNIA ENERGY COMMISSION PROJECTS

Client	Project	Experience
Silicon Valley Power Santa Clara, CA	PICO Power Project 147 MW	Co-authored the AFC sections on air quality and public health, and support appendices. The air quality section contained a detailed analysis of existing air quality, BACT analysis, project emissions, mitigation requirements, regulatory compliance analysis, and refined modeling impacts analysis. The public health section contained a detailed analysis of project air toxic emissions, exposure levels, and multiple pathway health risk analysis for cancer risk, cancer burden, acute and chronic health effects.
Calpine-Bechtel LP Hayward, CA	Russell City Energy Center 600 MW	Co-authored the AFC sections on air quality and public health, and support appendices. The air quality section contained a detailed analysis of existing air quality, BACT analysis, project emissions, mitigation requirements, regulatory compliance analysis, and refined modeling impacts analysis. The public health section contained a detailed analysis of project air toxic emissions, exposure levels, and multiple pathway health risk analysis for cancer risk, cancer burden, acute and chronic health effects.
Calpine-GE	Russell City Energy Center 600 MW	Co-authored the revised AFC sections on air quality and public health, and support appendices. The revisions were undertaken as a result of the new proposed site location. The air quality section contained a detailed analysis of existing air quality, BACT analysis, project emissions, mitigation requirements, regulatory compliance analysis, and refined modeling impacts analysis. The public health section contained a detailed analysis of project air toxic emissions, exposure levels, and multiple pathway health risk analysis for cancer risk, cancer burden, acute and chronic health effects.
Midway Power, LLC FPL Energy Livermore, CA	Tesla Power Plant Project 1120 MW	Prepared the AFC sections on hazardous materials, hazardous waste, and worker safety, as well as the supporting documentation. The hazardous materials section contained a discussion of proposed materials to be used, storage and handling requirements, and offsite consequence analysis for aqueous ammonia. The hazardous waste section identified all wastes to be generated during construction and operation, required waste management practices, and potential disposal sites. The worker safety section presented a detailed discussion on both construction and operation worker safety practices and programs, required training programs, and a comprehensive listing of industry codes and standards.
NextEra Energy	Genesis Solar Project, Blythe, Ca.	Co-authored the AFC sections on air quality and public health, and support appendices for the project. The air quality sections contained a detailed analysis of existing air quality, BACT analysis, project emissions, mitigation requirements, regulatory compliance analysis, and refined modeling impacts analysis. The public health sections contained a detailed analysis of project air toxic emissions, exposure levels, and multiple pathway health risk analysis for cancer risk, cancer burden, acute and chronic health effects.
Abengoa Inc.	Mojave Solar I, Harper Lake, Ca.	Co-authored the AFC sections on air quality and public health, and support appendices for the project. The air quality sections contained a detailed analysis of existing air quality, BACT analysis, project emissions, mitigation requirements, regulatory compliance analysis, and refined modeling impacts analysis. The public health sections contained a detailed analysis of project air toxic emissions, exposure levels, and multiple pathway health risk analysis for cancer risk, cancer burden, acute and chronic health effects.
BP Carson Refinery	Watson Cogen Expansion Project	Co-authored the AFC sections on air quality and public health, and support appendices for the project. The air quality sections contained a detailed analysis of existing air quality, BACT analysis, project emissions, mitigation requirements, regulatory compliance analysis, and refined modeling impacts analysis. The public health sections contained a detailed analysis of project air toxic emissions, exposure levels, and multiple pathway health risk analysis for cancer risk, cancer burden, acute and chronic health effects.
Calpine Corporation Romoland, CA	Inland Empire Energy Center 670 MW	Co-authored the AFC sections on hazardous materials, hazardous waste, and worker safety, as well as the supporting documentation. The hazardous materials section contained a discussion of proposed materials to be used, storage and handling requirements, and offsite consequence analysis for aqueous ammonia. The hazardous waste section identified all wastes to be generated during construction and operation, required waste management practices, and potential disposal sites. The worker safety section presented a detailed

		discussion on both construction and operation worker safety practices and programs, required training programs, and a comprehensive listing of industry codes and standards.
Edison Mission Energy Sun City and City of Industry, CA.	Sun City Energy Center 500 MW and Walnut Creek Energy Park 500 MW	Co-authored the AFC sections on air quality and public health, and support appendices for both projects. The air quality sections contained a detailed analysis of existing air quality, BACT analysis, project emissions, mitigation requirements, regulatory compliance analysis, and refined modeling impacts analysis. The public health sections contained a detailed analysis of project air toxic emissions, exposure levels, and multiple pathway health risk analysis for cancer risk, cancer burden, acute and chronic health effects.
RGT/Tierra Energy	Eastshore Power Project - 126 MW	Co-authored the AFC sections on air quality and public health, and support appendices. The air quality section contained a detailed analysis of existing air quality, BACT analysis, project emissions, mitigation requirements, regulatory compliance analysis, and refined modeling impacts analysis. The public health section contained a detailed analysis of project air toxic emissions, exposure levels, and multiple pathway health risk analysis for cancer risk, cancer burden, acute and chronic health effects.
Cogentrix Energy	Quail Brush Power Plant-102.3 MW	Co-authored the AFC sections on air quality and public health, and support appendices. The air quality section contained a detailed analysis of existing air quality, BACT analysis, project emissions, mitigation requirements, regulatory compliance analysis, and refined modeling impacts analysis. The public health section contained a detailed analysis of project air toxic emissions, exposure levels, and multiple pathway health risk analysis for cancer risk, cancer burden, acute and chronic health effects.

BACT RESEARCH

Client	Project	Experience
Gas Research Institute Chicago, IL	Gas Co-firing/Wood Fired Boiler BACT	Prepared a comprehensive analysis of wood-fired (biomass) boiler best available control technologies for NO_x, CO, SO_x, VOC, and PM_{10}. Effects on emissions from gas co-firing in biomass boilers, and the need for reconsideration of BACT technologies was analyzed.
Electric Power Research Institute Palo Alto, CA	Oil-fired Utility Boiler Study	Prepared a detailed analysis of Clean Air Act (Amendments of 1990) impacts on utility oil-fired boilers. The analysis evaluated BACT technologies, HAPs emissions, MACT determinations, acid deposition issues, Title V permitting issues, and emissions offset issues.
CalEnergy Operating Corp. Imperial County, CA	Benzene Control-Geothermal Power Plants	Co-authored a BACT/MACT analysis for benzene emissions from geothermal power cycle processes. The analysis considered existing facility control techniques which were identified as "achieved in practice", as well as the retrofitting of controls such as thermal oxidizers, flares, and carbon adsorption to the power cycle processes. The report evaluated control efficiency, retrofit costs, O&M costs, and cost effectiveness for each technology.
NBTY Pharmaceuticals New York	VOC and PM_{10} Emission Control Study	Co-authored a regulatory analysis of VOC control technologies for methanol emissions from pharmaceutical formulation use. The analysis was conducted as part of a compliance audit and enforcement action response.
Piney Point Phosphates, Inc. Florida	Sulfuric Acid Emission Control Study	Co-authored a BACT analysis for SO_2 and sulfuric acid mist (SAM) emissions from the PPP plant. The analysis was conducted as a result of public concerns over the type of control technology chosen by the proposed plant. The BACT analysis evaluated candidate control technologies for application feasibility, emissions impacts, environmental impacts, energy impacts, and economic impacts. The evaluation followed the EPA "top down" methodology. SO_2 and SAM control technologies considered were as follows: ▪ Ammonia scrubbing (SO_2) ▪ Sodium Bisulfite scrubbing (SO_2) ▪ Molecular Sieves (SO_2) ▪ ESP (SAM) ▪ Dual Absorption (SO_2 and SAM) ▪ Hydrogen Peroxide Scrubbing (SO_2 and SAM) ▪ Packed-bed Filters (SAM)
Caithness Energy	Blythe II Energy Project, Blythe, CA.	Co-authored a detailed BACT analysis for the proposed facility combustion turbines and auxiliary boiler for the following pollutants; NOx, CO, VOC, SOx, PM10, and GHGs. The BACT analysis included detailed cost evaluations, as well as an analysis of the RBLC data for the period 1-1-2000 through 6-1-2010.
PSD and NSR Permitting Actions	BACT and LAER Evaluations Various Sources	Prepared numerous BACT and LAER evaluations for a wide variety of sources and processes as an integral part of both PSD and NSR permitting actions for new and modified sources. Sources and processes include, but are not limited to, the following: ▪ Boilers, IC engines, Gas turbines, LFG Flares, Kilns ▪ Surface coating and solvent use operations ▪ Mineral process operations, fugitive particulate emissions processes ▪ Wood products processes, pulp and paper mill processes ▪ Cooling towers ▪ Solids handling systems (fuels, ash, etc.)

REGULATORY PERMITTING

Client	Project	Experience
California Institute of Technology	Turbine Replacement Project Pasadena, CA	Prepared the air application for the turbine replacement project. The Caltech project involved the replacement of a Solar Centaur 50-T5900 turbine with a Solar Mars 100-T15000 turbine. The application contained detailed discussions of existing facility emissions, new turbine project emissions, BACT analysis, control cost analysis, refined modeling impact analysis, Class I area impacts analysis, screening health risk assessment, and regulatory compliance analysis.
Calpine Corporation	Inland Empire Energy Center Romoland, CA	Prepared the draft NPDES discharge permit application for the 670 MW gas turbine combined cycle power plant. The application delineated the proposed discharges from the power plant processes such as cooling water, and boiler blow down. The application was prepared for submittal to the Eastern Municipal Water District, the Santa Ana Regional Water Control Board, and the Orange County Sanitation District.
Silicon Valley Power Santa Clara, CA	PICO Power Project	Co-authored the air application for the 130 MW combined cycle power plant for review by the Bay Area Air Quality Management District. The air quality application contained a detailed analysis of existing air quality, BACT analysis, project emissions, mitigation requirements, regulatory compliance analysis, and refined modeling impacts analysis. The public health portion of the application contained a detailed analysis of project air toxic emissions, exposure levels, and multiple pathway health risk analysis for cancer risk, cancer burden, acute and chronic health effects.
Calpine Corporation Hayward, CA	Russell City Energy Center	Co-authored the air application for the 600 MW combined cycle power plant for review by the Bay Area Air Quality Management District. The air quality application contained a detailed analysis of existing air quality, BACT analysis, project emissions, mitigation requirements, regulatory compliance analysis, and refined modeling impacts analysis. The public health portion of the application contained a detailed analysis of project air toxic emissions, exposure levels, and multiple pathway health risk analysis for cancer risk, cancer burden, acute and chronic health effects.
Tractebel Power Inc. Ripon, CA	Boiler Replacement Project	Prepared the air application for the 93 MMBtu/hr boiler replacement project at the Ripon Cogeneration facility. The application contained detailed discussions of existing facility emissions, boiler replacement project emissions, BACT analysis, control cost analysis, refined modeling impact analysis, regulatory compliance analysis, and screening health risk assessment.
UAE Energy Operations Corp. Bakersfield, CA	Oildale Energy LLC Turbine Replacement Project	Prepared the air application for the gas turbine replacement project. The project consisted of the replacement of the existing LM-5000 turbine with a newer, more efficient LM-6000 unit. ENV, working with local air agency staff, was able to achieve successful project implementation as a “functionally identical replacement” thus negating the need for NSR permitting, BACT re-evaluation, and added emissions mitigations.
CalEnergy Operating Co.	Minerals Recovery Project Imperial County, CA	Co-authored the air permitting application for the minerals recovery project for the Region I geothermal power plants. The project involved the use of minerals recovery technology from spent geothermal brine, i.e., ion exchange, purification, solvent extraction, electrowinning, and ingot production. The facility was designed primarily for zinc recovery. The air application contained data on proposed facility and process emissions, BACT determinations, dispersion modeling and impact analysis, and regulatory compliance.
Enron North America Las Vegas, NV.	Las Vegas Cogeneration, LP	Co-authored the air application for the 240 MW expansion project located at the Las Vegas Cogeneration site. The expansion consisted of 4-LM6000 gas turbines with HRSG’s and steam turbines. The application contained detailed discussions of existing facility emissions, expansion project emissions, BACT analysis, control cost analysis, refined modeling impact analysis, Class I area impacts analysis, and regulatory compliance analysis.

Client	Project	Experience
Calpine Corporation	Vineyard Energy Project Vineyard, UT	Co-authored the air application for the 978 MW combined cycle power plant for review by the Utah DEQ-Air Division. The air quality application contained a detailed analysis of existing air quality, BACT analysis, project emissions, mitigation requirements, regulatory compliance analysis, and refined modeling impacts analysis. The public health portion of the application contained a detailed analysis of project air toxic emissions, exposure levels, and multiple pathway health risk analysis for cancer risk, cancer burden, acute and chronic health effects.

TITLE V PERMITTING PROJECTS

Client	Project	Experience
Simpson Paper Co.	Mill Title V Projects – Anderson, CA – Pomona, CA – Ripon, CA – Gilman, VT	Prepared the complete Title V applications and technical support documents for the following pulp and paper mills. ▪ Shasta Pulp and Paper Mill (integrated mill) ▪ San Gabriel Mill (recycled paper mill) ▪ Ripon Mill (non-integrated mill) ▪ Centennial Mill (non-integrated mill) Application documents included complete process and equipment inventories, emissions calculations for all equipment and processes, regulatory compliance analysis, monitoring and record keeping provisions, and reporting requirements. Typical equipment included in the various permit applications consisted of pulping and digester systems, pulping liquor systems, recovery boilers, power boilers, gas turbines, lime kilns, bleachery systems, pulp dryers, pulp hydrators, paper machines, paper coating processes, and waste water treatment plants.
Enpower Corp.	Wadham Energy LP	Prepared the Title V application for the 29 MW biomass fired power facility located in Williams, CA. Application documents included complete process and equipment inventories, emissions calculations for all equipment and processes, regulatory compliance analysis, monitoring and record keeping provisions, and reporting requirements.
PG&E	Colusa Generating Station	Prepared the Title V application for the 600 MW combined cycle turbine power facility located in Maxwell, CA. Application documents included complete process and equipment inventories, emissions calculations for all equipment and processes, regulatory compliance analysis, monitoring and record keeping provisions, and reporting requirements.
Calpine Corp.	Otay Mesa Generating Station, San Diego, CA.	Co-authored the Title V application for the gas turbine based cogeneration facility. Application documents included complete process and equipment inventories, emissions calculations for all equipment and processes, regulatory compliance analysis, monitoring and record keeping provisions, and reporting requirements.
Pacific Gas and Electric Co.	Gateway Generating Station	Co-authored the Title V application for the gas turbine based cogeneration facility. Application documents included complete process and equipment inventories, emissions calculations for all equipment and processes, regulatory compliance analysis, monitoring and record keeping provisions, and reporting requirements. This facility is currently operating under a federal consent decree.
Silvercrest Industries, Inc.	Western Homes Corp. Corona, CA	Prepared the Title V application for the pre-manufactured housing production facility located in Corona, CA. Application documents included complete process and equipment inventories, emissions calculations for all equipment and processes, regulatory compliance analysis, monitoring and record keeping provisions, and reporting requirements.
CalEnergy Co.	Region 1 Geothermal Power Plants Imperial County, CA	Co-authored the Title V applications for the Region 1 geothermal power plants. Application documents included complete process and equipment inventories, emissions calculations for all equipment and processes, regulatory compliance analysis, monitoring and record keeping provisions, and reporting requirements. Typical equipment included in the application analyses were production wells, power cycle equipment, cooling towers, injection wells, and IC engines.
UAE Energy Operations Corp.	Oildale Energy LLC Bakersfield, CA	Prepared the Title V application for the gas turbine based cogeneration facility located in Bakersfield, CA. Application documents included complete process and equipment inventories, emissions calculations for all equipment and processes, regulatory compliance analysis, monitoring and record keeping provisions, and reporting requirements.
Tractebel Power Inc.	Ripon Cogeneration Facility Ripon, CA	Prepared the Title V application for the gas turbine based cogeneration facility. Application documents included complete process and equipment inventories, emissions calculations for all equipment and processes, regulatory compliance analysis, monitoring and record keeping provisions, and reporting requirements.
UAE Energy Operations Corp.	Wadham Energy Facility Williams, CA	Provided regulatory oversight and review of the Title V permit application. . The facility is a biomass combustion facility, which produces power and provides steam hosting for an adjacent food processing facility. Application documents included complete process and equipment

		inventories, emissions calculations for all equipment and processes, regulatory compliance analysis, monitoring and record keeping provisions, and reporting requirements.
Biogen Power LP	Biogen Power I Nipton, CA.	Prepared the "synthetic minor" application for the refuse-coal based power plant facility located in the Mohave Air District. The facility consisted of a refuse-coal fluidized bed power production system and coal and ash handling system. Application documents included complete process and equipment inventories, emissions calculations for all equipment and processes, regulatory compliance analysis, monitoring and record keeping provisions, and reporting requirements sufficient to show compliance with the agency synthetic minor rule provisions.
Williams Co.	Gas Distribution Network – State of New Mexico – State of Montana	Co-authored the Title V applications for a number of gas distribution and compressor station facilities owned and operated by the Williams Co. These facilities consisted of the following types of equipment and processes; IC engines, gas turbines, and gas dehydration processes. Application documents included complete process and equipment inventories, emissions calculations for all equipment and processes, regulatory compliance analysis, monitoring and record keeping provisions, and reporting requirements.

EMISSION REDUCTION CREDIT PROJECTS

Client	Project	Experience
San Diego Gas and Electric Co.	Mobile Source Offset Program San Diego, CA	Prepared a detailed analysis of offset credit generation potential from the scraping of old vehicles. Offsets generated would be used by the utility to mitigate emissions increases from new or modified power plants within San Diego County. The analysis presented data on vehicle emissions, predicted validity period of such reductions, program costs and cost effectiveness, and an analysis of the UnoCal and CARB programs for old vehicle scraping.
Edison Mission Energy	Walnut Energy Center, Walnut, CA.	Co-authored the support analysis for the acquisition of non-traditional emissions offset opportunities for EME for the Walnut Energy Center. The analysis considered offset opportunities, amounts of offsets (emissions reductions) potentially available, and offset generation costs for emissions categories such as; stationary engine replacement, marine engine replacement, locomotive engine replacement or installation of locomotive idling technology, trucks stop electrification, agricultural pump engine electrification, etc. This analysis was part of a potential legislative action and SIP amendment.
Biogen Power LP	Biogen Power I Nipton, CA	Prepared the ERC application for the facility closure. The application contained a detailed analysis of past actual and potential emissions, historical operational patterns, and regulatory compliance analysis. ERC's were requested for emission reductions of NO_x, CO, SO_x, VOC, and PM_{10}.
Burney Forest Power	Burney Forest Power Burney, CA	Prepared the application and support data for the emissions mitigation package for PM_{10} for the proposed new biomass power plant. PM10 offset credits were proposed and obtained from an air agency approved road-paving program. The offset study consisted of a detailed study of candidate roads, traffic patterns, road surface analyses, emissions calculations, and compliance analysis to insure that the road paving program met the minimum EPA offset requirements of being: enforceable, permanent, surplus, and quantifiable.
Wheelabrator Corp.	Shasta Energy Facility Anderson, CA	Worked with power plant applicant on the application and support data for the emissions mitigation package for PM_{10} for the proposed new 56.4 MW biomass power plant. PM_{10} offset credits were proposed and obtained from a road-paving program designed by the applicant and the local air agency. The offset study consisted of a detailed study of candidate roads, traffic patterns, road surface analyses, emissions calculations, and compliance analysis to insure that the road paving program met the minimum EPA offset requirements of being: enforceable, permanent, surplus, and quantifiable.
Advanced Environmental Inc.	AEI Waste Oil Facility Fontana, CA	Prepared the ERC application for the facility closure. The application contained a detailed analysis of past actual and potential emissions, historical operational patterns, and regulatory compliance analysis. ERC's were requested for emission reductions of VOC primarily, but other pollutants such as NO_x, SO_x, CO, and PM_{10} were also included.
UAE Energy Operations Corp.	Modesto Energy LP San Joaquin County, CA	Prepared the ERC application for the TDF power plant closure. The application contained a detailed analysis of past actual and potential emissions, historical operational patterns, and regulatory compliance analysis. ERC's were requested for emission reductions of NO_x, CO, SO_x, VOC, and PM_{10}.
UAE Energy Operations Corp.	Oildale Energy LLC	Prepared a detailed analysis of facility emissions and required offset mitigation for the OELLC "operational flexibility" program. The "op flex" program was targeted at a partial de-linking of the cogeneration facility from the adjacent oil refinery, which had provided the original ERCs during initial permitting of the facility. Staff also worked with applicant on the identification and acquisition of the required ERCs to accomplish the partial de-link.
SCE	Mt. View Power Plant	Co-participant in post-commissioning re-permitting effort involving acquisition of additional VOC ERCs, and on-going compliance assistance.

OTHER REGULATORY PROJECTS

Client	Project	Experience
US Forest Service	Sioux Ranger District Oil/Gas Leasing EIS	Prepared a detailed analysis of the affected environment and potential consequences of increased oil and gas leasing within the confines of the Sioux Ranger District in northwest South Dakota. The affected environment analysis considered the existing setting, climate, existing air quality, attainment status, emissions from existing oil and gas development activities, applicable regulations, and stipulations of the Forest Plan. The consequence analysis considered the various emissions sources attendant to oil and gas development activities, resultant emissions, significance determinations, and compliance with the Forest Plan.
Wheelabrator Inc.	Shasta Energy Facility Anderson, CA	Prepared air application and supporting documentation for a proposed SO_x emissions increase from the existing biomass energy facility. This application was the result of numerous alternative fuel studies conducted at the facility in an attempt to identify other available fuels which could reasonably and cost effectively be used. The proposed SO_x emissions increase was subject to PSD review.
Burney Forest Power	Burney Forest Power Burney, CA	Prepared air application and supporting documentation for a proposed CO emissions increase from the existing biomass energy facility. The CO increase application consisted of a detailed historical emissions analysis, evaluation of required increase, refined dispersion modeling including a Class I area impacts analysis, and BACT re-evaluation. Prepared a detailed analysis of the facility's ammonia stack emissions limit in support of a variance application and subsequent permit amendment. As part of this task, managed another third party consultant who performed periodic stack testing and ammonia injection location evaluations. Prepared the PM_{10} CAM Plan for the boilers and ESP units, as well as review of the Title V renewal application.
Magma Power Inc.	Fishlake Power Plant Fishlake, NV	Provided research assistance for the federal EA on the proposed Fishlake Power Plant. The FLP is a geothermal power plant proposed to be located on the north end of Fishlake Valley (east central Nevada). The EA addressed such areas as air quality, transmission line right-of-way applications, visual analysis, UEPA compliance (State of Nevada), and water impacts.

SITING/CRITICAL ISSUES ANALYSIS PROJECTS

Client	Project	Experience
Calpine Corp.	Power Plant Siting Studies, CA	Prepared the air quality issues analyses for numerous power plant and LNG facilities proposed for construction and operation in California. These analyses included data on, existing site setting, climate, air quality, attainment status for NAAQS and SAAQS, regional emissions data, applicable regulations, impacts of applicable regulations, required level of mitigation, permitting schedules, and identification of any critical or fatal flaw issues. Siting analyses were prepared for the following power plant sites: ▪ Hesperia Site ▪ Pajaro Site ▪ Humboldt Bay LNG Site ▪ Milpitas Site ▪ Wolfskill Site
County of Modoc	Coal and Biomass Plant Sites – Alturas, CA – Canby, CA	Prepared the air quality issues analyses for two power plant sites proposed for construction and operation in Modoc County. These analyses included data on, existing site setting, climate, air quality, attainment status for NAAQS and SAAQS, regional emissions data, applicable regulations, impacts of applicable regulations, required level of mitigation, permitting schedules, and identification of any critical or fatal flaw issues. Siting analyses were prepared for the following power plant sites: ▪ Coal Fired Power Plant – Alturas, CA ▪ Biomass Power Plant – Canby, CA
Silicon Valley Power	PICO Power Project Santa Clara, CA	Prepared the air quality issues analyses for a 130 MW gas turbine based power plant site proposed for construction and operation in Santa Clara County. These analyses included data on, existing site setting, climate, air quality, attainment status for NAAQS and SAAQS, regional emissions data, applicable regulations, impacts of applicable regulations, required level of mitigation, permitting schedules, and identification of any critical or fatal flaw issues.
Matrix Power Inc.	Matrix Power Salt Lake City, UT	Co-authored a comprehensive siting analysis for a gas turbine based power plant to be located south of the Salt Lake City airport complex. This analysis considered siting and permitting activities for air, water, wastes, land use, etc., and included a detailed analysis of agency participation at both the city, county and state levels.

CEQA/NEPA PROJECTS

Client	Project	Experience
Pacific Corp. and Idaho Power Corp.	Gateway West EIS	Prepared the air quality technical section and analysis for the FERC EIS for the Gateway West Transmission line project. The project consisted of a transmission line project spanning approximately 1100 miles from Casper, WY. to Boise, ID. The air quality analysis addressed the primary and secondary transmission line route(s) background air quality, construction emissions, operational emissions, and impacts. Included in the analysis were discussions of GHG emissions, general conformity analysis, and compliance regulatory analysis.
Idaho Power Corp.	Boardman to Hemingway EIS	Prepared the air quality technical section and analysis for the FERC EIS for the Gateway West Transmission line project. The project consisted of a transmission line project spanning approximately 305 miles from Boardman, Or. to Hemingway, ID. The air quality analysis addressed the primary and secondary transmission line route(s) background air quality, construction emissions, operational emissions, and impacts. Included in the analysis were discussions of GHG emissions, general conformity analysis, and compliance regulatory analysis.
ENPLAN	Panorama Planned Development EIR	Prepared the air quality analysis section or the project EIR. The air quality analysis addressed background air quality, project emissions, regulatory setting, impacts, and mitigations. The project involved a planned subdivision consisting of approximately 430 residential lots located in southern Shasta County.
ENPLAN	Ukiah Air Attack Base EIR	Prepared the air quality analysis section or the project EIR. The air quality analysis addressed background air quality, project emissions, regulatory setting, impacts, and mitigations. The project consisted of the planned relocation of the fire suppression air attack facility from its current location at the Ukiah airport to a new location on the existing airport property.
North Baja Pipeline, LLC	North Baja Pipeline EIS	Prepared the air quality technical section and analysis for the FERC EIS for the North Baja pipeline project. The project consisted of an underground gas pipeline project spanning several hundred miles in the southern California area (Imperial County) The air quality analysis addressed the primary and secondary pipeline route(s) background air quality, construction emissions, operational emissions, and impacts. Included in the analysis were discussions of GHG emissions, general conformity analysis, and compliance regulatory analysis.
Liberty Energy Resources, Inc.	Liberty V EIR	Prepared the EIR Air Quality Technical Report for the Liberty V biosolids power plant project located at Lost Hills, Ca. (Kern County). The LV power plant is a 19.5 MW facility fired on biosolids and biomass. The AQ technical report consisted of a detailed analysis of the process systems, emissions, and impacts. In addition the AQ technical report contained a detailed GHG analysis and health risk assessment.
Tetra Tech ISG	I-10 Tippecanoe Interchange EIR	Prepared the air quality analysis section or the project EIR. The air quality analysis addressed background air quality, project emissions, regulatory setting, impacts, and mitigations. The project involved the modification of the I-10/Tippecanoe freeway interchange, i.e., ramp reconfigurations, lane adjustments, and lane additions.
US Forest Service	Sioux Ranger District Oil/Gas Leasing EIS	Prepared a detailed analysis of the affected environment and potential consequences of increased oil and gas leasing within the confines of the Sioux Ranger District in northwest South Dakota. The affected environment analysis considered the existing setting, climate, existing air quality, attainment status, emissions from existing oil and gas development activities, applicable regulations, and stipulations of the Forest Plan. The consequence analysis considered the various emissions sources attendant to oil and gas development activities, resultant emissions, significance determinations, and compliance with the Forest Plan.
Shell Wind Energy, Inc.	Hermosa West Wind Farm Project EIS, CO.	Prepared a detailed analysis of the affected environment and potential consequences of the proposed 300 MW wind farm facility to be located in Albany County, CO. The affected environment analysis considered the existing setting, climate, existing air quality, attainment status, emissions from wind farm development/construction activities, applicable regulations, and stipulations of the State of Wyoming. The consequence analysis considered the various emissions sources attendant to wind farm operational activities, resultant emissions, significance determinations, and compliance with the state and federal regulations.
Iberdrola	Amargosa Solar	Prepared a detailed analysis of the affected environment and potential consequences of the

Renewables	Project, Amargosa, NV.	proposed 150 MW solar photovoltaic power facility to be located in Nye County, NV. The affected environment analysis considered the existing setting, climate, existing air quality, attainment status, emissions from solar facility development/construction activities, applicable regulations, and stipulations of the State of Nevada. The consequence analysis considered the various emissions sources attendant to solar facility operational activities, resultant emissions, significance determinations, and compliance with the state and federal regulations.
Portland General Electric, Co.	Cascade Crossing Transmission Line Project EIS	Prepared the air quality technical section and analysis for the FERC EIS for the Cascade Crossing Transmission line project. The project consisted of a transmission line project spanning approximately 210 miles within the State of Oregon. The air quality analysis addressed the primary transmission line route(s) background air quality, construction emissions, operational emissions, and impacts. Included in the analysis were discussions of GHG emissions, general conformity analysis, and compliance regulatory analysis.

Resume – Carroz Consulting LLC

Carroz Consulting LLC provides environmental planning services to public agencies and private businesses. Katie Carroz helps her clients assess environmental impacts of projects as part of permitting documents prepared to satisfy NEPA, SEPA, and CEQA. Services include built environment analysis (socioeconomics, environmental justice, public services, land use); project and task management; and economic impact assessment. Her projects have spanned seven western states: Washington, Oregon, California, Idaho, North Dakota, Arizona, and New Mexico. Types of projects have included transportation (highway and transit), energy, natural resource, and development (commercial and mixed use). In her work and interactions with clients, she values and emphasizes effective communication and understanding of methods, responsiveness and reliability, and high-quality products. Carroz Consulting LLC is currently certified as a State of Washington Women's Business Enterprise (WBE) and a federal Disadvantaged Business Enterprise (DBE).

Expertise

- NEPA, SEPA, and CEQA planning and permitting
- Project and task management
- Socioeconomic impact assessment, IMPLAN analysis
- Environmental justice issues

Education, Katie Carroz

- Master of Arts in Economics, with an emphasis on Natural Resources (University of Washington, 1996).
- Bachelor of Arts in Economics, minor in Environmental Studies (Colorado College, 1992).

Prior Work Experience

- Carroz Consulting LLC, Issaquah, Washington, 2010-current
- ENTRIX, Inc., Seattle, Washington, 2009-2010
- Carroz Consulting LLC, Issaquah and Seattle, Washington, 2006-2009
- URS Corporation, Seattle, Washington, 2001-2006
- URS Corporation, San Francisco, California, 1999-2001
- Huckell/Weinman Associates, Kirkland, Washington, 1997-1999
- Puget Sound Regional Council, Seattle, Washington, 1996-199

Services

NEPA, SEPA, and CEQA Planning and Permitting

Katie has provided planning and permitting services on 13 transportation projects, 20 energy projects, five natural resource projects, and 17 development projects. Specific tasks include conducting and reviewing technical analyses and reports; writing portions of environmental permitting documents; scoping issues identification; coordinating document production; gathering data; coordinating mapping; developing methodology; conducting literature reviews; and facilitating team and client collaboration.

Project and Task Management

Katie has provided project management duties on several projects, including the Plymouth Generating Facility EIS; the Darrington Cogeneration Facility Expanded SEPA Checklist; the Station A Supplement to the Potrero Power Plant Application for Certification; the Oregon Coast Highway 101 Improvement (Pacific Way to Dooley Bridge) Socioeconomic Technical Report for the EIS; and several other transportation improvement projects. Project management tasks have included team leadership, client and agency coordination, budget monitoring, supervising junior staff, preparation of materials for public meetings and management of document production. In 2010, she was the primary technical reviewer for the built environment sections (land use, visual resources, noise, and air quality) of the NEPA EIS analyzing the effects of continued dredging in the lower Missouri River.

Socioeconomic Impact Assessment

Katie has prepared socioeconomic impact studies for transportation, energy, natural resource and development projects. Transportation projects have included highway and road alignment changes, new highway interchanges, the addition of light rail and commuter rail facilities and airport runway reconfigurations. Katie was a major contributor to the socioeconomics chapter of the Oregon Department of Transportation Environmental Procedures Manual, which instructs project managers on writing and reviewing NEPA socioeconomic studies.

Katie has completed socioeconomic studies of energy projects as part of (1) environmental impact statements in compliance with NEPA or SEPA (WA), or (2) applications for certification submitted to state energy facility licensing organizations (WA and CA). The California Energy Commission's process is a CEQA-equivalent process. Projects have included natural gas-fired power plants (simple cycle, combined cycle, cogeneration, integrated gasification combined cycle), wind power, biomass and hydrogen plants. Katie provided testimony about the socioeconomic and environmental justice analysis of the Tracy Peaker Power Plant, during a public hearing in 2001. She reviewed and responded to comments on the socioeconomics and environmental justice section for the NEPA EIS prepared for the North Steens Transmission Line Project in 2010.

Katie has analyzed economic impacts of five natural resource projects and several commercial development projects. She has estimated (using IMPLAN) direct, indirect and induced regional economic impacts due to 15 energy projects, ten transportation projects, one development project, and two natural resource projects. In 2007, Katie conducted a regional economic impact analysis of Children's Hospital and Regional Medical Center Major Institution Master Plan.

Environmental Justice

Katie has specific expertise in environmental justice issues. She addresses environmental justice issues by analyzing the potential risk of high and adverse disproportionate impacts to populations protected under Title VI of the Civil Rights Act of 1964 and related non-discrimination statutes. She has prepared environmental justice assessments for eight major transportation improvement projects, 12 energy projects and one natural resource project.

Relevant Energy Projects

Katie has prepared socioeconomic impact assessments, including in most cases environmental justice analysis and IMPLAN analysis, for the following energy projects.

- California Energy Commission Application for Certification (CEQA-equivalent process) – Watson Cogeneration Steam and Electric Reliability Project (City of Carson). 2008-2009.
- Washington State Energy Facility Siting Evaluation Council Application for Site Certification – Whistling Ridge Energy Project, Wind Power (Skamania County). 2008-2009.
- California Energy Commission Application for Certification – Willow Pass Generating Station (City of Pittsburg). 2008-2009.
- California Energy Commission Application for Certification – Carson Generating Station (City of Carson). 2008.
- California Energy Commission Application for Certification – Hydrogen Energy California (Kern County). 2007-2008.
- California Energy Commission Application for Certification – Kern Front Power Plant (Kern County). 2007-2008.
- California Energy Commission Application for Certification – San Gabriel Generating Station (San Bernardino County). 2007-2008.
- Seattle City Light Integrated Resource Plan EIS (City of Seattle, WA). 2006.
- Washington State Energy Facility Siting Evaluation Council Application for Site Certification – Pacific Mountain Energy Center Integrated Gasification Combined Cycle Plant (City of Kalama). 2006.
- Black Mesa Project EIS (Navajo, Mohave, Coconino and Apache Counties, AZ). 2005.
- Plymouth Generating Facility NEPA/SEPA EIS (Community of Plymouth, WA). 2002-2003.
- Cotterel Mountain Wind Project EIS, Socioeconomics (Cassia County, ID). 2003.
- Darrington Cogeneration Facility Expanded SEPA Checklist (City of Darrington, WA). 2003.
- California Energy Commission Application for Certification – Imperial Irrigation District Energy Projects (2) (Imperial County). 2005-2006.
- California Energy Commission Application for Certification – Potrero Power Plant (City of San Francisco). 1999-2001.
- California Energy Commission Application for Certification – Contra Costa Power Plant (Contra Costa County). 1999-2001.
- California Energy Commission Application for Certification – Colusa Power Plant (Colusa County). 1999-2001.
- California Energy Commission Application for Certification – Tracy Peaker Plant (Kings County). 1999-2001.
- California Energy Commission Application for Certification – Henrietta Peaker Plant (San Joaquin County). 1999-2001.
- California Energy Commission Station A Supplement to Potrero Power Plant Application for Certification (City of San Francisco). 2001.

Noel V. Casil, PE, TE, PTOE

Senior Traffic Engineer

Areas of Expertise

Traffic Engineering
Transportation Planning
ITS Planning

Years of Experience

With URS: 11
With Other Firms: 18

Education

BS/Civil/1982/University of Santo Tomas, Manila

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),

Highway Capacity Manual 2010 Active Traffic Management Task Force (Member)

Highway Capacity Manual 2010 User Liaison and Interpretation Task Force (Member)

Highway Capacity Manual 2010 *FREEVAL* Documentation Task Force (Member)

Overview

Mr. Casil has over twenty five 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. Mr. Casil has provided traffic and transportation consulting on over 30 power generation, utilities and fuel industry projects throughout California and Nevada.

Project Specific Experience

Task Leader, Calico Solar AFC, San Bernardino County, CA, Tessera Solar, 2008-2011: Solar One will be located in San Bernardino County, 35 miles east of Barstow, California, on public land managed by the BLM BFO. Solar One proposes to employ the SunCatcher technology of Stirling Energy Systems, Inc. (SES). This technology is innovative, technically proven, non-polluting, and cost-effective in large utility-scale deployment. The system is designed to track the sun automatically and to focus solar energy onto a Power Conversion Unit (PCU), which generates electricity. The system consists of a wide solar concentrator dish that supports an array of curved glass mirror facets. These mirrors collect and focus solar energy onto the heat exchanger of the PCU. The PCU converts the solar thermal energy into electricity. Each SunCatcher operates independently and generates grid-quality electricity. The traffic analysis and AFC traffic and transportation section evaluated various project access alternatives during construction and operations. One of the key transportation issues involve the need for a grade separated rail crossing across a busy train corridor.

Task Leader, Imperial Valley Solar (IVS) AFC, Imperial County, CA, Tessera Solar, 2008-2011: The proposed project will be one of the world's largest solar power plants. This facility will be located in Imperial County, 14 miles west of El Centro, California, on public land managed by the Bureau of Land Management (BLM), El Centro Field Office. The Facility will utilize solar concentrator dish technology. IVS proposes to employ the SunCatcher technology of Stirling Energy Systems, Inc. (SES). This technology is innovative, technically proven, non-polluting, and cost-effective in large utility-scale deployment. The system is designed to track the sun automatically and to focus solar energy onto a Power Conversion Unit (PCU), which generates electricity. The system consists of a wide

solar concentrator dish that supports an array of curved glass mirror facets. These mirrors collect and focus solar energy onto the heat exchanger of the PCU. The PCU converts the solar thermal energy into electricity. Each SunCatcher operates independently and generates grid-quality electricity.

Task Leader, Niland Generating Facility Project AFC, Imperial County, CA, Imperial Irrigation District, 2006-2008: The proposed project was constructed under the California Energy Commission's (CEC) Small Power Plant Exemption (SPPE) AFC process. The project is located in the community of Niland in Imperial County and owned and operated by the Imperial Irrigation District (IID). IID provides electrical power, non-potable water, farm drainage services to the lower southeastern portion of the California desert, primarily Imperial County. The proposed power plant is intended to serve the growing electrical load demands in the region.

Task Leader, El Centro Generation Station Unit 3 Repowering Project AFC, Imperial County, CA, Imperial Irrigation District, 2006-2008: The CEC Application for Certification (AFC) is for the construction and operation of the El Centro Generating Station (ECGS) Unit 3 Repowering Project. The project is owned and operated by the Imperial Irrigation District and will utilize the existing infrastructure and staffing at the ECGS. The Project consists of repowering Unit 3 with a GE Frame 7EA dry low NOx (DLN) combustion turbine generator (CTG) and heat recovery steam generator (HRSG) to supply steam to the existing steam turbine generator (STG).

Task Leader, Salton Sea Unit 6 AFC, Imperial County, CA, CalEnergy, 2001-2002: Preparation of an Application for Certification (AFC) for submittal to the California Energy Commission (CEC) for the construction and operation of a new power generation facility known as the CalEnergy Company, Inc. (CalEnergy) Salton Sea Unit 6 (SSU6) near Calipatria, California. The SSU6 is a proposed 180 megawatt (MW) geothermal steam turbine power plant.

Task Leader, Antelope Valley Solar Ranch 1, Los Angeles County, CA, NextLight, 2009-present: The proposed Project consists of construction and operation of a 230-megawatt (MW) alternating current (AC) solar photovoltaic (PV) facility on 2,100 acres of primarily fallow agricultural land located in northern Los Angeles County along State Route 138 (SR-138) (West Avenue D). The Project includes a 230-kilovolt (kV) transmission line for interconnecting the electrical output of the Project to the regional transmission system. The proposed transmission line is approximately 3.5 miles long, and is planned to interconnect to SCE's planned Whirlwind Substation north of the Project site in southern Kern County.

Task Leader, Carizo Energy Solar Farm, San Luis Obispo County, CA, Ausra Inc., 2007-present: The project proponent, Ausra Inc. is proposing to construct a solar power generation site at Carissa Plains in San Luis Obispo County and west of Kern County. Key transportation challenges for the site involve construction traffic movements through

SR-58 and county roadways. A Transportation Mitigation Plan was developed in response to agency and community concerns during project construction.

Task Leader, San Joaquin 1 & 2, Fresno County, CA, Martifer Renewables Solar Thermal, 2008-present: The Project will be located in an unincorporated area of southwestern Fresno County east of the City of Coalinga. The Project is approximately 8 miles north of Kings County. Roadway access to the site will be from West Jayne Avenue, which runs adjacent to and parallel to the northern border of the site. Regional access to the site will be provided via Interstate 5 (I-5), about four miles east of the project driveway. Key traffic and transportation issues involve temporary effects of project construction traffic to adjacent land uses including a state penal facility and feedstock deliveries during the operations of the proposed project.

Task Leader, San Gabriel Generating Station Application for Certification, Rancho Cucamonga, CA, San Gabriel Generating Station LLC, 2006-present: San Gabriel Generating Station LLC is proposing to construct a nominal 698 megawatt combined cycle gas fired power plant within an existing Electric Generating Station owned by Reliant Energy in an Industrial zoned portion of the City of Rancho Cucamonga. The traffic analysis included the evaluation of construction and operational traffic impacts at the project study area located near the confluence of two major Southern California freeways. The project site located at the northeastern quadrant of the I-15 and I-10 Freeways.

Task Leader, Bighorn Generating Facility, Primm, Clark County, NV, Reliant Energy, 2001: The proposed Bighorn Electric Generating Station is located on a 120-acre site east of I-15 freeway on the eastern periphery of the Primm area in Clark County, Nevada. The project site is generally undeveloped and required site grading to build the proposed project. The proposed project will be accessed via an existing unimproved road that would be improved in conjunction with the project and would tie-in to the easterly extension of Wells Road. The traffic impact analysis was conducted in compliance with State of Nevada Department of transportation (DOT) and Regional Transportation Commission of Southern Nevada (RTC) traffic analysis procedures and guidelines.

Other Energy Sector Studies, Licensing and Support Services

- Ruby Solar Project (Pacific Valley LLC)
- Bethel 10 Solar Hybrid Project (Bethel Energy LLC)
- Lost Hills Solar Project (NextLight)
- Tehachapi Renewables Transmission Project (SCE)
- Lompoc Wind Energy Facility (Acciona Wind Energy)
- Watson Cogen Expansion AFC (BP Alternative Energy)
- Larkspur Energy Center AFC Amendment (Wildflower Energy LLP)
- Otay Mesa Energy Center AFC (Calpine Corporation)
- Canyon Power Station AFC (SCPPA – City of Anaheim)
- Starwood Energy Center AFC (Starwood Energy Group)
- CPV Sentinel Energy Project AFC (CPV Sentinel, LLC)
- Granite Wind Farm Project (Granite Wind LLC)
- Rancho Santa Margarita Peaker (Wellhead Power Margarita LLC)
- 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)
- Tracy Peaker Plant AFC (GWF Energy LLC)
- Bullard Energy Center AFC (Bullard Energy Center LLC)
- Panoche Energy Center AFC (Panoche Energy Center, LLC)
- Pegasus Power Project AFC (Pegasus Power Partners, LLC)
- Kinder Morgan Carson Facility Expansion (Kinder Morgan)
- Bigwest Refinery Clean Fuels EIR (Flying J Corporation)
- Colton Phase II Expansion Project (Kinder Morgan)
- 7-11 Store and Gas Station Traffic Study (City of Vista)
- Luvs - Lost Hills Project Traffic Study (Pilot Corporation)
- Speedy Fuel Diesel Station Project Peer Review (BNSF)

Transportation Planning Projects

- Bullard High School Master Plan EIR (Fresno Unified)
- Carmelita Mining Project EIR (County of Fresno)
- Laton Community Plan Update TIA (County of Fresno)
- San Joaquin River Transportation Study (County of Madera)
- Bakersfield Systems Study (Kern Council of Governments)
- City of Chico Growth Feasibility Study (City of Chico)
- Pasadena Soccer Academy TIA (City of Pasadena)
- Vault Self Storage (3 Sites) Facilities TIA (City of Pasadena)
- Pasadena AMF 300 Parking Study (City of Pasadena)
- Empire Center Burbank Traffic Analysis (City of Burbank)
- Palmdale Airport Master Plan (LAWA)
- LAX/South (Orange County) High-Speed Ground Access Study (SCAG)
- City of Fullerton General Plan Update (City of Fullerton)
- Ontario Agricultural Preserve Sphere of Influence Study (City of Ontario)
- City of El Segundo Circulation Element Update (City of El Segundo)
- City of Santa Monica Master Environmental Assessment (City of Santa Monica)
- West Haven Specific Plan EIR (City of Ontario)
- Moonridge Corridor Specific Plan EIR (City of Big Bear Lake)
- Los Angeles County Park and Ride Master Plan (LACMTA)
- UCLA-Santa Monica Hospital EIR (UCLA Capital Improvements)
- Santa Monica Zoning EIR (City of Santa Monica)
- Arboretum EIR Analysis (Arboretum Development Partners)
- Metro Red Line Eastside Extension FEIS/FEIR (LACMTA)
- Santa Monica Bayside District EIR (City of Santa Monica)
- Los Angeles Zoo Master Plan EIR Traffic Study (City of Los Angeles)
- Griffith Observatory EIR (City of Los Angeles)
- Fullerton Impact Fee Study (City of Fullerton)
- House of Blues Traffic Study (City of West Hollywood)

- Los Amigos School EIR (Santa Monica-Malibu Unified School District)
- Ritter Ranch Specific Plan (Ritter Ranch Associates)
- Santa Monica/Doheny/Melrose Improvement Study (City of West Hollywood)
- MCB Camp Pendleton New Hospital Project EA (NAVFAC)
- MCB Camp Pendleton Main Exhange Project EA (NAVFAC)
- Seal Beach Naval Station BEAP (NAVFAC)
- Long Beach Naval Shipyard Reuse EIR (Port of Long Beach)
- MCAGCC Twentynine Palms Master Plan (EDAW)
- Rehabilitation of Walnut Canyon Reservoir (City of Anaheim)
- Canyon Power Station AFC (SCPPA – City of Anaheim)
- Frys Electronics Superstore TIA (City of Anaheim)
- Fuel Efficient Traffic Signal Management (FETSIM) (City of Anaheim)
- 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)
- "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)

Robert Collacott

Associate

Areas of Expertise

Power Plant Siting and Permitting
NPDES Permitting
Stormwater Management Planning
Stormwater Monitoring
Regulatory Programs
Water Quality Management
Erosion and Sediment Control

Years of Experience

With URS: 19 Years
With Other Firms: 14 Years

Education

MBA/1986/California State University, Fullerton
MS/Science, Biology/1976/ University of California, Irvine
B.S./Science, Biology/1974/ University of California, Irvine

Overview

Mr. Collacott has 33 years of experience covering a broad range of environmental programs related to permitting of power plants and permitting wastewater and stormwater discharges. As Manager of Water Resources Management and Permitting for the Santa Ana office, he is responsible for directing projects involving stormwater and wastewater discharge permitting, surface water quality management and planning, and regulatory compliance plan development and implementation. His experience includes substantial power plant siting and permitting projects in addition to wastewater and stormwater discharge permitting, stormwater quality planning and monitoring and regulatory compliance.

He founded the State Water Resources Control Board's (SWRCB) Stormwater Quality Task Force that provides consultation to and liaison among water quality regulators (USEPA, SWRCB, Regional Water Quality Control Boards (RWQCBs)) and stormwater dischargers (municipal and industrial). As Chairman of the Water Resources Committee of the Southern California Chapter of APWA, he organized and presented a number of workshops since 1988 addressing the requirements of the Clean Water Act to thousands of industrial and municipal compliance managers and consultants. His work in the above areas has provided Mr. Collacott with in-depth understanding of the challenges inherent in obtaining National Pollutant Discharge Elimination System (NPDES) discharge permits for wastewater and stormwater systems, surface water quality monitoring, evaluating and permitting water resource projects, and developing and implementing practical water quality control programs.

Project Specific Experience

Lead Water Expert, Application for Certification (AFC), Watson Cogeneration Project for Application for Certification, British Petroleum Refinery, Carson. Project involved identification of water supplies and wastewater disposal alternatives consistent with the California Water Policy, Recycled Water Policy, and NPDES permitting requirements.

Lead Water Expert, Hydrogen Energy California (HECA) AFC, Kern County. Project involved identification of water supplies and wastewater disposal alternatives consistent with the California Water Policy and NPDES permitting requirements. In this assignment, provided cost estimates for evaluation of water supply and wastewater disposal alternatives, identified alternative water supply and conceptual water extraction and transfer system, and assisted in negotiation to secure non-potable water supply, and prepared a draft water sales agreement between the water district and developer.

Bullard and Panoche Energy Center AFC, Central Valley. Projects involved identification of water supplies and wastewater disposal alternatives consistent with the California Water Policy and NPDES permitting requirements.

Lead Water Expert, Siting of Two Major Power Facilities in the Western United States (Confidential Client). This involved identification and evaluation of non-potable water supplies (primarily brackish groundwater and municipal effluents) sufficient for the operation of 1,000 and 2,500 MW steam generation facilities.

Lead Water Expert, Niland AFC. peaking facility for the Imperial Irrigation District.

Lead Water Expert, Development of Water and Wastewater Management Strategy for the El Centro Generating Station, Imperial Irrigation District. Even with the addition of another generating unit, this strategy resulted in a substantial reduction in water use by the El Centro Generating Station and the elimination of a large volume surface discharge of wastewater.

Lead Water Expert, AFC for Units 1 and 2 of the El Segundo Generating Station. This project involved repowering of the generating units using the existing once-through cooling system to Santa Monica Bay. Lead expert in addressing water related issues, including regulatory and design issues related to the once-through cooling system. This included assisting El Segundo Power in renewing the NPDES permit during the AFC process and in resolving an extensive Notice of Violation issued by the Los Angeles RWQCB. The alleged violations were either dismissed or resolved to the satisfaction of the LARWQCB and the discharger.

AFC for the repowering of the Magnolia Generating Station in Burbank, CA. This project involved repowering of the generating units with a proposed cooling system utilizing tertiary effluent and cooling towers with blowdown to the Los Angeles River. Lead expert in addressing water related issues, including regulatory and design issues related to the once-through cooling system.

Regulatory assistance, Southern California Edison, Mountainview Generating Station, Redlands, California. Assisted in identifying design modifications and regulatory strategy to avoid requirements to obtain 404 permit and 401 certification, NPDES permit for discharges and Waste Discharge Requirements for operation of a large retention basin. Strategies included re-direction of facility runoff, modification of process flows, and relocation of industrial facilities and activities. The Regional Board has approved the exception of permit requirements based on implementation of these strategies. This will provide SCE with capital immediate and long-term operation and maintenance cost savings. Also assisted in developing operational and design modifications to maximize use of reclaimed water supplies for industrial cooling and is assisting in resolving issues related to water supply.

Regulatory assistance, Long Beach Generation, Long Beach California. Assisted in the renewal of the Long Beach Generating Station NPDES Permit for the once-through cooling system to Long Beach Harbor. Also successfully assisted in resolving an extensive Notice of Violation issued by the Los Angeles Regional Water Quality Control Board. Also assisted the Long Beach Generating Station in renewing the NPDES permit and in resolving two major Notices of Violation issued by the LARWQCB. The alleged violations were either dismissed or resolved to the satisfaction of the LARWQCB and the discharger.

Regulatory assistance, AES, Alamitos, Huntington Beach and Redondo Beach Generating Stations. Assisting in renewal of NPDES permits for wastewater discharges consisting of once-through cooling, low volume wastes and stormwater to ocean, estuarine and enclose harbor receiving waters. Also assisting in developing alternative strategies for management of wastewater to reduce regulatory exposure.

NPDES Municipal Stormwater Permit with the Natural Resources Defense Council, Cities of Hermosa Beach and El Segundo. Mr. Collacott directed the development of a key element of the settlement agreements: preparation of Stormwater Program Implementation Manuals. The Implementation Manuals provide policies and procedures, implementation responsibility matrices, checklists, reporting forms and other information to document and guide implementation of the stormwater permit compliance programs.

Expert Witness Support for the Defense of Los Angeles County Municipal Stormwater Permit Compliance Program in Litigation with the Natural Resources Defense Council (NRDC). This has included participation in negotiation of a settlement agreement addressing program development and implementation and stormwater and receiving water monitoring.

Response to Notices of Violation and a Major Administrative Civil Liability (ACL), Riverside County. ACL issued by the San Diego and Santa Ana Regional Water Quality Control Boards for alleged non-compliance of capital improvement projects with NPDES stormwater permit requirements. Resulted in significant reduction in the ACL penalty and dismissal of other NOVs.

Regulatory and design assistance, United Foods, Inc. Mushroom Farm, Ventura California. Assisted in negotiating the renewal of Waste Discharge Requirements with the LARWQCB and in developing design alternatives to limit regulatory exposure, leading to development of a closed system that captures and utilizes all runoff from the 29 acre facility.

Discharge and Stormwater Permitting for the County of Orange for the Initial (1990) and 1996 Municipal Stormwater Permits. This included negotiating the municipal NPDES stormwater permits for Orange County and 32 cities with the Santa Ana and San Diego RWQCBs and the development and implementation of compliance programs.

Assisted Riverside County Municipal Stormwater permittees in preparing Reports of Waste Discharge (ROWD) and negotiating renewal of the municipal stormwater permits with the Santa Ana, San Diego and Colorado RWQCBs.

Directing the development of the Statewide Storm Water Management Plan (SWMP) for the California Department of Transportation (Caltrans). This SWMP covers all Caltrans storm water compliance including municipal, construction, and industrial storm water discharge quality management. In addition, he as assisted Caltrans in developing SWMPs and permit applications for activities and facilities in San Diego Region and Ventura County.

Expert Technical Support, Sand Diego County. Providing expert technical support to assist San Diego County regarding a citizen suit filed by NRDC for alleged failure to comply with the requirements of their municipal stormwater permit and the California General Industrial Activities Stormwater Permit. This assignment has included directing an evaluation of compliance with permit requirements, recommendations to achieve compliance, and development of a proposed strategy to address the pending lawsuit.

Peer Review, City of Orange. Assisted the City of Orange in providing a peer review of the proposed runoff management plan for the Santiago Hills Phase 2/East Orange Planned Community project. This project, which will create 8,000 new residences, is tributary to a regional park lake with existing impairments and a major surface water reservoir used for municipal supply.

SWPPP, U.S. Navy. Developed a format for and directed the preparation of Stormwater Pollution Prevention Plans (SWPPPs) for over 1,300 facilities on 28 bases operated by the U.S. Navy.

Development of Stormwater Program Implementation Manual, Los Angeles County Department of Public Works.

Various Projects. Management of numerous projects dealing with the permitting of discharges, development and implementation of compliance plans. Many of these projects involved the development of innovative solutions to difficult regulatory issues. Representative projects include:

- Negotiation of alternative permitting requirements for a major rail facility faced with a discharge prohibition
- Negotiation of alternative permit requirements for a major oil field facility and refinery in the Los Angeles/Long Beach Harbor area faced with restrictive and costly discharge requirements
- Assisting a facility operator in addressing a seven-page NOV for alleged non-compliance with the California NPDES General Industrial Stormwater Permit (NOV subsequently rescinded)
- Permitting of sanitary and stormwater discharges for nine food production facilities throughout California
- Development of a municipal NPDES stormwater permit compliance program for the County of Riverside

- Developed group stormwater permitting and monitoring program for over 200 facilities for the Building Materials Industry in compliance with the California

Professional Societies

President, Southern California Chapter, American Public Works Association, 1999

State Water Resources Control Board, Stormwater Quality Task Force, Vice- Chairman, 1989-1995

Water Resources Committee, Southern California Chapter, American Public Works Association, Chairman, 1989-1998

Orange County Water Association

Awards

Project of the Year, 1989, Upper Newport Bay Sediment Control and Restoration Facilities, American Society of Civil Engineers, Orange County Chapter

Chapter Service Award, 1993, American Public Works Association, Southern California Chapter

GREGORY S. DARVIN
Meteorologist

Summary of Experience

Mr. Darvin has specialized in the meteorological aspects of air quality issues for the last eighteen years. He has extensive experience in air quality management, dispersion modeling, meteorological modeling, greenhouse gas emission inventories, monitoring, major source permitting, complex terrain model development and implementation, emission inventory and health risk assessments. His experience spans more than 25 different states and several countries.

He has been actively involved with many of the proposed power plants in California requiring a CEC license along with PSD permits for many large-scale solid fuel and gaseous fuel projects across the United States. Mr. Darvin has performed the following in support of AFC and PSD applications for utilities: baseline air quality and air quality modeling analyses (including preparation and negotiation of the modeling protocol), prepared the PSD and air permit regulatory applicability analyses, managed the preparation of the air quality emissions inventories, and preparation of Best Available Control Technology (BACT) evaluations.

Specific project experience includes emissions calculations, modeling of impacts, evaluation of regulatory applicability and compliance, New Source Review (NSR) and Prevention of Significant Deterioration (PSD) permitting, and minor source permitting. He has used and is thoroughly familiar with a number of air quality models, including AERMOD, ISC3, CALPUFF, CALMET, COMPLEX I AND II, IGM, FDM, RTDM, CTSCREEN, CTDMPLUS, UAM, DEGADIS, SPILLS, VISCREEN, PLUVUEII, MESOPUFF, INPUFF, BLP, PAL, CAMEO, CALINE4, OCD5, RAM, TRACE, MM5, SLAB, and the Paris Airshed Model. These models have been used in scientific and development settings as well as in regulatory settings.

Education

M.S. Atmospheric Science, San Francisco State University, 1993
B.A. Physical Geography/Meteorology, University of California, Santa Barbara, 1985.

Select Project Experience

Quail Brush Power Project PSD Permit Application, Cogentrix (April 2011 – Present). Prepared air quality and public health sections for PSD and AFC permit applications for eleven (11) Warsila 20V34SG-C2 engines. Tasks also included developing emissions inventory, including toxics and criteria pollutant/GHG BACT sections.

Humboldt Bay Generating Station PSD Permit Application, Updated HRA and ATIR and Air Quality Compliance, PG&E (Ongoing). Prepared PSD increment analysis for ten (10) natural gas-fired Wartsila 18V50DF 16.3 megawatt (MW) reciprocating engine-generator sets and associated equipment with a combined nominal generating capacity of 163 MW. Project analyzed both natural gas and backup fuel oil. Currently under contract with PG&E to provide ongoing air quality compliance consulting including updating the permit to allow for more hours of operation on fuel oil, assisting with monitoring plans, and preparing Title V permits.

Select Project Experience (continued)

Eastshore Energy Center AFC, Tierra Energy (November 2006-July 2008). Provided air dispersion modeling assessments for a 115 MW power plant which utilized 14 Wartsila 20V34SG natural gas fired reciprocating engines located in the city of Hayward, California. Project modeling also included vertical plume analysis for issues associated with flight safety.

Chula Vista Energy Upgrade Project AFC, MMC (November 2006-November 2008). Project manager and lead modeler for preparing air and public health sections of the AFC and SDAPCD Permit Application in San Diego. Project included developing Carl Moyer mitigation program to satisfy CEC requirements.

Escondido Turbine Replacement Project Permit Application, MMC (July 2007-July 2008). Project manager for permitting one GE LM-6000 natural gas fired turbine in Escondido, California. Project involved preparing SDAPCD permit application, dispersion modeling, and preparation of air and public health sections of the associated environmental document.

Otay Mesa Generating AFC, Calpine. (1999 to 2004, 2006- Present). Lead Meteorologist for permitting a combined cycle power plant, located near San Diego, Ca. Project included Class I impacts, a nitrogen deposition impact assessment, and a downwash analysis in complex terrain. Modeling was used to prepare PSD permit application as well as the AFC application which was submitted to CEC.

Otay Mesa Generating Station, Calpine (September 2010-Present). Project manager for modifying the air quality permit to modify the existing auxiliary boiler at the site.

Caithness Blythe II AFC and PSD Permit Applications (June 2009-Present). Project manager and lead modeler for the preparation of the air quality permits for a 600 MW combined cycle power plant in Blythe, California. Project included Class I impact assessments, BACT and secondary impact assessments.

Calpine Geysers (Ongoing). Air quality modeling in support of ongoing permitting for both criteria pollutants and toxics. Performed wind field analyses in support of upgrading the Geysers Air Monitoring Program for use with AERMOD.

British Petroleum Carson Refinery AFC and PSD Permit Applications (2008-Present) Air Quality Project Manager and lead modeler for preparation of the permit applications for expansion of the refinery cogeneration facility. The project includes regulatory review, offset acquisition, Class I impact assessments, and BACT.

Mountainview Power Plant – SCE (2005 to Present). Project Manager for preparing an air quality permit modification related to commissioning activities and plant startup/shutdown. The project includes preparing a CEMS certification protocol, siting a meteorological tower, and ongoing compliance and regulatory consulting.

Select Project Experience (continued)

Roseville Electric Project AFC, City of Roseville, Ca. (January 2003 to Present). Air Quality Project Manager for air quality analysis related to a proposed new 200 MW natural gas fired power plant. Analysis included evaluation of CEQA, Class I impacts, visibility impacts, complex terrain, and cooling tower plume modeling.

Pico Power Project AFC, City of Santa Clara. (January 2002 to November 2004). Air Quality Project Manager and lead air quality modeler for permitting a 180 MW power plant in the City of Santa Clara, Ca. Prepared and negotiated air quality permit with BAAQMD and prepared air section(s) of AFC for the California Energy Commission.

Russell City Energy Center AFC, Calpine (January 1999 to November 2002, September 2006-Present). Air Quality Project Manager for obtaining PSD permit and AFC for a large natural gas fired power plant, located near Hayward, Ca. Project required detailed emission calculations, air quality modeling, combined impact assessments, BACT analysis and demonstration, Title IV compliance, and Title V compliance issues.

Metcalf Energy Center AFC, Calpine. *(1998 to 2003)* Lead air quality modeler for modeling a large natural gas fired power plant, located near San Jose, Ca. Project included CEQA, using refined modeling techniques to determine nitrogen deposition impacts, Class I analysis, and downwash analysis.

CalEnergy Blackrock Geothermal Expansion (2007-Present). Lead Meteorologist for permitting three geothermal power plants in the Salton Sea area. Project was in support of a CEC license as well as local District Permits.

East Altamont Energy Center AFC (2000-2002) Lead Meteorologist for permitting large power plant, located near Tracy, Ca. Project included meteorological data set assessments, criteria pollutant and toxics impacts analysis, and constructon impact modeling. Modeling was used to prepare PSD permit application as well as the AFC application for submittal to the CEC.

San Joaquin Energy Center AFC (2001-2002) Lead Meteorologist for permitting large power plant, located near the town of San Joaquin in the San Joaquin Valley. Project included preparing modeling assessments for toxics and criteria pollutants, meteorological data set assessments, construction impacts, and plume visibility assessments for the CEC and local air agency.

Prevention of Significant Deterioration (PSD) Permit Modification, Kettle Falls Generating Station, Avista Corporation, Kettle Falls Washington. Prepared a PSD application for modification to the Kettle Falls Generating Station, a wood-waste fired generating facility to address emission increases resulting from a capacity increase modification at the facility. Air quality modeling analyses were required to assess compliance with ambient air quality standards and PSD increments. A toxic air pollutant evaluation was also prepared.

Select Project Experience (continued)

Prevention of Significant Deterioration - Calpine Rocky Mountain Energy Center. Project manager for preparing PSD application for a 620 MW power plant, located near Hudson Colorado. Project required completion of a PSD permit application, air quality impact modeling analysis in Class I and Class II areas, and BACT.

PaleoResource Consultants
F & F GeoResource Associates, Inc.
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Phone: (530) 885-9696 ~ Fax: (530) 887-2274
info@paleoresource.com

Helping preserve the past for the future

Dr. Lanny H. Fisk, PhD, PG
Principal Paleontologist

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. PaleoResource Consultants., Auburn, 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

Post-Doctoral Research and ABD in Geology, 1979-1986, Michigan State University, East Lansing, Michigan
Ph.D., Paleobiology, 1976, Loma Linda University, Loma Linda, California
B.A. with Honors, Biology, 1971, Andrews University, Berrien Springs, Michigan

Professional Registrations

Professional Geologist #6985, State of California
Certified Professional Paleontologist, Orange County, California
Registered Geologist #G1390, State of Oregon

Professional Organizations - Selected

Paleontological Society
Society of Vertebrate Paleontology (Co Chairman, Ad Hoc Standard Guidelines Revision Committee 2009-2010; symposium proposer 2010)
Western Association of Vertebrate Paleontologists (field trip co-leader 2010)
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
AASP – The Palynological Society (symposium organizer 1983, 2009; Board of Directors, Recording Secretary 2010-)
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; symposium proposer 2010)
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

2009	Convener and Chairman, Ronald O. Kapp Symposium, 42nd Annual Meeting of AASP -- The Palynological Society
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
1986	Representative to the Organizing Committee for North American Paleontological Convention IV
1983-1985	Founding Member, Program Chairman, and Vice President, Inland Geological Society
1983	Convener, Chairman, and Editor, Harry D. MacGinitie Symposium on Palynology of Tertiary Fossil Floras

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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.

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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.

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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.

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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.

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.

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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.

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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: **Mr. Dan Conaty, Principal Environmental Manager**
Agency/Organization: **Parsons Transportation Group**
Address: 110 West 'A' Street, Suite 1050, San Diego, CA 92101
Telephone: 619-515-5119
E-mail: Dan.Conaty@parsons.com

Client Name and Title: **Mr. Paul Turek, Environmental Manager**
Agency/Organization: **CWMI-Kettleman Hills Facility**
Address: 35251 Old Skyline Drive, Kettleman City, CA 93239
Telephone: 559-386-6151
E-mail: pturek@wm.com

Stephen M. Garrett, P.E.

Senior Project Manager

Job Function
Stephen serves Kiewit as a project manager with expertise in project management, engineering design and financial analysis. He has managed projects in the areas of EPC contracting, conceptual and detailed engineering design, power market assessment, project identification and screening, due diligence review for financial institutions, asset valuation for buyers and sellers, utility privatization initiatives, and technical and financial feasibility analysis.

Kiewit Experience

Project Name	Description
Bowie Power Station Bowie, Arizona Owner: SouthWestern Power Group LLC Scope: Engineering	500 MW combined cycle power plant with two GE 7FA combustion turbine generators, one GE D11 steam turbine generator, a 9-cell counterflow cooling tower and a 345 kV switchyard. The facility is fueled by natural gas. This project will use zero discharge evaporation ponds. Steve served as the project manager.
Panoche Energy Center Fresno County, California Owner: Panoche Energy Center, LLC Scope: EPC	400 MW simple cycle power plant with four (4) GE LMS 100s. Balance of plant equipment includes SCR and CO modules, a 5-cell cooling tower, gas compression, 230kV switchyard, water treatment system and make-up water and water re-injection (wastewater) wells. Engineering services provided for this EPC project included design, procurement, construction support and startup and commissioning services. Steve serves as the project sponsor.
Griffith Simple Cycle Addition Kingman, Arizona Owner: LS Power	Design and engineering to support the Certificate of Environmental Compatibility, air permit, and other permits for a 4x LM6000 simple cycle addition at the Griffith power station. Services included plant conceptual design and characterization, chiller assessment, site surveying and geotechnical specifications, integration of new facilities with the existing plant, noise profiles, indicative EPC cost estimates, and design of switchyard modifications for the new plant. Steve is the project manager for the project duration.
Bullard Energy Center Fresno, California Owner: Energy Investment Funds	2x LMS100 project in Fresno with scope similar to the EIF Panoche project. Services also included geotechnical investigations and foundation design, onsite ambient noise monitoring and noise analysis. Steve was the project manager for the project duration.
Joslin CFB Repowering Project Port Comfort, Texas	Determined scope and capital costs to repower an existing gas-fired power station using a new circulating fluidized bed combustion (CFB) boiler. Steam

Project Name	Description
Owner: NuCoastal Corporation	generated by CFB boiler will be used in the existing steam turbine to generate power. Petroleum coke will be the fuel for the new CFB boiler. Steve was the project manager for the project duration.
Haynes Station Units 3&4 Repowering Project Long Beach, California Owner: Los Angeles Department of Water and Power Contractor: Kiewit Power Constructors Co.	Nominal 571 MW combined cycle power project utilizing two (2) GE 7FA combustion turbine generators, two (2) Alstom heat recovery steam generators and one (1) condensing steam turbine. Project included once through sea water cooling. Engineering services provided for the EPC project included design, procurement, field engineering, training and testing. This project won the Los Angeles Council of Engineers & Scientists Project Achievement Award. Steve was the design project manager for the project duration.
Santa Rosa Energy Center Pace, Florida Owner: Santa Rosa Energy, LLC (Skygen/Calpine) Contractor: Gilbert Industrial	240 MW combined cycle project with one (1) GE 7FA combustion gas turbine generator, heat recovery steam generator and steam turbine generator. Steve was the design project manager for the project duration.

Other Relevant Experience

Project Name	Description
Salt River Project Engineer: Black & Veatch	Lead mechanical engineer for detailed design of mechanical systems for a 400 MW coal plant in Arizona, including P&IDs, equipment procurement specifications, and contract management.
Reference Coal Plant Design Engineer: Black & Veatch	Mechanical engineer assigned to 400 MW reference coal fuel power plant design. The assignment included development of optimal design concepts and equipment selection for mechanical systems.
Florida Power Corp Engineer: Black & Veatch	Mechanical engineer for Bartow oil-to-coal conversion project. Project included system and equipment modifications throughout the plant to effect the change to coal fuel.
St. Joseph Power & Light Engineer: Black & Veatch	Engineering manager for a clean air act compliance evaluation which focused on plant modifications associated with fuel switching, scrubbing, and NOx control at an existing coal-fueled cyclone unit.

Project Name	Description
Iowa Power & Light Engineer: Black & Veatch	Mechanical engineer for assessment of coal dust mitigation design options at the existing Council Bluffs Station.
Shell Coal Project Engineer: Black & Veatch	Project manager for an evaluation of a new greenfield 350 MW mine mouth coal plant in Callide, Australia. The assignment included need for power, competitive market impacts, site evaluation, conceptual design, development of boiler and turbine specifications and pro forma financial analysis.
Coal Plant Development Engineer: Black & Veatch	Project manager for USTDA-funded feasibility study of coal plant development, including pulverized coal and CFB, in southwestern Tanzania. The assignment included environmental assessment, siting and infrastructure evaluation, conceptual design, financial evaluation, economic evaluation of net national benefits and project development strategy.
Brown Coal Power Plant Review Engineer: Black & Veatch	Technical and operational review of brown coal plants in Victoria and Queensland, Australia, with focus on the commercial drivers and management policies that had resulted in the current levels of performance.
Coal Plant Expansion Engineer: Black & Veatch	Engineering manager for mine-mouth coal fueled power plant expansion project in Zimbabwe. The assignment included optimization of alternative system design concepts to maximize efficiency.
Engineering Design for New Combined Cycle Florida Engineer: Black & Veatch	Engineering manager for the design, procurement and construction of a new 250 MW gas-fueled combined cycle project in Florida. Responsibilities included scheduling and managing the engineering staff and providing quality control. Project included all detailed design activities, specification development, equipment bid evaluations, contract negotiations, contract management, production of design control documents and drawings, licensing activities, construction contracting and construction management.
Project Development for Combined Cycle Caracas, Venezuela Engineer: Black & Veatch	Project manager for an EPC project development initiative for a greenfield gas-fueled combined cycle planned by Electricidad de Caracas (EdC). The assignment included due diligence reviews of completed siting studies, need for power studies and the environmental impact analyses. The assignment also included preparation of the preliminary plant design, preparation of EPC bidding documents and drawings, EPC price development, financial pro forma analysis, risk analysis and debt funding investigations.

Project Name	Description
Project Development for Combined Cycle Mato Grosso do Sul, Brazil Engineer: Black & Veatch	Project manager for initial project development and environmental licensing for a new greenfield combined cycle for Enersul, a recently privatized utility in the state of Mato Grosso do Sul. The assignment included site evaluation and selection, project sizing and technology selection, plant performance estimates, capital cost estimates, transmission load flow analysis, environmental licensing and permitting, financial analysis, preparation of EPC specifications and technical/financial evaluation of EPC turnkey proposals.

Education and Experience

B.S. Mechanical Engineering – Colorado State University, 1977

Registrations and Organizations

Professional Engineer – Kansas

American Society of Mechanical Engineers (ASME)

Jeremy Hollins, MA

Senior Architectural Historian/Architectural History Team Lead

Areas of Expertise

- Vernacular Architecture
- 19th – 20th century California Architecture
- Historic Preservation Treatments and Law
- Secretary of Interior Professional Qualification *Architectural History* (36 CFR Part 61)

Years of Experience

With URS: 5 years
With Other Firms: 2 year

Education

- M.A./2005/University of San Diego/Public History
- B.A./2003/University of Rhode Island/History [Environmental]

Continuing Education

- SRIF "Section 106: Principles and Practice," 2006
- FEMA Institute Independent Study Course IS-00253 "Coordinating Environmental & Historic Preservation Compliance," 2006
- FEMA Institute Independent Study Course IS-00650 "Building Partnerships in Tribal Communities," 2006
- Certificate Program, Urban Planning, UC San Diego Extension; In Completion
- Association of Environmental Professionals "Introductory and Advanced CEQA Workshop Series," 2005
- California Preservation Foundation Annual Conference, 2005

Overview

Jeremy Hollins is a Secretary of Interior Professional Qualified Architectural Historian for URS' San Diego office. Since 2003, Mr. Hollins has performed numerous historic evaluations, context studies, and determinations of eligibility and effect for a range of resources based on local, state, and National Register criteria and through technical reports, DPR 523 series forms, HABS reports, cultural landscape reports, historic structures reports, and resolution documents. He has a detailed knowledge of the laws and ordinances which affect historic properties, such as Section 106 of the NHPA, CEQA, NEPA, Section 4(f), California Public Resources Code, State Historic Building Code, and the Secretary of Interior Standards for the Treatment of Historic Properties. Additionally, two academic journals have published Mr. Hollins' work, and he was an adjunct instructor in 'World Architectural History' at the New School of Architecture before coming to URS in 2006.

Project Experience

Brightsource Solar Energy, Rio Mesa Solar – Blythe, CA. Oversaw architectural history field survey and archival research as architectural history task manager for a large solar project in the Colorado Desert (partially within BLM land) in accordance with Section 106 of the NHPA, NEPA and, CEQA. Oversaw architectural history field survey of project footprint, transmission line and substation locations, and half-mile buffer. Oversaw historic research and community consultation, and the recordation and evaluation of approximately 30 cultural resources, including historic-age transmission lines, canals and irrigation ditches, historic roads, mines, and borrow pits. (2011)

Pio Pico Energy Center, LLC, Pio Pico Energy Center, Otay Mesa – San Diego County, CA. Supervised an intensive architectural history field survey of the project survey area in accordance with CEQA and CEC guidelines. Oversaw archival research, evaluated the project APE for eligibility for listing in the CRHR or as a historical resource for purposes of CEQA, recorded two new resources (circa 1909 ranch complex and 1960 ranch-style residence) and re-recorded a third (historic road) on the appropriate DPR 523 forms, and drafted the architectural history portion of the cultural resources technical report for submission to the CEC. (2010-2011)

Apex Energy Group, Pio Pico Energy Center – Chula Vista, CA. Oversaw an intensive architectural history field survey of the project's APE in accordance with CEQA and the CEC guidelines. Supervised archival research, evaluated the project APE for eligibility for listing in the CRHR or as a historical resource for purposes of CEQA, recorded three resources (1897 reservoir and 1919 dam, late-1950s public park facilities,

and early twentieth-century livestock pens) on the appropriate DPR 523 forms, and drafted the architectural history portion of the cultural resources technical report for submission to the CEC. (2009-2010)

Stirling Energy Systems Solar One Project, Class III Intensive Field Survey, Barstow, CA. Supervised an intensive architectural history field survey of the project survey area in accordance with NEPA and BLM, and CEQA and CEC guidelines. Oversaw archival research, field survey, eligibility determinations, and analysis of effect. In total, recorded and evaluated over 7 resources, including Route 66, National Old Trails Highway, historic transmission lines, townsites, and canal systems. Recordation and evaluation of resources was via DPR 523 series forms.

Tessera Solar, Imperial Valley Solar (formerly Solar II) – El Centro, CA. Supervised archival research and compiled findings regarding Juan Bautista de Anza National Historic Trail and historic gravel mines in the project APE and vicinity pursuant to Section 106 of the NHPA, NEPA, and CEQA. Input archaeological field data to DPR 523 form database. (2009)

Lost Hills Solar, Lost Hills – Kern County, CA. Facilitated **r**esearch and drafted the historic context pursuant to CEQA. (2009)

100MW Solar/Bio-Waste Power Plant, Spinnaker Energy, Inc., Fresno County, CA
Cultural Resources Task Manager (URS Corporation)
Served as Task Manager for cultural resources assessment. Performed fieldwork and co-authored Cultural Resources AFC section and technical report for a proposed hybrid solar and bio-fuel power plant in Fresno County. Deliverables were submitted to the CEC in support of a CEQA-level assessment. Duties included coordination of field survey, CHRIS records search, Native American consultation, primary and secondary research, development of historic context, recordation and evaluation of historic-period properties through DPR 523 series forms, analysis of effects, and development of mitigation measures. *(2008)*

Carrizo Energy Solar Farm AFC Data Requests, Ausra, Inc., San Luis Obispo County, CA.
Architectural Historian (URS Corporation)
Performed additional historic research and field surveys for CEC AFC Data Requests to determine the presence of a potential cultural landscape within the northern Carrizo Plains near the vicinity of the Project Area. Research efforts included a review of primary and secondary sources, development of an evaluative context, and recordation and evaluation of 8 potential contributing resources through DPR 523 series forms. Recordation and evaluation followed National Register Bulletin 30: Guidelines for Evaluating and Documenting Rural Historic Landscapes. *(2008)*

Carrizo Energy Solar Farm AFC Supplemental Filing, Ausra, Inc., San Luis Obispo County, CA.
Cultural Resources Task Manager (URS Corporation)
Served as Task Manager for cultural resources assessment. Performed CHRIS records search and authored Cultural Resources AFC section for a 150-mile transmission line corridor intended for use as part of the 177 MW solar power project located in San Luis Obispo County, California. *(2008)*

Confidential Solar Energy Project, Confidential Private Client, Imperial County, CA.
Architectural Historian (URS Corporation)
Performed primary and secondary source research to develop a historic context for the project area in support of a CEQA-level assessment for submission to the CEC. Context focused on Imperial County transportation/circulation networks (Highway 80), local military activities, irrigation agriculture, and the San Diego-Arizona Railroad. *(2008)*

Carrizo Energy Solar Farm 177 MW Solar Plant, CEC, Ausra, Inc., San Luis Obispo County, CA.
Cultural Resources Task Manager (URS Corporation)
Served as Task Manager for cultural resources assessment. Performed fieldwork and authored Cultural Resources AFC section and technical report for a 177 MW solar power project located in San Luis Obispo County, California (640 acre solar farm; 380 acre construction laydown). Deliverables were submitted to the CEC in support of a CEQA-level assessment. Duties included coordination of field survey, CHRIS records search, Native American consultation, primary and secondary research, development of historic context, recordation and evaluation of historic-period properties, analysis of effects, and development of mitigation measures. *(2007-2008)*

Stirling Energy Systems – Solar 2 Project and Data Request 125, CEC, Imperial County, CA
Architectural Historian (URS Corporation)
Performed primary and secondary source research to develop a historic and evaluative context for the project area. Context focused on Imperial County transportation/circulation networks (Highway 80), local military activities, irrigation agriculture, and the San Diego-Arizona Railroad. Also, recorded and performed determination of eligibility, analysis of integrity, and identification of effect for six historic-period properties. Prepared for Stirling Energy Systems. *(2007-2009)*

Solar Hybrid Power Plant Cultural Resources Assessment, Bethel Energy, Imperial County, CA.
Architectural Historian (URS Corporation)
Performed CEQA-level cultural resource assessment of two early 20th century earthen and concrete-lined canals in Imperial Valley area. Performed CHRIS Center Record Search, developed historic context on Imperial Valley's irrigated commercial agriculture industry, performed

built environment survey, recorded and evaluated resources through DPR 523 series forms, and produced a technical report. *(2007)*

Carson Cogeneration Plan Expansion, BP, Inc., Los Angeles, CA.
Cultural Resources Task Manager (URS Corporation)
Served as Task Manager for cultural resources assessment for a cogeneration plant expansion. Performed fieldwork and co-authored Cultural Resources AFC section and technical reports. Deliverables were submitted to the CEC in support of a CEQA-level assessment. Duties included coordination of field survey, CHRIS records search, Native American consultation, primary and secondary research, development of historic context, recordation and evaluation of historic-period properties through DPR 523 series forms, analysis of effects, and development of mitigation measures. *(2008)*

Starwood-Midway Power Plant AFC Data Requests, Starwood Energy, Fresno County, CA.
Architectural Historian (URS Corporation)
Performed additional historic research and field surveys for CEC AFC Data Requests to determine the location of a historic farm in relation to the Project Area. Research efforts included a review of historic maps, aerial photographs, real estate and county records, and newspaper articles. The Data Requests, and associated figures and maps, were submitted to CEC via a Letter Report. *(2007)*

Revised Niland Cultural Treatment Plan and Research Design, Niland Gas Turbine Plant Project, CEC, Niland, CA
Architectural Historian (URS Corporation)
Authored the Historic Period Research Questions used in the Treatment Plan. Research questions focused on emigration, irrigation, flooding episodes, and power generation in Imperial Valley. *(2007)*

Cultural Resource Survey and Assessment, Imperial Irrigation District, Niland and El Centro, CA.
Architectural Historian (URS Corporation)
Staff architectural historian for the evaluation of built environment resources and effect caused by alterations to power plant facilities. Evaluated resources per California Register criteria and developed recommended mitigation measures for project. Co-authored the Technical Reports, DPR 523 series forms, and Application for Certification. Identified an historic bank, eligible for the California Register of Historic Resources, related to the early development of Niland and a historic powerplant building, associated with the early development of the Imperial Irrigation District and eligible for the California Register. *(2006)*

Verizon Wireless, Telecommunication Projects – CA and NV.
Architectural History Task Manager on over 95 intensive architectural history field surveys in California and Nevada for telecommunication projects' direct Areas of Potential Effect (APE) and viewshed (indirect

APE). Projects completed as part of Section 106 of the NHPA and the FCC Programmatic Agreement with the California Office of Historic Preservation (OHP). Conducted and oversaw archival research, evaluated the projects' APE for eligibility for listing in the NRHP and California Register of Historic Resources (CRHR), identified effects, completed appropriate DPR 523 forms, drafted the reports for submission to OHP, and provided technical editing expertise. Resources identified and evaluated have dated from the late nineteenth century to the recent past, were located in various settings (dense urban, suburban, rural, and industrial), and have included numerous property types such as residential and commercial buildings, churches, educational institutions, hospitals, water towers, windmills, farm and ranch landscapes, an oil refinery, and irrigation canals. Responsible for scoping, budget and tasks management, client/agency interaction, and submission of compliance materials. (2008-Present)

FAA, San Francisco International Airport Runway Safety Area Program – San Francisco, CA. Task manager for reconnaissance survey of the historic-age runways, taxiways, canal, and approach-lighting trestles within the project APE; evaluated the airport facilities pursuant to Section 106 of the NHPA, NEPA, and CEQA; assessed effects and impacts from the proposed undertaking; completed DPR 523 forms; and authored the Historic Architecture Survey Report. (2011)

Los Angeles Unified School District, Alameda Transportation Relocation Project – Historical Architecture Assessment – Los Angeles, CA. Oversaw a historic architecture assessment in accordance with CEQA and according to City of Los Angeles criteria for listing as a historical or cultural monument. Managed an intensive architectural history survey, archival research, and evaluation. Authored the letter report to assess the significance of the three mid-twentieth century light industrial buildings on the site and any project impacts according to CEQA. (2011)

National Oceanic and Atmospheric Administration (NOAA), Integrated Water Resources Science and Services (IWRSS), University of Alabama Section 106 Compliance – Tuscaloosa, AL. Leader of project planning and photo guidance for a desktop evaluation of eligibility and effect pursuant to Section 106 of the NHPA for buildings associated with the mid-nineteenth century Bryce Hospital (Alabama State Hospital for the Insane) NRHP-eligible historic district. Task manager for resolution of adverse effects and completing SHPO consultation regarding the necessary HABS standards. (2011)

Caltrans and Alameda Corridor Transportation Authority, HAER, Level II, for the Commodore Schuyler F. Heim Bridge, Schuyler Heim Bridge Replacement and SR-47 Expansion Project – Long Beach, CA. Managed HAER for Commodore Schuyler F. Heim Bridge, a 1948 steel vertical lift bridge eligible for listing in the NRHP, to fulfill NHRA Section 106 mitigation requirements. The study was completed

consistent to the specific guidelines and requirements of the United States Department of Interior and Library of Congress for a Level II HAER and included written historical and descriptive data, 5-by-7" large-format photographs and negatives, and 4-by-5" large-format photographic copies of as-built drawings and negatives. Oversaw project planning (client meetings, site visits, access permits, contract and engagement with photographer), facilitated field work, archival research, report drafting and editing and archival processing. . Project required extensive FHWA, Caltrans, and Port of Los Angeles-Port of Long Beach coordination and consultation. Project was nominated for a URS Pyramid Award for Technical Excellence. (2010-2011)

Caltrans and City of Santa Ana, Bristol Street HPSR and HRER, Phase 3 and Phase 4 – Santa Ana, CA. Task manager for an intensive architectural history field survey of the direct APE and a reconnaissance survey of the indirect APE in accordance with the Programmatic Agreement between the FHA, the Advisory Council on Historic Preservation, the California OHP, and Caltrans. Managed archival research, wrote a historic context, evaluated the APE for eligibility for listing in the NRHP and the CRHR (or as historical resources for purposes of CEQA), recorded 66 resources (primarily early to mid-century residences in planned subdivisions) on the appropriate DPR 523 forms, and authored the HPSR and HRER. Adapted unique approach for recordation based on historic subdivisions and property types to facilitate and streamline compliance. (2010-2011)

Caltrans and SANDAG, Lenwood Road HPSR, ASR, and HRER – Barstow, CA.
Task manager for cultural resources studies, and preparation of HPSR, ASR, and HRER. Oversaw archival research, historic context, evaluated the project APE for eligibility for listing in the NRHP and the CRHR (or as historical resources for purposes of CEQA), recorded forty-one resources (Historic Route 66-related commercial buildings and single-family residences) on the appropriate DPR 523 forms, and drafted the Historic Resources Evaluation Reports and Historic Properties Survey Reports. (2009-2011)

FEMA, Lake Valley Roof Replacement – Lake Valley Fire Protection District, CA. Managed and planned strategic tasks man tasks for preliminary NHPA Section 106 compliance evaluation of project involving hundreds of mid-twentieth century recreational residences and roof replacements. (2010-2011)

FEMA, Marcucci – Jackson, CA. Completion of Section 106 studies per the FEMA Programmatic Agreement for flood damage control (culvert replacement). Prepared Section 106 compliance materials, including findings memorandum, APE maps, DPR 523 series forms, correspondence records, and historic research (2010)

FEMA, Sutter Creek Broad Storm Drain Diversion – Sutter Creek, CA. Managed Programmatic Agreement between FEMA, the California OHP, the California Governor's Office of Emergency Services, and the Advisory Council on Historic Preservation for proposed flood damage control (culvert drainage system alterations near a NRHP-eligible creek wall and historic district) tasks Prepared Section 106 compliance materials, including findings memorandum, APE maps, DPR 523 series forms, correspondence records, and historic research (2010)

FEMA, Fairfax Pavilion – Fairfax, CA. Completion of Section 106 studies per the FEMA Programmatic Agreement for seismic retrofit to NRHP-eligible property). Prepared Section 106 compliance materials, including findings memorandum, APE maps, DPR 523 series forms, correspondence records, and historic research (2010)

FEMA, Lake Elsinore Seismic Retrofit – Lake Elsinore, CA. Managed Programmatic Agreement between FEMA, the California OHP, the California Governor's Office of Emergency Services, and the Advisory Council on Historic Preservation to proposed seismic retrofit tasks for preliminary NHPA Section 106 compliance evaluation of project involving the city hall buildings. (2010)

Caltrans and Riverside County Transportation Department, Clay Street Grade Separation Project – County of Riverside, CA. Task manager for cultural resources studies, and preparation of HPSR, ASR, and HRER. Oversaw archival research, historic context, evaluated the project APE for eligibility for listing in the NRHP and the CRHR (or as historical resources for purposes of CEQA), recorded 5 resources on the appropriate DPR 523 forms, and drafted the Historic Resources Evaluation Report and Historic Properties Survey Reports. (2010)

United States Postal Service, USPS San Diego Midway Processing and Distribution Facility Property – San Diego, CA. Oversaw NRHP eligibility (including Criterion Consideration G) and effects for NHPA Section 106 compliance for the proposed disposition of the USPS San Diego Midway Processing and Distribution Facility property, which contained a large 1972 Brutalism and New Formalism-style building. Supervised a records search, Native American consultation, historic research, evaluation, integrity analysis, assessment of adverse effects, and drafting of report. (2010)

FEMA Santa Maria Seismic Retrofit–Santa Maria, CA. Supervised NRHP- and CRHR-eligibility of the Cook and Miller Court Complex, a Monterey style complex constructed in 1954, in compliance with NHPA Section 106 and the Programmatic Agreement between FEMA, California OHP, California Emergency Management Agency, and the Advisory Council on Historic Preservation. Completed DPR 523 forms. (2009)

California High Speed Rail Authority, High Speed Train – Sylmar to Palmdale, CA. Task manager for field reconnaissance data analysis,

records search review, and cultural resource location map revisions pursuant to Section 106 of the NHPA and CEQA. (2009)

Clay Street Grade Separation, Riverside County Transportation Department, Riverside County, CA.
Cultural Resources Task Manager (URS Corporation)
Performed Section 106 Compliance Study for Riverside County Transportation Department for the at-grade crossing of Clay Street with the Union Pacific Railroad. Prepared HPSR, ASR, and DPR 523 series forms for project per Caltrans/FHWA guidelines. Developed historic context and performed determination of eligibility, analysis of integrity, and identification of effect. *(2010)*

Westside Extension Cultural Resources Technical Report and Historic Survey Report, Los Angeles County Metropolitan Transportation Authority (Metro), Los Angeles, West Hollywood, Beverly Hills, Santa Monica, and the County of Los Angeles, CA.
Architectural History Task Leader (URS Corporation)
Led architectural history tasks for the Los Angeles Metro Westside Extension project, which involved the planning and design of a heavy-rail subway connecting City of Los Angeles, West Hollywood, Beverly Hills, Santa Monica, and the County of Los Angeles. Responsibilities include Metro, FTA, and SHPO coordination/meetings; authoring project Programmatic Agreement; organizing field survey activities and background research; and authoring the Section 106 of the NHPA, NEPA, and CEQA technical studies. Field survey activities and background research required development of project-specific field survey forms, photograph protocols, architectural style guide, APE map delineation, stakeholder consultation, historic context development, primary and secondary source research, and impact analysis. In total, the project identified and evaluated a total of 91 NRHP-listed, -eligible, or contributing resources, and over 200 non-significant historic-period properties. *(2009-2010)*

NHPA Section 106 Compliance for ARRA Projects Undertaken by National Railroad Passenger Corporation (Amtrak). CA, WA, NM.
Architectural Historian (URS Corporation)
West Coast lead for California, Oregon, Washington, and New Mexico National Historic Preservation Act Section 106 consultation and State Historic Preservation Office (SHPO) coordination regarding Amtrak's receipt of $1.3 billion in American Recovery and Reinvestment Act (ARRA) funds under an expedited timeline for receive ARRA funding. Responsibilities included field assessments/built environment surveys with engineering teams; development of design guidelines per project based on the Secretary of the Interior's Standards for Rehabilitation; and completion of Section 106 compliance materials (letter reports). Project required extensive coordination with SHPOs (e.g., CA, WA, and NM). SHPOs) to ensure Section 106 concurrence (No Adverse Effect to Historic Properties) was received in less than 30 days for each project. In total, project involved alterations and additions to nearly 7 NRHP-eligible

and -listed properties (e.g., Los Angeles Union Station). Project was nominated for a URS Pyramid Award for Innovation. *(2009-2010)*

California High-Speed Train Project EIR/EIS-Los Angeles to Palmdale Segment, California High-Speed Rail Authority, Los Angeles County, CA.
Architectural History Task Leader (URS Corporation)
Led architectural history tasks for the CA High Speed Train Palmdale to Los Angeles Union Station. Responsibilities include sub-consultant management; organizing field survey activities and background research; and authoring the technical reports and EIR/EIS sections. Field survey activities and background research required development of project-specific field survey forms, photograph protocols, architectural style guide, APE map delineation, stakeholder consultation, historic context development, primary and secondary source research, and impact analysis. *(2009-Present)*

BNSF Tehachapi Cultural Resources Assessment, Kern County, CA.
Architectural Historian (URS Corporation)
Architectural historian for the evaluation of built environment resources and features located within APE for an eleven mile addition of a double-track in the Tehachapi area, near the Tehachapi Loop. Developed historic context and performed determination of eligibility, integrity analysis, and identification of effect. Prepared DPR 523 series forms and co-authored the technical reports per Caltrans Division of Rail CEQA-level standards. Project required complex evaluation of Cesar Chavez former office and gravesite, involving Criterion Considerations C, D, E, F G. *(2008-Present)*

California High-Speed Train Project EIR/EIS-Fresno to Bakersfield Segment, California High-Speed Rail Authority, CA.
Architectural Historian (URS Corporation)
Technical reviewer for the Section 106, NEPA, and CEQA studies for the High Speed Train Fresno to Bakersfield segment. *(2010)*

Alosta Avenue Bridge Section 106 Compliance, LADPW, Los Angeles County, CA.
Architectural Historian (URS Corporation)
Performed Section 106 Compliance Study for LADPW for the seismic retrofit of a 1929 Plate-Girder bridge and the California Central Railroad. Prepared HPSR and DPR 523 series forms for project per Caltrans guidelines. Developed historic context and performed determination of eligibility, analysis of integrity, and identification of effect. *(2008)*

Long Beach Blvd. Bridge Section 106 Compliance, LADPW, Los Angeles County, CA.
Architectural Historian (URS Corporation)
Performed Section 106 Compliance Study for LADPW for the seismic retrofit of a 1932 Warren truss Bridge and the Union Pacific Railroad. Prepared HPSR and DPR 523 series forms for project per Caltrans

guidelines. Developed historic context and performed determination of eligibility, analysis of integrity, and identification of effect. *(2008)*

Willow Street Bridge Section 106 Compliance, LADPW, Los Angeles County, CA.
Architectural Historian (URS Corporation)
Performed Section 106 Compliance Study for LADPW for the seismic retrofit of a 1932 Warren truss Bridge and the Union Pacific Railroad. Prepared HPSR and DPR 523 series forms for project per Caltrans guidelines. Developed historic context and performed determination of eligibility, analysis of integrity, and identification of effect. *(2007)*

Palomar Road Widening Cultural Resource Survey, County of Riverside, Riverside County, CA.
Architectural Historian (URS Corporation)
Performed historic research and CRHR and NRHP determination of eligibility for a 19th century rural (garden) cemetery (historic designed landscape) in Wildomar. NRHP evaluation required application of Criterion Consideration D: Cemeteries. Information was incorporated into DPR 523 series forms and final technical report. *(2007)*

California High-Speed Train Project EIR/EIS Methodology and Detailed Work Plan, Federal Rail Authority and High-Speed Train Authority, Statewide, CA.
Architectural Historian (URS Corporation)
Prepared Architectural History Methodologies for the completion of the state-wide Section 106, NEPA, and CEQA compliance of the High Speed Train Project EIR/EIS. Developed research, survey, identification, evaluation, and consultation methodologies for completion of the project, as well as identified possible constraints. Also prepared the Detailed Work Plan for the LA-Palmdale Segment Project EIR/EIS. *(2007)*

US-101/McCoy Lane Interchange Project ASR and HPSR, Caltrans Santa Barbara County, CA.
Architectural Historian (URS Corporation)
Prepared the Historic Context for a Section 106, NEPA, and CEQA compliance study for improvements to the US-101/McCoy Lane interchange. Performed primary and secondary sections. The historic context examined the development of oil prospecting in the Santa Maria Valley and the development and operation of the Battles Plant Facility, which was adjacent to the APE. *(2007)*

US 101/SR 46W Interchange Improvement, City of Paso Robles, Paso Robles, CA.
Architectural Historian (URS Corporation)
Performed Section 106 Study for proposed undertaking. Survey discovered 5 previously unrecorded historic properties and evaluated the resources within 2 historic contexts. Performed determination of eligibility, identification of effect, analysis of integrity, and recommended

mitigation measures for project. Completed DPR 523 series forms, HRER, and HPSR for Caltrans. *(2006)*

2701 North Harbor Drive Demolition Project EIR, San Diego Unified Port District and San Diego County Regional Airport Authority, City of San Diego, CA.
Cultural Resources Task Manager/Architectural Historian (URS Corporation)
Served as Task Manager for CEQA-level cultural resources assessment. Performed fieldwork and authored Cultural Resources EIR section and technical report for the demolition of 50 structures at San Diego International Airport. Project considered potential effects to a National Register-eligible historic district (comprised of 17 properties). Duties included coordination of field survey, CHRIS records search, Native American consultation, primary and secondary research, development of historic context, recordation and evaluation of historic-period properties through DPR 523 series forms, and development of mitigation measures. *(2008-2009)*

Phase I Archaeological Assessment of Nuevo Business Park II, Private Client, Riverside, CA. *Architectural Historian (URS Corporation)*
Performed CEQA-level cultural resource assessment of 5 rural historic-period landscapes associated with agricultural/subsistence activities in Riverside County. Developed historic context on Riverside County's commercial agriculture industry, performed built environment survey, recorded and evaluated resources through DPR 523 series forms, and produced a technical report per County of Riverside Planning Department regulations. *(2008)*

Anaheim Historic Resource Evaluation, City of Anaheim, Orange County, CA.
Architectural Historian (URS Corporation)
Performed CEQA-level cultural resource assessment for three historic-period residences (Tudor Revival, modern ranch, contemporary style) within the City of Anaheim. Performed background research, wrote historic context on northeast Anaheim's transformation from agricultural to industry in the mid-20th century, performed built environment survey, recorded and evaluated resources through DPR 523 series forms, and produced a technical report. *(2007)*

Space Shuttle Program NEPA, Section 106, and 110 Compliance, NASA, Third Party Peer Review of Technical Reports.
Architectural Historian (URS Corporation)
Performed third party NEPA, Section 106 and Section 110 review of technical reports for NASA for the decommissioning of its Space Shuttle Program properties. Reviewed properties per Criterion Considerations B (Moved Properties) and G (Properties less than 50 years), federal government definition of personal properties, and as geographic historic districts. Space Shuttle Program properties were located at Dryden Flight Research Center (Edwards, CA), White Sands Space Harbor, and White Sands Test Facility (Las Cruces, NM). *(2007)*

Pacific Gateway Cargo Center, Ontario International Airport Construction Monitoring and Treatment Plan, Ontario International Airport, Ontario, CA
Architectural Historian (URS Corporation)
Authored construction monitoring and treatment plan for subsurface features and built environment. Plan was for the redevelopment of 96 acre site, and included monitoring guidelines for construction/grading, and a visual inspection program for surrounding historic resources. Plan encompassed entire building process from pre-construction meetings to post-construction reports. *(2006)*

West Moreland Clean Harbors Landfill Expansion Cultural Resource Assessment, Private Client, West Moreland, CA.
Architectural Historian (URS Corporation)
Performed CHRIS Center Records Search for Study Area for proposed landfill site. Results of Record Search were tabulated and used for cultural resource assessment of Study Area. *(2006)*

La Posada Hotel Engineering Contingency Plan, Private Client, Winslow, AZ.
Architectural Historian (URS Corporation)
Planned and wrote an Engineering Contingency Plan for the La Posada Hotel (within the La Posada National Register District) for the removal of oil seepage from a raised concrete foundation. Plan provided scope, costs, and recommended Rehabilitation and Restoration treatments (per Secretary of Interior Standards for the Treatment of Historic Properties). Project required informal consultation with AZ SHPO and Materials Contractors. *(2006)*

IERF Building Historic and Architectural Documentation (HABS), University of California, Irvine, Irvine, CA.
Architectural Historian (URS Corporation)
Performed equivalent of HABS Level 2 survey of a 1986 Frank Gehry-designed academic complex at the University of California – Irvine. Responsible for architectural investigation, physical history, historic context, and coordination with HABS photographer. *(2006)*

Uptown San Diego Historic Reconnaissance Survey, City of San Diego, San Diego, CA.
Architectural Historian (IS Architecture)
Historian for the identification and evaluation of 20,000 resources in San Diego. Responsible for jointly preparing survey's first volume, which included "Data Analysis, Phase Implementation, Methodology, Styles Guide/Context, and Proposed Districts/Conservation Overlays." Evaluated and grouped resources based on association to historic context, and drafted district and overlay records, contributing elements, boundaries, and integrity. *(2005-2006)*

Calnev Expansion Project, Kinder Morgan, San Bernardino County, CA.
Architectural Historian (URS Corporation)
Served as Architectural Historian for cultural resources assessment for NEPA and CEQA project. Performed fieldwork and authored technical report for a 190-mile portion of a proposed 245-mile pipeline expansion project from Colton, CA to Primm, NV. Deliverables were submitted to the BLM as the lead agency for NEPA and the County of San Bernardino as the lead agency for CEQA. Duties included coordination of field survey, CHRIS records search, primary and secondary research, development of historic context, recordation and evaluation of historic-period properties through DPR 523 series forms, analysis of effects, and development of mitigation measures. In total, recorded and evaluated 39 unrecorded historic-period properties and 17 previously recorded historic-period properties. Prepared for Kinder Morgan, Inc. *(2008)*

1507 Mt. Vernon Avenue Historic Property Assessment, Patch Services Engineering, City of Pomona, Los Angeles County, CA.
Project Manager/ Architectural Historian (URS Corporation)
Project Manager/ Architectural historian for the evaluation of a 1927 paper mill located within a cogeneration power facility. Developed historic context, construction chronology, and performed determination of eligibility, analysis of integrity, and identification of effect. *(2008)*

Confidential Pipeline Expansion Project Feasibility Study and Constraints Analysis, Private Client, CA and NV.
Architectural Historian (URS Corporation)
Performed CHRIS Center Records Search for 223-mile pipeline expansion. Results of Record Search were tabulated and included in Feasibility Study. Also coordinated all cultural resource mapping with GIS personnel. *(2006)*

Cook & Miller Court Complex Seismic Retrofit, FEMA, Santa Barbara County, CA.
Architectural Historian (URS Corporation)
As part of HMGP-funding, evaluated the NRHP and CRHR eligibility of the Cook & Miller Court Complex, a Monterey style complex constructed in 1954, in compliance with Section 106 and the PA Completed architectural history survey, background research, DPR 523 series forms and findings memorandum. *(2010)*

Franklin Reservoir Improvement Section 106 Compliance Project, FEMA, Los Angeles County, CA.
Architectural Historian (URS Corporation)
Performed Section 106 Compliance Study for LADWP for the replacement of five catch basins for a 1940s dam within the City of Beverly Hills. Prepared DPR 523 series forms and technical report for SHPO. Developed historic context, recordation and evaluation of historic-period properties through DPR 523 series forms, analysis of effects, and development of mitigation measures. *(2008-2009)*

Santa Monica City Hall MOA Seismic Retrofit, Jail-Area Adaptive Use, and ADA Improvements, FEMA, Los Angeles County, CA.
Architectural Historian (URS Corporation)
Performed Section 106 Review on behalf of FEMA for the seismic retrofit, jail-area adaptive use, and ADA improvements of the National Register-eligible City Hall. Reviewed consultant and City prepared studies and drawings, performed integrity analysis and identification of character defining features, analyzed effects, and developed a resolution of effects plan. Coordinated with ACHP, SHPO, OES, FEMA, and City, and authored Notification Letter and Draft MOA to resolve effects. Prepared for FEMA *(2008-2009)*

Harada House Section 106 Review, FEMA, Riverside County, CA.
Architectural Historian (URS Corporation)
Performed Section 106 Compliance Review on behalf of FEMA for emergency repairs to a National Historic Landmark (Harada House) within the City of Riverside. Reviewed project through NEMIS database, and responsible for SHPO consultation, applying Section 106 Programmatic Agreement Allowances, integrity analysis, and identification of effects. Drafted Notification Letter for ACHP, SHPO, OES, FEMA, and City. *(2008)*

Ross School Flood Mitigation Assistance, FEMA, Sonoma County, CA.
Architectural Historian (URS Corporation)
Performed Section 106 Compliance Review for FEMA for a flood elevation assistance project. Performed CHRIS Center Record Search and determination of eligibility, analysis of integrity, and identification of effect. Compliance study submitted via letter report to FEMA. *(2008)*

Sonoma County Flood Mitigation Assistance, FEMA. Sonoma County, CA.
Architectural Historian (URS Corporation)
Performed Section 106 Compliance Study for FEMA for flood mitigation assistance project. Performed CHRIS Center Record Search and determination of eligibility, analysis of integrity, and identification of effect. Compliance study submitted via letter report to SHPO. Prepared for Sonoma County. *(2008)*

Napa County Flood Mitigation Assistance, FEMA, Napa County, CA.
Architectural Historian (URS Corporation)
Performed Section 106 Compliance Study for FEMA for flood mitigation assistance project. Performed CHRIS Center Record Search and performed determination of eligibility, analysis of integrity, and identification of effect. Compliance study data transmitted via letter report to SHPO. Prepared for Sonoma County. *(2008)*

Municipal Water District - Upper Feeder Line, FEMA, Riverside County, CA.
Architectural Historian (URS Corporation)
Staff architectural historian for the evaluation of built environment resources for FEMA disaster recovery project. Evaluated resources ("Pratt" truss bridge and gaging station) per National Register criteria and requirements of Section 106 of the NHPA. Performed determination of eligibility, identification of effect, analysis of integrity, and recommended mitigation measures for project. Prepared for Riverside County. *(2006)*

San Diego Vegetative Management, FEMA, San Diego County, CA.
Architectural Historian (URS Corporation)
Assisted FEMA's Section 106 compliance for vegetative management for the San Diego County communities of Bay Terrace, Del Cerro, Encanto, Lake Murray, Marion Bear Park, Serra Mesa, Black Mountain, Carmel Valley, Los Penasquitos, Tecolote Canyon, Scripps Ranch, and Tierrasanta. Performed CHRIS Center Records Search and wrote historic contexts for communities of Bay Terrace, Del Cerro, Encanto, Lake Murray, Marion Bear Park, Serra Mesa, Black Mountain, Carmel Valley, Los Penasquitos, Tecolote Canyon, Scripps Ranch, and Tierrasanta. Part of technical reports submitted to FEMA for Section 106 Compliance. Prepared for City of San Diego. *(2006)*

Hurricane Katrina Public Assistance, DR-1604-MS, FEMA, Biloxi, MS.
Architectural Historian (URS Corporation)
Historic Preservation Specialist for NEPA review of over 100 public assistance projects. Reviewed projects through NEMIS database. Responsible for SHPO consultation, applying Section 106 Programmatic Allowances, determinations of eligibility, integrity analysis, and identification of effects. Drafted MOAs, developed mitigation measures, ensured projects met Secretary of Interior Standards for the Treatment of Historic Properties, and coordinated and led meetings between applicants, FEMA, and Mississippi SHPO. Projects included over 10 National Register Properties, 1 National Historic Landmark, and 15 Mississippi Landmarks. *(2006)*

Nevada City Fuel Reduction Project, FEMA, Deer Creek Environs, Nevada County, CA.
Architectural Historian (URS Corporation)
Assisted FEMA's Section 106 compliance for wildfire mitigation of 600 acres. Mr. Hollins participated in kick-off meetings; performed extensive background research; developed an evaluative historic context; completed architectural history surveys for the Undertaking; and, prepared DPR 523 series forms and a findings memorandum. Four previously recorded cultural resources, one previously unidentified historic-period residential camp site, and five historic-period isolates were recorded in the Area of Potential Effect (APE) - all associated with the early history of 19th and 20th century northern California gold mining. *(2006)*

Calaveras Dam Staff Housing Replacement Project, San Francisco Public Utilities Commission, Sunol, Alameda County, CA.
Architectural History Task Manager (URS Corporation)
Architectural History Task Manager for the CEQA evaluation of a historic-period rural property that would be demolished to accommodate new staff housing for the SFPUC, as part of Calaveras Dam replacement project. CEQA evaluation included preparation of a technical archaeology and architectural history memorandum, recordation of the property through DPR 523 series forms, and preparation of project area maps. Developed evaluative historic context for the Spring Valley Water Company, Sunol, and Alameda County historic-period rural properties. *(2010)*

City of Los Angeles Lower Franklin Reservoir No. 2 - Debris Basins Replacement, Los Angeles, CA.
Architectural Historian (URS Corporation)
Assisted FEMA's Section 106 compliance for LADWP's replacement of five catch basins for a 1940s dam within the City of Beverly Hills. Mr. Hollins performed extensive background research; developed an evaluative historic context; completed architectural history surveys for the Undertaking; and, prepared DPR 523 series forms and a findings memorandum. (*2009)*

MCB Camp Pendleton Bachelor Enlisted Quarters Siting Study, San Diego County, CA.
Architectural Historian (URS Corporation)
Reviewed MCB Camp Pendleton GIS layers and cultural resources records and data to identify potential direct impacts to previously recorded cultural resources located within a 500-foot radius of proposed Bachelor Enlisted Quarters at MCB Camp Pendleton. Provided cultural resources analysis as part of a preliminary NEPA constraints and siting study to support the preparation of the Project's design-build RFP for FY2008, FY2009, and FY2010. In total, 25 potential BEQ sites were analyzed for potential direct impacts to cultural resources. Prepared for MCB Camp Pendleton. *(2008)*

Desert Installation Appearance Plan and Airfield Security Study for NAF El Centro, NAS Fallon, NWS Seal Beach, NAS Lemoore, and NAWS China Lake.
Architectural Historian (URS Corporation)
Architectural Historian responsible for developing cultural resources considerations, base-wide historic contexts, design guidelines for historic structures and districts, and base-wide visual themes. Project was completed at five installations throughout California and Nevada. Within the historic district analysis, the character-defining features, visual quality and context, and historic contexts were identified to classify built environment styles and a harmonizing theme. In addition, all built environment properties within the installations were identified and categorized, in order to provide clear visual design guidance and functional and aesthetic guidance. Lastly, based on the preceding data,

design guidelines (including material and construction elements) were then established for each installation. Prepared for NAVFAC. *(2008)*

Historic-Period Property Evaluation Report – Twin Peaks, San Francisco Planning Department, San Francisco, CA.
Architectural History Task Manager (URS Corporation)
Architectural History Task Manager for the Section 106 of the NHPA and CEQA evaluation of a historic-period religious building (church) located within the City of San Francisco, which would be substantially altered. CEQA evaluation was completed in compliance with San Francisco Planning Department regulations, as well as the guidelines established by the Major Environmental Analysis (MEA) staff and the Planning's Department's Preservation Coordinator. Section 106 of the NHPA and CEQA evaluation included preparation of a letter report, DPR 523 series forms, APE maps, historic maps and images, records search information, and a San Francisco Planning Department Supplemental Information Form for Historic Resource Evaluation form. Historic-period property was evaluated using the Criterion Consideration A: Religious Properties, in addition to NRHP/CRHR criterion. *(2010)*

Scripps Park Historical Structures and Cultural Landscape Report, La Jolla, CA.
Project Manager (Independent Contractor)
Project Manager and lead investigator for historic context and treatment plan of site. Work entailed identifying landscape features, flora/botanical species, existing conditions, review of original drawings and plans, historic sequence of events, construction chronology, and archaeological discoveries. Responsible for assigning tasks, overseeing sub-consultants work, coordination of report, budget, and application of Secretary of Interior standards, CEQA, and Coastal Commission regulations. Project submitted to City of San Diego and Coastal Commission for Restoration and Reconstruction of site and future planning. *(2005)*

Community Involvement

Traffic and Parking Commission, City of Del Mar, Del Mar, CA. Appointed by the Del Mar City Council to serve four-year term as member of five person committee. Meet monthly and make recommendations to City Council based on public input and participation. Responsible for resolving traffic and parking issues; such as speeding, reoccurring regulatory violations, traffic congestion, parking problems, and application of new technologies. Work and meet regularly with the public, City Council, Parking Enforcement, the Fire Department, the San Diego Sheriff's officers, City Manager's office, Public Works and Planning Departments, and the City's Traffic Engineer. *(July 2005-July 2009)*

Publications

"Village Memories: A Photo Essay on La Jolla's Past," *Journal of San Diego History*, Vol. # 54, Fall 2008

"Until Kingdom Come: The Design and Construction of La Jolla's Children's Pool," *Journal of San Diego History*, Vol. # 51, Winter/Spring, 2005

Chronology

2006-Present: URS Corporation, Senior Architectural Historian, San Diego, CA

2005-2006: New School of Architecture, Adjunct Instructor, San Diego, CA

2004-2005: IS Architecture, Architectural Historian, La Jolla, CA

2003-2004: La Jolla Historical Society, Archivist and Preservation Specialist, La Jolla, CA

URS

Casey Lee Jensen, PG, CEG

Project Engineering Geologist

Overview

Mr. Jensen has over 14 years experience in project management; geologic and geotechnical site evaluation; exploration; development and implementation of corrective grading solutions; oversight for mass grading projects; proposal preparation and cost estimating; environmental assessments; fault exploration; geologic mapping and preparation of technical reports.

Areas of Expertise

Construction Project, Geotechnical Management
Environmental Impact Assessment
Geotechnical Investigations
Geologic Mapping
Landslide Mitigation
Fault Exploration
Phase I and II Environmental Site Assessments
Geologic Hazard Abatement Districts

Years of Experience

With URS: 5 Years
With Other Firms: 9 Years

Education

BS/Geology/Engineering/March 1997, University of California-Los Angeles (UCLA)

Registration/Certification

Professional Geologist/California/ PG 7475, expires March 31, 2013
Certified Engineering Geologist/ California/CEG 2320, expires March 31, 2013

Project Specific Experience

Task Manager, Geology and Soils for EIR Studies
Prepared technical studies to support Environmental Impact Reports – Geology and Soils; and Mineral Resources for the following projects:

- Los Angeles Mission College Facilities Master Plan, Revised, Los Angeles Mission College
- North Spring Street Bridge Widening - Technical Studies and Environmental Documentation, City of Los Angeles Bureau of Engineering
- California High Speed Train Los Angeles Union Station to Highway 134 EIR-EIS, California High Speed Rail Authority
- Dodger Stadium - The Next 50 Years, Los Angeles Dodgers

Senior Engineering Geologist/Project Manager and Point-of-Contact, Potrero Canyon Park, Pacific Palisades, Los Angeles, CA
Project Manager and Point-of-Contact for a major geotechnical investigation for City of Los Angeles site with current and historic landslide activity. Our scope included drilling, logging and sampling of over 45 exploratory borings and test pits, soils laboratory testing, slope stability analysis and preparation of reports.

Project Geologist, Olive View Medical Center, A-P Fault Studies, Sylmar, CA, 2007-ongoing: Performed A-P fault studies within a historically faulted site for the placement of proposed facilities.

Project Geologist, Oliveira Property Master Planned Community, Los Banos, CA: Provided geotechnical consultation services for the preparation of draft material for use in an Initial Environmental Impact Report (EIR) for the subject site. The planned development at the +192 acre site included high, medium and multi-family residential, school, park, daycare, institutional, office/industrial and municipal uses. The scope of work included providing a preliminary characterization of geologic conditions at the site, evaluating potential geologic and geotechnical constraints, and providing a discussion of mitigation alternatives.

Multiple Project Experience

Fault Exploration, CA 1998-Present
Performed numerous fault exploration projects in California. Duties included trenching and logging across Alquist-Priolo earthquake fault zones, identification of fault traces and design of required setbacks.

Phase I Environmental Site Assessments, CA 2000-2004
Conducted more than 50 Phase I Environmental Site Assessments on a wide variety of properties for real estate transfers including agricultural properties and commercial real estate for commercial and residential development.

Geologic Hazard Abatement Districts (GHADs), CA 1998-2004
Project manager for numerous GHADs in Northern California. Provided monitoring and technical consultation services related to slope stability and erosion issues, including exploration and design of landslide mitigation options.

Professional Societies/Affiliates

Association of Environmental and Engineering Geologists (AEG)

Specialized Training

2010/Confined Space Entry Awareness (OSHA 29 CFR 1910.146)
2010/Standard First Aid – American Red Cross
2010/CPR-Adult – American Red Cross
2008/URS Certified Project Manager
2007/Competent Person Training
2003/Leadership Stockton Program
2001/OSHA 40-hour HAZWOPER Coarse
2011/OSHA 8-hour HAZWOPER Annual Refresher
2001/Aerial Photography Interpretation Workshop
1998/Nuclear Gauge Operator Training

Chronology

04/1997-10/1997: Ralph Stone and Company, Los Angeles, California
04/1998-12/2004: ENGEO Incorporated, San Ramon and Tracy, California
01/2005-05/2007: Geocon Incorporated, San Diego, California
06/2007-Present: URS Corporation, Los Angeles, California

Contact Information

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casey.jensen@urs.com

David A. Kisner

Project Ecologist, Santa Maria Biology Group Leader

Areas of Expertise

Permitting and Environmental Analysis

Birds of the United States

Site Assessment and Monitoring of Endangered Birds of California

Habitat Assessment

Wildlife Surveys

Botanical Assessment

Permit Compliance

Construction Monitoring

Years of Experience

With URS: 7 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

- Blunt-nosed Leopard Lizard Identification Workshop
  May 2009
- CLE International Endangered Species Act review
  December 2008
- *Rana* Capture and PIT Tag Training with Dr. Rathbun
  October 2006
- CNPS Vegetation Mapping and Classification Workshop
  August 2005
- Southwestern Willow Flycatcher Workshop
  May 1999

Overview

Mr. Kisner is a project ecologist who has been the Biology Task Manager on numerous power projects in southern California. He has extensive experience working with threatened and endangered species within southern California. David completed his Master's in Ecology examining the impact of the non-native Giant Reed (*Arundo donax*) on the riparian bird community. His areas of expertise include evaluating impacts to special status species and habitats, developing mitigation and monitoring plans, and acquiring project approvals from state and federal resource agencies. David is currently managing the biology portion of environmental documents associated with power development, overseeing the construction monitoring for various projects, and managing the Santa Maria Biology Group.

Project Specific Experience

Project Management

- **Designated Biologists and Biology Task Manager, CPV Sentinel Energy Project, Riverside County** – Designated biologist in charge of worker education, biological monitoring compliance, and reporting. Managed and co-authored section for AFC document assessing biological impacts associated with 37 acre power plant and associated linears. Assisted with successful negotiation regarding water resource impacts on sensitive habitat with Fish and Wildlife. The California Energy Commission Decision for the project was finalized December 2010; construction began in June 2011. January 2007 to present.
- **Biology Task Manager, Watson Cogeneration Steam and Electric Reliability Project, Application for Certification, Los Angeles County** – Responsible for managing the biological portion of the AFC through the CEC Certification process for the 2.5 acre "brownfield" site. January 2009 to Present.
- **Biology Task Manager, Hydrogen Energy California (HECA) Application for Certification, Kern County** – Managed and authored section for Application for Certification (AFC) assessing biological impacts associated with 473 acre power plant and associated linears. Authored Biological Assessment and 2081 Incidental Take Permit application for impacts to listed species. Species addressed in BA and 2081 include: blunt-nosed leopard lizard, antelope ground squirrel, Swainson's hawk, Tipton and giant kangaroo rats, and San Joaquin kit fox. March 2008 to present.
- **Biology Task Manager, General Electric Solar Project Mitigated Negative Declaration, Kern County** – Managed and authored the biology report for incorporation into the Mitigated Negative Declaration. Report assessed biological impacts associated with 280 acre solar power project and linears. The MND has been certified and

CUP has been approved; construction scheduled for 2011. March 2009 to present.

- **Designated Biologist, SCE Mountainview Power Project, San Bernardino County** – 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. Generated monthly Biological Resources Mitigation Implementation and Monitoring Plan for submittal to CEC, USFWS, and CDFG. April 2004 to April 2006.
- **Project Manager, Delhi Sands Restoration, San Bernardino County** –- Organized and oversaw the successful restoration for SCE of a half-acre site for the federally endangered Delhi Sands Flower-loving Fly. Disturbance of site caused by the installation of the 18 mile gas line feeding the Mountainview Power Project. April 2006 to February 2009.

Listed Species Survey Experience

California Red-legged Frog (*Rana aurora draytonii*)
Over 40 positive contact hours in San Luis Obispo and Santa Barbara Counties.

Arroyo Toad (*Bufo microscaphus californicus*)
Over 15 positive contact hours in Santa Barbara and San Diego Counties.

Blunt-nosed Leopard Lizard (*Gambelia sila*)
3 confirmed sightings in Kern County.

Least Bell's Vireo (*Vireo bellii pusillus*)
Over 350 positive contact hours in Santa Barbara, Ventura, Riverside, Los Angeles, and San Diego Counties.

Southwestern Willow Flycatcher (*Empidonax traillii extimus*)
Over 175 positive contact hours in Santa Barbara, Ventura, Riverside, Los Angels and San Diego Counties.

Western Snowy Plover (*Charadrius alexandrinus nivosus*)
Over 130 positive contact hours in San Luis Obispo, Santa Barbara, Ventura, and San Diego counties.

California Least Tern (*Sterna antillarum browni*)
Over 30 positive contact hours in Ventura and San Diego Counties.

Swainson's Hawk (*Buteo swainsoni*)
Over 20 positive contact hours in Kern County.

San Joaquin Kit Fox (*Vulpes macrotis mutica*)
Over 5 positive contact hours in Kern County.

Contact Information

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Joseph B. Landwehr, P.E.

Lead Mechanical Engineer

Job Function
Joe, a professional engineer since 1976, has a wide range of experience in design of coal-fired and combined-cycle power plants.

Kiewit Experience

Project Name	Description
J. T. Deely Unit #2 SCR Retrofit San Antonio, Texas Owner: CPS Energy Scope: EPC	JTD2 is a 440 MW unit firing PRB coal. The project consisted of retrofitting an SCR reactor into the flue gas stream. The design scope included the aqueous ammonia storage and vaporization, air compressors, and interconnecting piping systems, including ammonia, steam, condensate, diverter damper seal air, soot blowing air, service air and service water. Joe served as the lead mechanical engineer.
Springfield Unit #1 SCR Retrofit Springfield, Missouri Owner: City Utilities Springfield Scope: EPC	Unit #1 is an existing 195 MW PRB fired coal plant. This project consisted of retrofitting a new external economizer and SCR reactor into the flue gas stream. The project also includes an air heater rebuild, flue gas damper removal and replacement, ESP structural analysis, and installation of an urea system. Engineering services provided for this EPC project include design, construction support, and assistance with performance testing. Joe was the lead mechanical engineer.
Palomar Energy Project Chiller Addition Escondido, California Owner: San Diego Gas & Electric Scope: Engineering	554 MW combined cycle power plant with two (2) GE 7FA combustion turbines. This project is located in an urban area with stringent noise, aesthetic and permitting requirements. The facility burns natural gas. Kiewit was responsible for providing design engineering services under subcontract to GE Energy. Scope includes adding (4) electric chillers, CTG inlet chilling coils, pre-engineered building, and all associated electrical, mechanical, and structural design. Joe was the lead mechanical engineer.
UCI Cogeneration and Chiller Addition Irvine, California Owner: University of California, Irvine Scope: EPC	Nominal 18 MW power plant and new chillers at the University of California, Irvine central utility plant. One 14 MW Solar gas turbine, Deltak HRSG with duct firing and one 5.8 MW Murray steam turbine. Addition of two (2) 3,000-ton centrifugal chillers. Joe was the lead mechanical engineer.

Project Name	Description
Tenaska Virginia Power Project Fluvanna County, Virginia Owner: Tenaska Virginia Power Partners, L.P. Scope: EPC	Nominal 890 MW combined cycle facility utilizing three (3) GE PG7241FA combustion turbines with power augmentation, fired Deltak heat recovery steam generators, and one GE condensing steam turbine. Kiewit was an EPC joint venture partner with Gilbert Southern and provided engineering services for the project, including detailed design and performance testing services. This project was named DBIA: MAC Best Project Industrial/Process Sector Over $25 Million and one of *POWER Magazine*'s Top Plants. He was the lead mechanical field engineer during the final phase of construction through startup and testing. His responsibilities included initiating mechanical design changes to improve constructability, assisting the start-up team by clarifying the design intent and taking the lead in coordinating multi-discipline design changes.
Haynes Station Units 3&4 Repowering Project Long Beach, California Owner: Los Angeles Department of Water and Power Scope: EPC	Nominal 571 MW combined cycle power project utilizing two (2) GE 7FA combustion turbine generators, two (2) Alstom heat recovery steam generators and one (1) condensing steam turbine. Project included once through sea water cooling. Engineering services provided for the EPC project included design, procurement, field engineering, training and testing. This project won the Los Angeles Council of Engineers & Scientists Project Achievement Award. Joe served as senior mechanical engineer/lead procurement engineer in charge of major equipment procurement. The project included the following new mechanical equipment: boiler feed pumps, condenser with condenser tube cleaning system, traveling water screens, vacuum pumps, condensate and demineralized water pumps, circulating water pumps, water sampling and analysis, chemical feed skids, heat exchangers, fuel gas compressors, heaters and filter/separators, air compressors, shop-fabricated tanks, skid-mounted process pumps, oil-water separator and fire protection system. The condenser, traveling water screens, and shell and tube closed cooling water heat exchangers were all designed for sea water service.
Santa Rosa Energy Center Pace, Florida Owner: Santa Rosa Energy, LLC (Skygen/Calpine) Scope: EPC	240 MW combined cycle project with one (1) GE 7FA combustion gas turbine generator, heat recovery steam generator and steam turbine generator. Joe served as the lead procurement engineer and managed the following major equipment contracts: boiler feed pumps, condenser, steam jet air ejectors, condensate and demineralized water pumps, circulating water pumps, cooling tower, water treatment system, water sampling and analysis, chemical feed skids, heat exchangers, fuel gas heaters and filter/separators, air compressors, shop-fabricated tanks, process pumps, oil-water separator and new fire protection system. Joe also served as the project mechanical engineer during the construction, start-up and testing of the project.

Project Name	Description
Kendall Station Project Cambridge, Massachusetts Owner: Mirant Scope: EPC	170 MW repowering project with one (1) GE7FA combustion turbine generator and one (1) Foster Wheeler heat recovery steam generator with integral deaerator, to provide steam to three (3) existing steam turbine generator units, and plant process loads. The facility burns natural gas and No. 2 fuel oil. Responsible for providing engineering services including design, procurement, training, testing and field engineering services. Joe served as lead procurement engineer/senior mechanical engineer responsible for the major equipment procurement phase and administered the equipment contracts. Major equipment included the fuel gas compressors and filter/separators, air compressors, boiler feed pumps, fuel oil pumps and heaters, fin-fan heat exchanger, oil-water separator and miscellaneous process pumps.
Unit 9 146 MW Combined Cycle Repowering Project Kansas City, Missouri Owner: Kansas City Power & Light	Joe served as project mechanical engineer for the repowering of the existing Hawthorn Unit 4 steam turbine generator. The facility included a new heat recovery steam generator, which was connected to the existing Unit 6 combustion turbine and provided with supplemental firing to match the potential of the refurbished steam turbine. The project consisted of the redesign of all existing mechanical and electrical systems, including all new equipment except for the turbine-generator, circulating water pumps and some of the 2400V electrical equipment, which were refurbished. Joe was responsible for the system design and procurement of the following major equipment: HRSG and its auxiliaries, including the diverter damper; anhydrous ammonia supply system; the boiler feed pumps; the condenser, vacuum pumps, condensate and demineralized water pumps; water sampling/analysis and chemical feed panels; closed cooling water heat exchangers, process pumps and new fire protection.
Installation of a Refurbished GE Frame 5 Simple Cycle Rated at 24 MW Manitowoc, Wisconsin Owner: City of Manitowoc	Joe served as project mechanical engineer for the installation, which included the following new systems and equipment: fuel oil storage tank and supply pumps, fuel gas piping and filter-separator, and service air and water piping. A demineralized water system was installed for exhaust gas NO_x reduction. The system included portable ion exchange modules, a water storage tank and supply pumps.
GE International Power Systems Bursa, Turkey Owner: Bis Enerji	45 MW steam turbine generator installation at a combined cycle power plant. Joe served as project mechanical engineer for the steam cycle portion of this 150 MW project. The mechanical project segment of the project consisted of all systems and auxiliary equipment downstream of three (3) heat recover steam generators, except for the steam turbine equipment provided by GE.

Project Name	Description
150 MW Rotem IPP Southern, Israel Owner: Mid-Atlantic Energy	Project manager for the 150 MW Rotem IPP proposed for construction in southern Israel. The plant consisted of two 75 MWe CFB boilers firing oil shale being mined locally. Kiewit provided owner-engineer services for the project, which included responsibility for the turnkey contract specifications, pre-award evaluation of turnkey proposals and technical descriptions for the environmental impact study.

Other Relevant Experience

Project Name	Description
Lake Road No. 6 St. Joseph, Missouri Owner: St. Joseph Power and Light	Project manager for the precipitator replacement for the coal-fired cyclone boiler.
Baldwin Unit 1 Baldwin, Illinois Owner: Illinois Power Company	Project manager for the precipitator replacement for this 560 MW coal-fired cyclone boiler.
Quindaro Unit 1 Kansas City, Kansas Owner: Board of Public Utilities	Project manager for balanced draft conversion and precipitator retrofit for this 90 MW coal-fired cyclone boiler.
Cope Power Station Cope, South Carolina Owner: South Carolina Electric and Gas	Mechanical engineer assisting the owner in evaluating wet lime and limestone FGD versus spray dryer FGD technologyfor the air quality control system for this new 350 MW coal-fired unit.
Sikeston Power Station – Unit 1 Sikeston, Missouri Owner: City of Sikeston	Project engineer for the wet chimney liner upgrade for this 235 MW coal-fired unit.
Decatur Cogneration Project Decatur, Illinois Owner: A.E. Staley Manufacturing Company	Mechanical engineer in charge of the air quality control system design for two new CFB boilers (equivalent to 90 MW).
Campus Power Plant Columbia, Missouri Owner: University of Missouri – Columbia	Project engineer for baghouse improvement project at coal-fired campus power plant.

Project Name	Description
Silver Lake Units 3 (25 MW) and 4 (60 MW) Rochester, Minnesota Owner: Rochester Public Utilities	Project manager for precipitator replacement at coal-fired units.
Thomas Hill Unit 2 Thomas Hill, Missouri Owner: Associated Electric Cooperative	Project engineer for precipitator retrofit for this 275 MW coal-fired cyclone boiler.
Blue Valley Units 1, 2 & 3 (119 MW total) Independence, Missouri Owner: City of Independence	Mechanical engineer in charge of the air quality control system design and testing for this plant upgrade to switch from oil-firing to coal.
Loman Plant Units 1 & 2 Jackson, Alabama Owner: Alabama Electric Cooperative	Mechanical engineer in charge of the air quality control system design and testing for this new 470 MW coal-fired power station. The flue gas cleaning equipment included precipitators and spray tower, wet limestone FGD systems.

Education and Experience

M.S. Agricultural Engineering (with M.E. specialization) – University of Missouri, 1971

B.S. Agricultural Engineering – University of Missouri, 1969

Registrations and Organizations

Professional Engineer – Kansas, Texas

American Society of Mechanical Engineers (ASME)

URS

Angela Leiba, GISP, Vice President

Senior Project Manager / GIS Manager / Visual Specialist

Areas of Expertise

Environmental Permitting, Planning and Analysis
CEQA/NEPA Project Management
Project Permitting/Agency Coordination
Energy Projects
Emergency Response/Emergency Planning
GIS Modeling/Analysis, Database Application Design, Website Design
Visual Resource Studies/ Aesthetics/Simulations
Military Planning Projects
Flood Modeling Projects
Flood Modeling Projects

Years of Experience

18 Years

Education

MS Program/1994/Computer Graphics/University of California, Los Angeles
BA/1992/Computer Graphics/San Diego State University
ESRI ArcGIS 9.0, 2005
ESRI Spatial Analysis, 3-D Analysis, Palomar College, 1999
ESRI ArcView Avenue Programming, SD Data Processing Center 1999, 1997

Registration/Certifications

Certified Project Manager, 2008
Certified GIS Professional (GISP), GIS Certification Institute, 2006
Certified Visual Resource Specialist, 2007

Overview

Ms. Angela Leiba is a Vice President and Senior Project Manager with 18 years of experience. Ms. Leiba oversees the Environmental Management Group (consisting of approximately 70 specialists). Her project management expertise focuses on environmental projects, energy/power projects, emergency response/planning studies, visual resource assessments, and GIS projects/programs. She has helped prepare over 30 major environmental impact reports (EIRs), more than 100 environmental assessments (EAs) or technical studies, over a dozen Application for Certifications (AFCs), and dozens of environmental impact statements (EISs). She has also Project or Task managed environmental, traffic, water resource, biological, cultural, social impact, noise, air, environmental compliance, military, and planning efforts for numerous public and private agencies. She has served as Project Manager and/or Task Manager on hundreds of projects for local, state, federal, and private agencies.

Project Experience

Energy Projects

Ausra, Inc. 180MW Concentrated Solar Power (CSP) Solar Power Plant AFC, San Luis Obispo County, CA. Project Manager for the Application for Certification for an 180MW solar thermal generating facility located within San Luis Obispo County. Ausra uses a proprietary type of solar trough called a Compact Linear Fresnel Reflector. Once licensed, this project will likely be the first utility-scale solar power project under the CEC in California. The project covers two sections of land within the Carrizo Plain area in San Luis Obispo County. Project will include agency consultation and coordination including with the California Energy Commission (as lead CEQA agency) and ACOE, USFWS, CDFG, to name a few. **($1.5M) 2006-2009**

Stirling Energy Systems Concentrated Solar Power (CSP) (Solar Two/Imperial Valley Solar) Solar Power Plant AFC/EIS, Imperial County, CA. Project Manager for the 750MW solar thermal generating facility located within Imperial County. The project will cover approximately 6,500 acres and will include 12,000–36,000 solar dishes. Managed joint CEQA/NEPA documentation preparation under joint thresholds of the California Energy Commission (CEC) and Bureau of Land Management (BLM). Facilitated project-level MOU between the CEC and BLM to help expedite joint process. MOU later became a State and Federal mandate. Managing all aspects of project permitting including technical resource analysis, agency review and consultation, public involvement and scoping, compliance management and post-construction monitoring, once constructed. This project will be one of the largest solar power plant projects in the world, once built. **($10M) 2006-ongoing**

Spinnaker Energy (Martifer/Bethel Energy) 106MW San Joaquin 1 & 2 Solar/Bio-Fuel Power Plant AFC, Imperial County, CA. Principal-in-Charge and permitting support for the Application for Certification for hybrid design solar thermal electric generating plants, comprising a solar field and biomass facility for each plant. The two plants will each produce up to a nominal 53.4 MW net of renewable energy. The California Energy Commission will act as lead CEQA agency for the project. **($350K) 2006-2007**

Caithness (Solenergis) PhotoVoltaic (PV) Solar Permitting, San Bernardino, CA. Provided peer review and other support for solar energy project lead by Caithness Soda Mountain, LLC (Caithness). Caithness has requested a right-of-way grant to construct and operate a 350 megawatt (MW) solar electric power generating facility on federal lands managed by the U.S. Department of the Interior, Bureau of Land Management (BLM) located in San Bernardino County, California. Assisted URS team in providing comprehensive environmental and technical support services to assist Caithness in the permitting process with the BLM and other Federal and State agencies and assisting in the land use planning for the project. **($150K) 2008-2009.**

Solar Power Plant Siting/Fatal Flaw Studies, Nautilus Energy/Starwood Power, Western US. Task Manager for GIS analysis and mapping relating to helping Nautilus Energy locate a solar power plant location in the western US. GIS siting criteria and weighed modeling were used to identify key sites based upon siting criteria that included, but were not limited to, the following: solar intensity, slope, acreage, land ownership, distance to transmission, distance to gas, and distance to reclaimed water. Fatal Flaw studies were also performed for a variety of sites that were narrowed down from the GIS siting studies performed above. **($35K) 2007-2009**

Granite Wind, LLC - Granite Mountain Wind Energy Project, San Bernardino, CA. Ms. Leiba was the visual resources task leader for this Project. Granite Wind, LLC is proposing to construct the approximate 84-MW Granite Mountain Wind Energy Project, which will be located approximately 6 miles east of Apple Valley in San Bernardino County, California, comprised of 28 turbines. The proposed project will be located on private lands and on lands administered by the BLM. Ms. Leiba authored a Visual Impact Assessment (VIA) including an interim Visual Resources Management Classification and impact analysis combining methodologies and guidelines from the BLM, US Forest Service, Federal Highway Administration, CEQA, San Bernardino County and other local agencies. This visual resource methodology and the VIA is now being used by the BLM as an agency "template" for other wind projects in the Southwest. Additionally, Ms. Leiba oversaw the preparation of the visual resources section of the Project's EIS/EIR. **($52K) 2008-2009**

AES Somerset Coal Power Plant Unloading Project, AES, Niagra County, New York. Task Manager for Visual Resource Analysis and Visual Impact Assessment (VIA) review and updates. Provided peer review and updates to the Visual Impact Assessment performed for the New York Somerset Lake Unloading Project. The AES Somerset Power Plant (Plant), in operation since 1984, is a single 675 megawatt (MW) coal-fired electrical generating unit located on the south shore of Lake Ontario in the Town of Somerset, Niagara County, New York. The project added a loading and unloading dock to the existing power plant facility. The project looked at potential visual impacts to neighboring historic landmarks. **($25K) 2008**

Visual Resource Assessment for the Lower Deschutes Wild and Scenic River, Maupin, Oregon. Visual Resource Task Reviewer for the Lower Deschutes River upgrade project. The project was on Bureau of Land Management (BLM) lands and included a proposed pipeline crossing over the river. The Deschutes River is a federal and state designated Wild and Scenic River. Visual Resource management (VRM) BLM guidelines had to be adhered to while conducting the analysis. In addition a Visual Resource Inventory and Interim Resources Management Classification had to be conducted according to federal BLM VRM policy for the project. **($25K) 2008**

Otay Mesa Generating Station Power Plant Construction Monitoring, Calpine, San Diego County, CA. Project Manager for the Construction monitoring for a 510-MW gas-fired power facility located within San Diego County. Managing all oversight for multi-year construction phasing for project including agency consultation, managing and scheduling for compliance with conditions of certification, managing sub-consultants and monitoring field efforts – and being available for on-call services whenever the Project Compliance Manager needs assistance. **($800K) 2006-2009**

Solar Power Plant Siting Study, Edison Mission Energy, Western US. Task Manager for the GIS analysis and mapping relating to helping Edison Mission Energy locate a solar power plant in the western US. GIS siting criteria and weighed modeling were used to identify key sites based upon siting criteria that included, but were not limited to, the following: solar intensity, slope, acreage, land ownership, distance to transmission, distance to gas, and distance to reclaimed water. **($35K) 2007-2008**

Bethel Energy 100MW Solar/Bio-Fuel Power Plant CEQA Documentation, Imperial County, CA. Assistant Project Manager for the Application for Certification. Small Power Plant Exemption or Environmental Impact Report (depending on project configuration). Advised client on schedules and budgets for each of these alternatives as they move forward to try and permit their facility. Project in early stages currently. The California Energy Commission or the County of Imperial will act as lead CEQA agency. **($35K) 2006-2007**

Larkspur Power Facility AFC Amendment, San Diego County, CA. Project Manager for the Post Certification Amendment for Diamond Generating Corporation (a subsidiary of Mitsubishi) to the California Energy Commission to modify the Existing Larkspur Energy Facility in Otay Mesa, City of San Diego, to add a third 45MW LM6000. The normal power plant rating will be 135MW. Facilitated all technical resource area peer review, project facilitation with the California Energy Commission and oversaw regulatory oversight from various technical resource area agency involvements. **($350K) 2007**

Starwood Midway Power Facility AFC, Fresno County, CA. Project Manager for the Application for Certification for a simple-cycle electric generating facility located within Fresno County. The facility will include two FT8-3 Swift Pac Gas Turbine Generator (CTG) units installed in a simple cycle power plant arrangement. The normal power plant rating will be 120MW. Facilitated all technical resource area peer review, project facilitation with the California Energy Commission and oversaw regulatory oversight from various technical resource area agency involvements. **($350K) 2006-2007**

Stirling Energy Systems Concentrated Solar Power (CSP) (Solar One/Calico Solar) Solar Power Plant AFC/EIS, San Bernardino County, CA. Project Manager for the 850MW thermal generating facility located within San Bernardino County, CA. The project will cover approximately 6,200 acres and will include over 36,000 solar dishes. Facilitated all technical resource area peer reviews, project oversight and overall guidance on joint documentation preparation, technical resource evaluation and analysis, agency input and permitting requirements, and public involvement oversight. Managed joint CEQA/NEPA documentation preparation under joint thresholds of the California Energy Commission (CEC) and Bureau of Land Management (BLM). Managing all aspects of project permitting including technical resource analysis, agency review and consultation, public involvement and scoping, compliance management and post-construction monitoring, once constructed. **($10M) 2007-ongoing**

Solar and Wind Power Plant Siting Study, BP Energy, Western US. Task Manager for the GIS analysis and mapping relating to helping BP Energy locate a power plant location in the western US. GIS siting criteria and weighed modeling were used to identify key sites based upon siting criteria that included, but were not limited to, the following: solar intensity/wind generation, slope, acreage, land ownership, distance to transmission, distance to gas, and distance to reclaimed water. **($35K) 2007-2008**

Panoche Energy Center AFC, Fresno County, CA. Task Manager for several components of the Application for Certification for the Permitting of the Panoche Energy Center in Fresno County, CA. Panoche Energy Center, LLC was the applicant to the California Energy Commission. Evaluating impacts of four LMS100 natural gas-fired combustion turbine

generators was part of this simple-cycle power generation project. **($35K) 2007-2008**

Bullard Energy Center AFC, City of Fresno, CA. Task Manager for the visual resources components of the Application for Certification for the Permitting of the Bullard Energy Center in the City of Fresno, CA. Bullard Energy Center is a proposed simple-cycle electrical generating facility occupying twelve acres. Bullard Energy Center, LLC is the project applicant to the California Energy Commission. **($35K) 2007-2008**

Solar Power Plant Fatal Flaw Studies, LightSource Renewables, California/Arizona. Task Manager and Client Manager for Fatal Flaw studies relative to five sites that were previously chosen (3 in CA, 2 in AZ). A complete GIS analysis and subsequent desktop review by a variety of specialists (including water, geotechnical engineering/geology, cultural resources, biological resources, and land use) were performed. A write-up of potential fatal flaws and conclusions by each resource area, in addition to the environmental constraints map generated by the GIS system were included in the deliverables. **($125K) 2008-2009**

Gaviotta Coast Wellhead Power Project, LMS100. Task Manager for the visual resources studies for the potential permitting of a Wellhead LMS100 power project along the Gaviotta coast. Scenic highway issues were of primary concern, since the energy project location was in viewshed of the local scenic highway. Viewshed analyses and visual simulations were completed as part of these initial environmental, specifically visual resource issues for the proposed project. **($25K) 2007-2008**

NextLight, AV Solar Ranch One Project, Los Angeles, CA. Ms. Leiba was the visual resources task leader for this Project. NextLight Renewable Power, LLC is proposing to construct the approximate 230-MW Photovoltaic Solar Ranch One Project, which will be located on a 2,100-acre site in Antelope Valley, in unincorporated Los Angeles County, approximately 20 miles northwest of the City of Lancaster. The proposed project will be located on private lands and on lands administered by the County of Los Angeles. Ms. Leiba oversaw the preparation of the visual resources section of the Project's EIR consistent with CEQA, Los Angeles County and other local agencies. **($25K) 2009**

Solar and Liquid Natural Gas (LNG) Power Plant Siting Study, Chevron/Texaco, West Coast, US. Task Manager for Geographic Information System, Visual Resource, Social Economic and other analyses relating to siting potential solar and LNG power plants within the western united states. Worked directly with the Program Director to help with early environmental constraint issues. **($35K) 2006**

Starwood Power Plant Construction Monitoring, Fresno County, CA. Project Manager for the Construction monitoring for a 120MW gas-fired power facility located within Fresno County. Program Manager for

compliance with all Conditions of Certification proposed in the CEC's Final Commission Decision. Documentation of all certification was included in these efforts. Managing all oversight for multi-year construction phasing for project including scheduling, reporting of conditional compliance, additional permitting, agency consultation, managing sub-consultants and monitoring field efforts – and being available for on-call services whenever the Project Compliance Manager needs assistance. **($800K) 2008-2009**

Carson Hydrogen Power Project, Long Beach, CA. Task Manager for Visual Resources permitting relating to the proposed project. This project in a major initiative by BP Alternative Energy (in partnership with Edison Mission Energy) to use gasification technology to gasify petroleum coke (a low value refinery waste product) to produce a hydrogen-rich gas that will then be combusted in next-generation turbines to be developed by GE in order to produce electric power. **($55K) 2007**

Niland Proposed Power Plant, Small Power Plant Exemption (SPPE), Imperial County, CA. Imperial Irrigation District Peaker Development Project. Visual Resources Task Manager for SPPE Visual Resource Section. Also developed visual simulations and public meeting materials for the proposed development of a 30-acre generating station, Imperial County. **($55K) 2007**

El Centro Generating Station, Small Power Plant Exemption (SPPE), El Centro, CA. Visual Resources Task Manager for SPPE Visual Resource Section for the Imperial Irrigation District Project. Also developed visual simulations and public meeting materials for the proposed project. Development included an 80-acre treatment pond (160 acre area) and the addition of an additional generator adjacent to an existing generating station in Imperial County. **($55K) 2007**

Chevron Liquid Natural Gas (LNG) Environmental Assessments, West Coast, U.S. Task Manager for Visual Resource, Social Economic and Geographic Information System analyses for this highly controversial proposed off-shore liquid natural gas platform. Worked directly with the Program Director to help with early environmental constraint issues. **($55K) 2006**

Wind Implementation Monitoring Program, County of Riverside, California. Project Manager for the County of Riverside to evaluate the ongoing and potential additional impacts of Wind Farm Development within the region. Managed visual assessment, noise assessment, air quality study, communication systems assessment, navigation element study, fire protection study, police service element, retrofit element and biological resources components. **($136K) 2006**

San Onofre Nuclear Generating Station (SONGS) Units 2 and 3 Steam Generator Replacement Project. Task Managed preparation of a Proponent's Environmental Assessment for the California Public Utilities

Commission, and participated in other aspects of project permitting, including NEPA compliance on Marine Corps Base Camp Pendleton and permitting through the California Coastal Commission. **($350K) 2003**

Cal Energy Geothermal Power Plant, California Energy Commission, California. Served as Task Manager for preparation of an application for certification (AFC) for submittal to the California Energy Commission (CEC) for construction and operation of the Salton Sea Unit 6 (SSU6) geothermal plant power-generation facility in Imperial County, California. The SSU6 is a proposed, nominally rated, 175-megawatt (MW) merchant power plant. Ancillary facilities and three transmission line alternatives were analyzed. A complete visual resource assessment, including several visual simulations of the plant and corresponding transmission lines, were included in this effort. Over 120 GIS exhibits analyzing over a dozen technical disciplines were also created. **($350K) 2006**

Oak Valley Substation & Transmission Line Project, Southern California Edison, Riverside County, California. Visual Resources Task Manager for the installation of a new substation, re-conductoring of several transmission lines and new installation of several transmission lines in Riverside County (including the cities of Beaumont, Banning, and Calimesa). Visual simulations showing potential transmission line alternatives and the substation were included as part of this effort. Visual assessment included reviewing potential visual impacts relating to highly populated areas where new transmission lines were to be installed, including a freeway over-crossing. **($55K) 2006**

Powerplant Siting Study, ENPEX Development, Marine Corps Air Station, Miramar, CA. Task manager for GIS components of powerplant siting study. Worked to develop model of environmental and man-made constraint information, compiled GIS model and mapping elements to show areas with potential for site development. Coordinated with Air Station, agency, ENPEX and sub-consultants to identify, gather and reconcile relevant GIS data for project. **($55K) 2006**

GIS Solar Power Plant Siting Study, US Renewables Group, Western US. Task Manager for the GIS analysis and mapping relating to helping US Renewables Group locate a solar power plant in the western US. GIS siting criteria and weighed modeling were used to identify key sites based upon siting criteria that included, but were not limited to, the following: solar intensity, slope, acreage, land ownership, distance to transmission, distance to gas, and distance to reclaimed water. **($35K) 2007-2008**

Kinder Morgan Concord-to-Sacramento Pipeline, **Northern California**. Task Manager for pipeline project from Concord, CA to Sacramento, CA. **($55K)**

Kinder Morgan California-to-Nevada Pipeline, **Northern California**. Task Manager for pipeline project from Colton, CA to Las Vegas, NV. I complete environmental and man-made constraint analysis was completed as part of this project. **($160K)**

Meadow Valley Generating Project EIS, **Southern Nevada**. Task Manager for 1,000 MW, gas-fired combined cycle power plant proposed in Southern Nevada. **($115K)**

Imperial County Gas Pipeline, Pacific Gas & Electric/Foster & Wheeler, Imperial County, California. Task Order Manager in support of archaeological services for the transmission line project. **($145K)**

South Bay Power Plant Land Use/Soil/Economic Studies, EDAW/Duke Engineering, San Diego County, California. Oversaw analysis of land use, soil, and economic issues related to relocation of a power plant. **($35K)**

InterGen Transmission Line, Imperial County, California. Analyst for constraints and possible impacts as related to the project corridor. Archaeological and biological impact maps were produced for the entire corridor. **($105K)**

All-American Conversion Line 1903, ENSR, San Bernardino County, California. Analyst for possible impacts as related to archaeological resources along the project corridor. **($75K)**

Bi-National Pipeline Study, Del Mar Land Management, San Diego County, California. Task Managed constraints analysis for possible impacts as related to archaeological resources along the project corridor. **($55K)**

Valley-Rainbow Transmission Line, Power Engineering, San Diego and Riverside Counties, California. Task Manager for several alternative routes for a 500-kilovolt transmission line corridor. Biological, environmental, archaeological, and social impacts were the focus. **($135K)**

AEP Constraints and Permitting, Energy Management and Services Co., Imperial County, California. Task Manager to help analyze and identify possible environmental, biological, archaeological, and social impacts related to transmission line corridor. **($55K)**

AT&T China, US Cable Network, California State Lands Commission, China to U.S. Task Manager overseeing GIS/CAD mapping, database development, and analysis of social impacts as related to fiber optic cable networking along seafloor. GIS seafloor modeling was conducted as part of the project. **($45K)**

Imperial Irrigation District L-Line, Imperial Irrigation District, Imperial County, California. Extensive analysis and mapping was conducted to help evaluate potential cultural impacts from a proposed transmission line. **($115K)**

Environmental Projects

Port of San Diego/Airport Authority Demolition EIR, San Diego, CA. Project Manager for the EIR for the proposed demolition of existing aviation manufacturing facilities located on North harbor Drive in San Diego, CA. The project includes removal of approximately 50 existing structures; removal of asphalt and other paving materials; removal and disposal of all hazardous and contaminated construction materials; removal and disposal of chlorofluorocarbons; cutting, capping and removal of all underground piping and utility systems, and capping storm drain and sanitary sewer laterals. Multiple agency coordination, potential historic building demolition, least tern nesting mitigation, hazardous material coordination, and coastal zone permitting required. **($415K) 2008-2009**

County of San Diego On-Call Environmental Services, San Diego, CA. 2006-2007. Project Manager for on-call environmental contract. Task orders not to exceed $500K. Environmental projects include capital improvement projects, highway projects, and other miscellaneous county-improvement projects. Over a dozen projects managed focusing on road improvement projects. Majority of projects included either biological or cultural resource tasks. Projects were typically quick-burn – received notice within a day, had resources allocated within 2-3 days, work completed in a week or two, tops. All projects completed on-time/on or under budget. **($500K) 2006-2007**

County of San Diego On-Call Environmental Services, San Diego, CA. 2008-2009. Project Manager for on-call environmental contract. Task orders not to exceed $500K. Environmental projects include capital improvement projects, highway projects, and other miscellaneous county-improvement projects. Projects included: Viejas Bridge Replacement, Summit Drive Upgrades, Woodside Drive Upgrades, Fallbrook Airport Improvements, Moosa Creek Upgrades, Lone Star Road Improvements, Tavern Road Culvert Replacement, Pauma Road Bridge Replacement, SV Bonita Road Upgrades, to name a few. **($500K) 2008-2009**

Coastal Rail Trail EIR/CE, San Diego, California. Project Manager for an EIR/CE for a proposed trail that would start near Del Mar and run south to connect to the existing Rose Canyon bike path. Three proposed Class I bike path areas are the focus: Sorrento Valley Road between Carmel Valley Road and Carmel Mountain Road, Roselle Street to Eastgate Map, and Genesee (Nobel Drive) to Gillman Drive. The project includes multiple agency review including Caltrans/FHWA, City of San Diego and others. A coastal zone permit will also be included. **($294K) 2006-2009**

El Cajon Redevelopment District GIS Webserver Project, El Cajon, San Diego County, CA. Project Manager for GIS project. Oversaw development of webserver developed in-house. Site was designed to manage real estate, environmental and other redevelopment district information in one cohesive public website. The project included meeting with the District to review needs of users and the public. Information was gathered, reviewed, updated and integrated into an on-line mapping viewer program that was linked to the District's existing website. Staff training and a step-by-step guide to usage was included in the project. **($75K) 2006-2007**

High Speed Rail EIR/EIS, Los Angeles, CA. Task Manager for preparation of visual impact assessment (VIA) and subsequent Visual Resources section for the EIR/EIS. The VA required Federal Highway Administration and Caltrans aesthetic guideline adherence. Responsible for analysis relating to the portion of the project covering Los Angeles Union Station (North end of the Station) to the Palmdale Transportation Center in Palmdale, CA. **($85K) 2006-2009**

Placer Parkway Tier I EIR/EIS, Counties of Placer, Sutter and Sacramento, CA. Task Manager for preparation of visual impact assessment (VIA) and subsequent Visual Resources section for the Tier 1 EIR/EIS. The VA required Federal Highway Administration and Caltrans aesthetic guideline adherence. Five current project alternatives were assessed as part of this proposed parkway connecting major State Highways in northern California. **($65K) 2006-2007**

SANDAG On-Call Environmental Services/I-805 Widening Project, San Diego County, CA. Ms. Leiba is serving as the Principal GIS Manager and Visual Resource Task Manager for all relevant studies under this on-call contract. All projects are transportation related within San Diego County. Presently working on study for expansion of I-805 from the Mexican Border to the 805/I-5 merge. **($85K) 2006-2009**

State Route 56/Interstate 5 Interconnections, City of San Diego, California. Deputy Project Manager and Visual Resources Task Manager for environmental and preliminary engineering tasks relating to the "connectors" project for Interstate 5 and State Route 56. Connections from southbound Interstate 5 to eastbound State Route 56 as well as the connection from westbound State Route 56 to northbound Interstate 5 were not completed as part of the initial State Route 56 project. Also managed the visual assessment relating to the project. **($300K)**

Nursery Products Composting Facility Initial Study (IS)/Mitigated Negative Declaration (MND)/Environmental Impact Assessment (EIR), San Bernardino, CA. Assistant Project Manager and Visual Resources Task Manager for the proposed development of a 160-acre biosolids/green waste composting facility, San Bernardino County. **($350K)**

San Simeon Bridge Widenings Visual Impact Assessment (VIA), San Luis Obispo, CA. Visual Resource Task Manager for preparation of visual impact assessment (VIA) for two bridge widenings in San Luis Obispo. Oak tree removal and mitigation was also a key component addressed in this assessment. The VA required Federal Highway Administration and Caltrans aesthetic guideline adherence. Visual simulations and coordination with project engineer were also included as parts of the assessment. **($35K)**

San Diego Unified School District GIS Webserver Project, San Diego County, CA. Project Manager for GIS project. Oversaw development of webserver refined in-house. Site was developed to manage school site information, environmental factors and other district information in one cohesive private/public website. The project included meeting with the District to review needs of users and the public. Information was gathered, reviewed, updated and integrated into an on-line mapping viewer program that was linked to the District's existing website. Staff training and a step-by-step guide to usage was included in the project. **($50K)**

Coastal Rail Trail Phase I Studies, City of San Diego, CA. Environmental Project Manager responsible for development of the second-half of the Coastal Rail Trail. The project is tasked with completing a bicycle/pedestrian multi-use trail from Del Mar south to the Santa Fe Depot. Helped manage project oversight, budgeting, environmental overview, public meeting support, and sub-consultant oversight. An environmental assessment and 30% engineering were the products of Phase I of the project. Phase II will consist of Final engineering and Design, once funding becomes available. **($150K) 2002**

Soil Erosion Surveys, GIS/GPS Database Collection and Plan Development, Marine Corps Air Station, Miramar, San Diego, CA. Project Manager responsible for as aspects of the project including field surveys, GIS/GPS data collection, soil survey collection, soil erosion modeling, PH soil testing, Best Management Practices (BMP) restoration, and methodology oversight for both GIS-related and Soil Survey-related data. After being devastated by the 2003 San Diego Wildfires, the Base was concerned with erosion, runoff and potential for restoration for the lands burned. The project covered 14,000ac. of soil. **($150K)**

Native Plant Restoration, Marine Corps Air Station, Miramar, San Diego, CA. Project Manager responsible for as aspects of the project including field surveys, data collection, native plant restoration oversight, and implementation oversight of Best Management Practices (BMP) for two highly eroded sites on Miramar. After being devastated by the 2003 San Diego Wildfires, the Base was concerned with erosion, runoff and potential for restoration for the lands burned. These two sites were the focus of restoration due to their proximity to highly used training areas. Managed all five years of project maintenance including oversight of subconsultant, Native Landscapes. **($100K) 2007-2011**

State Route 76 Improvements, San Diego County, CA. Task Manager for the State Route 76 improvements. Geographic Information Systems were utilized to calculate potential constraints and potential impacts for various resource areas affected by the improvements. **($50K)**

Carmel Valley Bike Feasibility Study, San Diego County, CA. Environmental Manager for the Carmel Valley Bikeway Feasibility Study. Topics covered included traffic, noise, visual, biology and other potentially affected resource areas. **($100K)**

Southwest Division (SWDIV) Navy Facility Assessment, San Diego County, CA. Task Manager for Geographic Information System mapping and analyses for tracking progress of asset evaluation. Project included GIS conversions from AutoCAD of over 1200 facilities. Geodatabases were created including such things as, asset use, square footage, age of building and more. **($150K)**

On-call Consulting Services for Otay Land Company, Otay Land Co., LLC. Task Manager for on-call consulting services contract for 4,800-acre ownership within Otay Ranch planning area. Biological surveys and GIS analyses and mapping were major task orders for the client. **($85K)**

San Bernardino County General Plan Update, Environmental Impact Report (EIR), San Bernardino County, CA. Visual Resources Task Manager for Aesthetic/Visual Resource Issues associated with updating the county general plan. Complete EIR section and relevant write-ups were included as part of this project. **($50K)**

Unexploded Ordnance (UXO) Assessment for San Diego Unified School District, San Diego County, CA. Task Manager for Geographic Information System mapping and analyses for tracking progress of unexploded ordnance studies relating to the potential re-use of these areas for proposed school sites. **($40K)**

Miramar Landfill Raise EIS/EIR, City of San Diego, California. Task Manager for the Visual Assessment and supporting EIS/EIR. The Miramar Landfill is being evaluated for potential impacts relating to the eventual raise of twenty feet in order to accommodate additional landfill capacity. Miramar Landfill sits on land leased to the City of San Diego. Ms. Leiba also managed several efforts relating to public outreach/public meetings. Visual simulations with and without mitigation were important pieces of this evaluation. NEPA and CEQA determinations were also included as part of this effort. **($350K) 2006-2008**

State Route 46/Highway 101 West Interchange Project, Paso Robles, San Luis Obispo County, California. Visual Resources Task Manager for the VIA for interchange project. Managed oak tree mitigation and scenic highway elements as part of the project. Handled all coordination with agency leads and client to assure project was in

compliance with the San Luis Obispo County Council of Governments and the Regional Transportation Plan. This was a precursor to the next phase of improvements in the region, the East interchange. **($50K) 2006-2007**

State Route 46/Highway 101 East Interchange Project, Paso Robles, San Luis Obispo County, California. Visual Resources Task Manager for the VIA for controversial interchange project. Dealt with oak tree mitigation and scenic highway elements as part of the project. Handled all coordination with agency leads and client to assure project was in compliance with the San Luis Obispo County Council of Governments and the Regional Transportation Plan. **($45K) 2005**

Santa Barbara Ranch EIR, County of Santa Barbara, California. Visual Resources Task Manager for the EIR for the development of the Santa Barbara Ranch development. Undeveloped coastline along the scenic highway 101 was evaluated for potential impacts relating to development of a project consisting of several mansions, an equestrian farm and other ranch-style complex facilities. Undeveloped coastal bluffs, night lighting, scenic highway, and coastal zone issues were several factors that played into the visual resource/aesthetic impact determinations. Several visual simulations were also incorporated into the visual resource documentation showing various development alternatives. **($45K) 2005**

Newhall Ranch EIS/EIR, Los Angeles County, California. Visual Resource Task Manager for development project in Los Angeles County. Seven development alternatives were equally analyzed for potential visual impacts for this project. This tiered EIS/EIR document included assessing 21,000 residential units and accompanying components including several bridges. The project is highly controversial and includes Army Corps of Engineer issues relating to wetland impacts. **($65K) 2005**

North Spring Street Bridge Widening EA/EIR, County of Los Angels, California. Visual Resource Task Manager for the widening of a historic bridge within the urban core of Los Angeles County. With several potential sensitive resources in the area, the widening included several key visual resource issues including: historic structures, public art removal, oak tree removal, park area takes, train/light rail transit viewers and more. Since the widening affected several densely populated and highly unique community groups, ensuring development was handled in compliance with each community plan was also a key component of this project. **($55K) 2006-2009**

Interim Improvements for the Interstate 5-State Route 56 Interconnections, City of San Diego, California. Project Manager and Visual Resources Task Manager for initial environmental clearance and preliminary engineering for the Interim Improvements relating to the interconnection project for Interstate 5 and State Route 56. Interim Improvements included road widening, restriping, retaining wall, additional drainage/bioswale installation, and replantings. Oversaw Noise,

Traffic, Biology, Water Resource and Visual Resource Technical Write-ups. Managed coordination with FHWA, Caltrans and the City of San Diego. **($85K) 2002-2003**

Cathedral City Transfer Station EA, Waste Management, Riverside County, California. Visual Resource Task Manager for preparation of an EA evaluating the proposed waste management facility in Riverside County, California. New project components included construction of a transfer building, recycling drop-off, office, weigh station, and parking area. Specific City visual guidelines, as well as County of Riverside aesthetic standards, were of concern for this new facility. **($35K)**

Price Canyon Road Widening Visual Impact Assessment/EA, County of San Luis Obispo, California. Visual Resource Task Manager for preparation of visual impact assessment (VA) and subsequent Visual Resources section for the EA. The VA required Federal Highway Administration and Caltrans aesthetic guideline adherence. Simulations were also generated for inclusion in the documents. **($35K) 2004**

Black Mountain Water Treatment Plant EIR, County of San Diego, California. Task Manager for visual simulations and visual resource assessment assistance for an EIR for a proposed 42-acre water treatment plant within Black Mountain Ranch Subarea I boundaries. Interactive 3-D model of the water treatment plant in addition to simulations were prepared for use with the environmental documentation relating to the project. Viewshed modeling was also conducted as part of the project. **($25K) 2001**

Mariposa Composting Facility EA/EIR, Mariposa County/U.S. Forest Service, California. Visual Resource Task Manager for preparation of an EA/EIR evaluating the expansion of a landfill facility in Mariposa County, California. New project components included construction of a composting facility and lighted parking area. Lighting and glare studies were completed to comply with the area night-sky ordinance. Because of the project's rural nature and its proximity to Yosemite National Forest, visual character mitigation was also included in the assessment. Because the U.S. Forest Service was partially funding the project, an EIR was also completed incorporating several visual simulations. California Environmental Policy Act/National Environmental Policy Act. **($35K)**

Port of Long Beach, Piers J South Marine Terminal Projects, Long Beach, CA. Task manager for three separate EIS/EIRs and Application Summary reports for a 385-acre marine terminal project to be located on Pier J South. The Project features associated with all development scenarios included landfilling (from 52 to 115 acres) submerged land, dike and wharf construction, and inter-modal rail. Additionally, the project entailed the demolition of 15 acres of terminal on Pier F to allow for Pier J The U.S. Army Corps of Engineers was the federal lead agency. **($500K) 2003**

Metropolitan Water District Habitat Conservation Program (MWD HCP), Southern California, US. Task Manager for the Geographic Information Systems (GIS) component of the project. GIS was utilized to map and analyze environmental constraints for the Water District's owned properties. Since the project area was huge, sample areas were chosen using the GIS and each area was analyzed then compiled to form the basis for potential habitat conservation in the area. **($50K)**

Pier T Terminal Modification, Port of Long Beach, CA. As the on-call consultant to the Port of Long Beach, Ms. Leiba helped prepare the Addendum to the Long Beach Complex Environmental impact Report. The Addendum assessed the 20-acre site within the greater Pier T complex for a change from development as a ship repair facility to an expansion of adjacent container terminal facilities. **($150K) 2003**

Piers G and J Terminal Development, Port of Long Beach, California. As the on-call consultant to the Port of Long Beach, California, Ms. Leiba helped prepare of the EIR and Application Summary Report for this 315-acre marine terminal redevelopment project. The EIR evaluated the four-phased project that would be constructed over an 11-year period. Project features included landfilling 53 acres of submerged land, dike and wharf construction, inter-modal rail. **($150K) 2003**

Vegetation Management EA, Federal Emergency Management Agency, San Bernardino, California. Visual Resource Task Manager for preparation of an EA evaluating several burn sites in San Bernardino. A viewshed assessment was completed to help with overall analysis. The managed burn sites were mapped in GIS in relation to any area sensitive viewers, which helped with overall assessment of the project. **($25K)**

Edom Hill Transfer Station EA, Cathedral City, California. Task Order Manager for the Visual Resources section for Waste Management of California, Inc./Waste Management of the Desert to design and construct a 35,000-square-foot, enclosed transfer station and an adjacent 2,500-square-foot office building on 27.5 acres east and south of Edom Hill Road, near the west side of the Edom Hill Landfill in the Coachella Valley. **($35K)**

Sorrento Valley Road EIR, City of San Diego, California. Task Manager for the equal evaluation of three distinct alternatives for a 3-mile segment of Sorrento Valley Road which is closed and in disrepair since 1994 while a new pump station and a major Caltrans intersection at I-5 was constructed. The project borders the Los Peñasquitos Lagoon, which is managed by State Parks and under the joint coastal jurisdiction of the City of San Diego and the State Coastal Commission. All CEQA issues were evaluated and mapped in GIS with special emphasis on traffic and noise impacts as well as biological permitting and mitigation. Plan and Final Report were generated as part of this project. **($350K)**

Mira Sorrento Place Road Extension, City of San Diego, California. Task Manager for the civil design and environmental compliance studies associated with this road extension. Principal issues for evaluation included soils and slope stability, surface water hydrology, construction impacts, and cultural resources. Also helped prepare land use analysis technical report. This project won an Association of Environmental Professionals (AEP) award for environmental documentation. **($85K)**

Miramar Hills Curve Realignment/Second Main Track EIR, North County Transit District (NCTD), San Diego, California. Task Manager for preparation of an Environmental Impact Report for proposed realignment and second main track through Soledad Canyon in San Diego, California. Served as task leader for land use impacts analysis and helped coordinate preparation of the Environmental Impact Report. **($85K)**

SONGS Unit 1 Reactor Pressure Vessel Transport Project. Task Managed preparation of a NEPA EA on Marine Corps Base Camp Pendleton and in other aspects of project permitting, including permitting through the California Coastal Commission. **($85K) 2002-2003**

Carmel-Valley Road Improvements, City of San Diego/Caltrans, California. Task Manager for the CEQA compliance for the controversial Carmel Valley Road Project. After extensive coordination with permitting agencies and the community, an EIR was prepared to evaluate the effects of improving Carmel Valley Road between Interstate 5 and the Pacific Coast Highway. Oversaw mapping which included potential wetland impacts due to the expansion of the roadway. **($300K) 2000**

State Route 56 EIR, City of San Diego, California. Task Manager for the State Route 56 (SR-56) EIR and associated studies. The project involved working closely with the City on preparation of biological and land use constraints analyses consistent with the MSCP and City MSCP Subarea Plan, which were finalized during the SR-56 study process. Using GIS background data, a database was updated through focused biological surveys, including surveys for sensitive chaparral plant species, the California gnatcatcher, vernal pools and San Diego fairy shrimp, and wetlands delineations. Assisted in an analysis using GIS MSCP data to facilitate a potential MSCP boundary adjustment for a parcel near the Camino Ruiz interchange. Section 404/401 and 1601 permit applications were performed using the updated MSCP dataset, and mitigation ratios were based on City MSCP plans. **($400K) 2000**

Miramar Road Pipeline Project, San Diego County, California. Task Manager for evaluating potential project impacts to noise levels, vegetation, and sensitive species in the project area. Also incorporated a VISTA (site assessment and remediation) database to evaluate hazardous materials sites in and around the project location.

Pacific Street Bridge, City of Oceanside, Oceanside, California. Task Manager for review of potential impacts relating to three proposed bridge alternatives in Oceanside California. Very controversial as bridge was within the coastal zone and above wetlands. Presented paper and won technical symposium award on behalf of the City of Oceanside for use of innovative GIS modeling to calculate past wetland impacts.

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

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

GPS Survey and GIS Database Development, Port of San Diego, California. Project Manager responsible for overseeing field crew collection of drain, inlet, and pipe information in GPS format. A complete version of the populated data was entered into a personal geodatabase format for delivery to the client. An FGDC-standard data dictionary and complete metadata were also included in the deliverable. GPS training of Port of San Diego staff was also included so that in-house staff could make necessary future updates to the GIS database.

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

project won the Association of Environmental Professionals' 2002 "Outstanding Environmental Solution" award.

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

Black Mountain Water Treatment Plant EIR, County of San Diego, California. Task Manager for an EIR for a proposed 42-acre water treatment plant within Black Mountain Ranch Subarea I boundaries. The proposed site is adjacent to and partially within the Multi-Habitat Planning Area (MHPA). MSCP GIS data layers for regional vegetation, sensitive species, and the MHPA boundaries were used as baseline information for the project analysis. Imported MHPA boundaries from regional data were incorporated into project GIS maps. Findings relevant to a boundary adjustment analysis were presented in the Biological Resources section of the EIR and in the biology technical report.

Environmental Services for Emergency Storage Project, San Diego County Water Authority, California. Task Order Manager for visualization and related project components of the first five-year phase of the $760 million contract. The Authority's proposed 24,000-acre-foot reservoir and dam are key components to solving regional water-storage needs. One task was to create a "dynamic" model that could incorporate data layers from over 20 different consultants. Built this three-dimensional geospatial model in GIS for resource specialists to analyze impacts to environmental resources, including biology, cultural resources, and water quality. Won several technical/GIS awards for work on this project.

East Otay Mesa Specific Plan, San Diego County, California. Task Manager assisting the County in its efforts to amend the Specific Plan for the 3,300-acre East Otay Mesa Specific Planning Area as documented on the County's MSCP Subarea Plan. The proposed amendment would modify previously approved land use designations and conservation areas within the SPA. Analyses conducted would also be used to process a minor amendment to the County's MSCP Subarea Plan, as well as a boundary adjustment to MHPA boundaries. MSCP GIS data layers for regional vegetation, sensitive species, and MHPA boundaries were

analyzed as baseline information to plan current biology field survey needs and for project analysis. The regional GIS vegetation database is being updated via ongoing surveys, and all past and current data will be assessed to revise conservation boundaries and development constraints and opportunities within the SPA.

Hopewell National Historic Park Ethnographic Overview, National Park Service, Chillicothe, Ohio. Task Order Manager for the document prepared to address park ethnography. The document focused on the park's dedication to preservation and interpretation of the Hopewell culture. The park contains nationally significant archeological resources, including large earthwork and mound complexes that provide an insight into the social, ceremonial, political, and economic life of the Hopewell people. All aspects of the project were mapped, analyzed, and presented in the document in GIS format.

Biscayne National Park Ethnographic Overview, National Park Service, Biscayne National Park, Florida. Task Order Manager providing a complete ethnographic overview of Biscayne National Park, which is in Biscayne Bay and the offshore waters along the Atlantic Coast south of Miami in Miami-Dade County, Florida. The park encompasses almost 173,000 acres and has relatively pristine estuarine and marine environments. Several off-shore GIS databases were compiled, analyzed, integrated, and exhibited for this project.

City of San Diego As-Builts Project, San Diego, CA. Project Manager for the compilation for final As-Built drawings and files for water/ wastewater resource projects completed by URS over ten years ago. Tracked all final CAD fines and drawings down, updated as necessary via engineering mark-ups and presented all to City of San Diego for final processing.

Pelagic Fisheries EIS, National Marine Fisheries Service, Hawaii. Task Order Manager analyzing impacts on the human environment resulting from management of U.S. pelagic fisheries under the Fishery Management Plan for the Pelagic Fisheries of the Western Pacific Region (Pelagic FMP). Analyzed environmental impacts caused by fisheries managed under the FMP. The EIS provided a comprehensive overview of pelagic fisheries conducted under the FMP and their effects, as well as described management actions that would mitigate such negative effects. All fisheries information was cataloged, integrated into database format, and loaded into GIS for ongoing efforts.

Raising of the Ehime Maru, U.S. Navy, Southwest Division, Honolulu, Hawaii. Created the visual simulation to show the raising of the Ehime Maru, the Japanese fishing vessel sunk by a nuclear submarine in Hawaii. Worked with the Navy to help visualize raising the ship from a 6,000-foot depth to an approximately 150-foot depth to recover those that perished in the accident. Created visual simulations to show how the

Ehime Maru, barge, and subsequent equipment would be positioned once the move occurred.

Salton Sea Geotechnical Study, Imperial County, CA. Task Manager for the Geographic Information Systems (GIS) component of the Salton Sea geotechnical evaluations. GIS was used to help map boring locations and track resources within the area.

Midcoast Transportation Study, San Diego County, CA. Task Manager for the traffic and transportation study of the Midcoast transportation corridors. Geographic Information Systems were utilized to help review potential constraints including slope issues and other environmental and manmade constraints potentially affecting the project.

Agua Caliente New Casino Project EA, Agua Caliente Indian Reservation, San Diego County, California. Managed the visual component for the Casino, as well as the subsequent signage components for the project. GIS and aerial images were combined to produce a base. CAD and GIS files were incorporated and extruded adding the Casino, subsequent parking structure, and later signage components to the overall assessment. Key observation points were identified and photographs from each of these points taken. The models were eventually placed in these photographs for realistic representation. **(2001)**

San Diego Unified School District Administrative Space Study, San Diego, CA As GIS and CAD Manager, provided analysis and graphics of the buildings for conducting a Space Utilization Study, development of Space Requirement Report, Alternatives and Cost Estimates, and the final report describing methodology, information obtained, alternatives considered, and preferred alternatives.

Emergency Response/Emergency Planning Projects

City of San Diego Flood Mitigation Plan, San Diego County, CA. Project Manager for the Flood Mitigation Plan (FMP). Coordinated with the City of San Diego, State Office of Emergency Services, and FEMA to coordinate a risk assessment, vulnerability analysis and complete mitigation measures for the Plan. Planning efforts also included managing public outreach measures, including hosting public meetings, flyer generation and website development with the City of San Diego. The project will allow the City of San Diego to continue to receive mitigation funding for flood-related mitigation projects from FEMA.

County Hazard Mitigation Implementation Plan, San Diego County, CA. Project Manager for the Implementation of the San Diego County Multi-Jurisdictional Hazard Mitigation Plan (HMP). Coordinated with the County Office of Emergency Services and all eighteen incorporated cities to implement mitigation strategies identified in the HMP. Responsible for press releases, county- and jurisdictional-level working group meetings and public notices, information flyer development and GIS updates relating to the county-wide efforts.

Multi-Jurisdiction All Hazard Mitigation Plan, Municipal Water District of Orange County, CA. Deputy Project Manager for the for the preparation of a confidential hazard mitigation plan for all natural and man made hazards for 20 water districts in Orange County. Oversaw GIS coordination of assets and hazards information, Hazard analysis and write-up, risk assessment, vulnerability assessment, and mitigation strategy preparation. Coordinated working group and district-level meetings.

San Diego Gas & Electric Seismic Study, San Diego County, CA. Task Manger for the Geographic Information Systems (GIS) component of the project. CAD and GIS were utilized to map and analyze seismic issues within right-of-ways for the San Diego Gas & Electric transmission systems and owned facilities. Geotechnical data was input into GIS and distributed to agency following the project.

Multi-hazard Mitigation Plan, Viejas Band of Mission Indians, San Diego County, CA. Deputy Project Manager for the preparation of the tribe's Hazard Mitigation Plan (HMP). Coordination of GIS efforts and write-up of Planning document. Also facilitated tribal council meetings, public and inter-agency workshops. Helped develop risk assessment, vulnerability analysis and tribe's mitigation strategy, and provided general oversight of preparation of the HMP. **(2001)**

Multi-hazard Mitigation Plan, Oregon Tribal Hazard Mitigation Plans, OR. Task Manager for the preparation of three tribal Hazard Mitigation Plans. Oversaw GIS elements for project which included a Hazard Analysis, Risk Assessment, and Vulnerability Assessment. Coordination of GIS efforts and write-up of GIS-related sections of planning document. Provided QA/QC of all GIS efforts.

US Postal Service Landslide Susceptibility Studies, Western US. Project Manager for the preparation of landslide susceptibility studies for all postal offices within the western United States. Working under an on-call contract with FEMA, URS helped evaluate potential at-risk post office locations following torrential rains in California. Focusing on California, and then moving toward the western United States, Ms. Leiba worked directly with USPS and FEMA to help with this evaluation.

Multi-hazard Mitigation Plan, Concow Maidu (Mooretown Rancheria), Sacramento Area, CA Deputy Project Manager for the preparation of the tribe's Hazard Mitigation Plan (HMP). Oversaw GIS elements for project which included a Hazard Analysis, Risk Assessment, and Vulnerability Assessment. Coordination of GIS efforts and write-up of GIS-related sections of planning document. Provided QA/QC of all GIS efforts.

Federated States of Micronesia (FSM) Multi-State Hazard Mitigation Plan, Federal Emergency Management Agency (FEMA), Government of FSM/National Emergency Management Office (NEMO). Project Manager for the multi-state FSM Hazard

Mitigation Plan. As a recognized county who is eligible under compact with the U.S. for FEMA funding, the FSM government hired URS to help prepare the Plan. The FSM is made up of four states, Pohnpei, Kosrae, Chuuk, and Yap covering over 1,000,000 miles of ocean including over 605 islands. Managed extensive public outreach efforts held throughout the islands during the project. Prepared Public Participation Plan including federal website uploads, press releases, public meeting materials/preparation/and presentations, working group participation and data collection, agency and interested party site visits and interviews and more. The Plan included a complete risk assessment, vulnerability analysis, and separate mitigation strategies for each State. **(2005)($150k)**

Guam Hazard Mitigation Plan, Federal Emergency Management Agency (FEMA), Guam. Task Manager in support of planning and GIS-related efforts for the Guam Multi-Hazard Mitigation Plan. Helped with QA/QC of Plan, GIS analysis and HAZUS-99/HAZUS-MH modeling, input to public outreach efforts, and general planning team support. The Plan included a complete risk assessment, vulnerability analysis, and mitigation strategy.

Multi-Jurisdictional Hazard Mitigation Plan, Federal Emergency Management Agency (FEMA), Office of Emergency Services (OES), County of San Diego, CA. Deputy Project Manager for San Diego County's Multi-Jurisdictional Multi-Hazard Mitigation Plan. Oversaw Plan preparation, GIS analysis and HAZUS-99/HAZUS-MH modeling, public outreach efforts, and individual jurisdiction support. The Plan (including a separate "For Official Use Only" attachment for manmade hazards) was over 750 pages, included production of over 100 maps for 18 jurisdictions and the County, and covered 4,264 square miles. Riskbasilo9 assessment, vulnerability analysis, and mitigation strategies were generated for each jurisdiction. Coordinated all working group meetings, encompassing public officials/staff, fire/police/emergency personnel, public/private organizations and citizens; over two dozen individual jurisdictional meetings, and all public meetings held over the two-year project life. Project won two awards including Outstanding Environmental Document from the Association of Environmental Professionals and a National Award through the National Association of Counties. **(2004)($250k)**

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

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

Urban Area Security Initiative, City of San Diego/Federal Emergency Management Agency (FEMA). Participated in the analysis and compilation of a wide-variety of complex, highly confidential source data for the completion of the Urban Area Security Initiative (UASI). This project included analysis of potential hazardous materials release/weapons of mass destruction analysis, including morbidity, mortality, and damage assessments. The preparation of mitigation measures was also a component of this project.

California Firestorm 2003 Modeling/Mapping, Federal Emergency Management Agency (FEMA)/California Office of Emergency Services (OES), Los Angeles, San Bernardino, Ventura, Riverside, San Diego Counties; California. Project Manager responsible for floodplain assessment, database generation of reaches affected, and mapping of approximately 770,000 acres of presidential declared disaster burn areas in Southern California. Emergency reaches were identified and tabulated. HEC-GEORAS hydraulic models were then generated and incorporated into GIS for 5- and 100-year flood zones. Data for over 5 counties were analyzed, field verified, H&H modeled, and mapped for upload onto the Federal Emergency Management Agency website in 3 weeks. Over 100 maps were generated in only 2 days. **(2003-2004).**

Flood Modeling Projects

Digital Flood Insurance Rate Map (D-FIRM) Mapping; Federal Emergency Management Agency (FEMA), Map IX-Mainland Joint Venture, Napa County, San Mateo County, Alameda County, Marin County, Sacramento County, Sonoma County, Tulare County, Monterey County, and Solano County CA; Maui County, HA,. Project Manager for the Joint Venture Project with URS Corp. and Dewberry. FEMA is undertaking a nationwide effort to update and convert hard-copy flood maps for the entire nation to digital geographic information system (GIS) electronic data. FEMA has tasked the partnership with creating these "geodatabases" containing over fifty layers of updated flood information per County. After compiling local, state and federal data, each database was converted to federal standards and detail checked for accuracy. Once complete, quad-scale maps were produced for each county (100-200 maps per county). Each map was then quality assured/quality checked for accuracy. Agencies, local governments, and the public will utilize the geodatabases and corresponding maps to help analyze flood risks in their communities. **(2005).**

Federal Emergency Management Agency Post-Fire Floodplain Mapping, San Diego, Riverside, San Bernardino, Los Angeles, and Ventura Counties, California. Task Manager responsible for floodplain assessment, database generation of reaches affected, and mapping of approximately 770,000 acres of presidential declared disaster burn areas in Southern California. Emergency reaches were identified and tabulated. HEC-GEORAS hydraulic models were then generated and incorporated into GIS for 5- and 100-year flood zones. Data for over 5 counties were analyzed, field verified, H&H modeled, and mapped for upload onto the Federal Emergency Management Agency website in 3 weeks. Over 100 maps were generated in only 2 days. **(2003-2004).**

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

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

Rio de Flag Flood Control Study, Los Angeles Army Corps of Engineers, Rio de Flag, Arizona. Task Manager responsible for GIS modeling/mapping for the Los Angeles Corps of Engineers (LACOE) for impacts relating to possible flooding of the lower Rio de Flag drainage. Erosion-control issues were incorporated into the analysis. Three-dimensional modeling in GIS was performed using the LACOE's HEC-RAS extension. Special attention was also given to manmade alterations of the stream's channel made in the early 1900s.

Murrieta Creek Flood Control BCR and EIS/EIR, LACOE, Los Angeles, California. Working with the LACOE, Task Managed modeling to help determine possible impacts associated with the Murrieta Creek Flood Control project. Some major modifications assessed were (1) removing the B Street bridge, (2) constructing a bridge over Ivy Street, (3) replacing the Washington Avenue bridge, (4) modifying detention/collection basins, (5) assessing equestrian trails, (6) assessing bicycle/pedestrian trails, and (7)

replacing the Main Street bridge. Using HEC-RAS and GIS, environmental impacts associated with these studies were mitigated. **(2000) (Task $300k)**

San Timoteo Creek EIR/EIS, Riverside, California. Complex GIS analysis and mapping was conducted to help evaluate biological, cultural, social, and other potential environmental impacts from proposed enhancements for flood control at San Timoteo Creek, which drains a watershed of approximately 126 square miles of the San Bernardino Mountains and foothills in eastern Riverside and San Bernardino counties. The San Timoteo Creek study area falls within several small communities, including Redlands, Colton, Loma Linda, and San Bernardino, California. The study area, which includes the 100-year floodplain of San Timoteo Creek, extends along San Timoteo Creek from a short distance downstream of Alessandro Road west to the confluence with the Santa Ana River in San Bernardino.

Military Planning Projects

Naval Base San Diego Asset Evaluation, Department of the Navy, San Diego, CA. Project Manager responsible for the oversight of the drafting of the floor plans and the GIS conversion process of data into SDSFIE compliant GIS forma for updating of Property Record Cards and Facility Planning Documents of the floor plans and space utilization data for more than 800 buildings in the metro San Diego Area spread across Naval Bases Point Loma and San Diego.

Naval Special Warfare Group 1(NSWG-1), Naval Amphibious Base (NAB, Department of the Navy, Coronado, CA. As GIS and CAD Manager, provided oversight for analysis and graphics of the buildings on NAB for Asset Evaluations (AE), development of Basic Facility Requirements (BFR), and preparation of a Facilities Development Plan to support future development of NSWG-1. This project includes development of Special Project or MILCON projects to eliminate existing facility deficiencies.

Naval Base Point Loma AOP, Department of the Navy, San Diego, CA. As GIS and CAD Manager, provided oversight for analysis and graphics of the buildings on NBPL. The goal of the RSIP (Regional Shore Infrastructure Plan) was to develop a program of capital improvements which alleviate deficiencies through adaptive reuse, consolidations, facility expansions and new construction, and to reduce shore infrastructure costs associated with excess and underutilized facilities. The Overview Plan will also include recommendations for improvements to meet DoD standards for Anti-Terrorism/Force Protection.

Naval Base San Diego AOP, Department of the Navy, San Diego, CA. As GIS and CAD Manager, provided analysis and graphics of the buildings on NBSD. The goal of the RSIP (Regional Shore Infrastructure Plan) was to specifically address regional land and facility requirements from a functional point of view for Naval Base San Diego. Development included conducting data collection through site visits, questionnaires,

interviews, and a visioning workshop with NBSD tenants. The RSIP identifies and aligns future infrastructure investment strategies with CNO guidance and Navy regional planning objectives of reducing footprints and costs, increasing existing capabilities and sustainability, and maximizing efficiencies.

Naval Base Coronado Asset Evaluation, Department of the Navy, San Diego, CA. As GIS and CAD Manager, provided oversight of the CAD and GIS conversion process of data into SDSFIE compliant GIS format for updating of Property Record Cards and Facility Planning Documents of the floor plans and space utilization data for more than 2,000 buildings in the metro San Diego Area.

Powerplant Siting Study, ENPEX Development, Marine Corps Air Station, Miramar, CA. Task manager for GIS components of powerplant siting study. Worked to develop model of environmental and man-made constraint information, compiled GIS model and mapping elements to show areas with potential for site development. Coordinated with Air Station, agency, ENPEX and sub-consultants to identify, gather and reconcile relevant GIS data for project.

Basilone Road Realignment, Marine Corps Base Camp Pendleton, CA. Task Manager for realignment of Basilone Road. Oversaw GIS database development, GIS mapping and analysis and all electronic database development in support of the Environmental Assessment. Oversaw coordination with Base and agency GIS contacts. **(2005) (Approx $350k).**

Advanced Amphibious Assault Vehicle, MCAS Camp Pendleton, California. Task Manager for an EA/BA and subsequent EIS. Oversaw creation of a suitability model to break down the 125,000-acre-plus military area into military maneuver suitability classes. The model analyzed slope restrictions, incorporated seasonal habitat information, and added over two-dozen environmental and manmade constraint layers. **(2000) (Approx $350k).**

Flood Repair-MCAS Camp Pendleton, MCAS Camp Pendleton, California. Task Manager overseeing extensive GIS mapping and modeling. Several environmental constraint, developmental, and flood-related layers were entered into a GIS/HEC-RAS model to help determine flood repair areas on base. Drainage information, precipitation information, and slope were just a few such entries. The model and data layers were installed at the base upon completion of the project so that the MCAS Camp Pendleton GIS department could analyze and use the data results for its ongoing future planning efforts. Specialized training was provided to the base to help with future flood-related potential impact assessments. **(2004) ($100k).**

San Clemente Island Ranges Environmental Assessment, Los Angeles County, CA. Task Manager responsible for analysis, and map preparation for the environmental assessment and Coastal Consistency Determination for Small Arms, Demolition Ranges, and Training Areas, including biological resource survey mapping/analysis and cultural resource investigation support services. **(2000) (Approx $150k)**

Regional Shore Infrastructure Plan, San Diego County, California. Task Manager responsible for analysis and mapping support for investigating three complexes. Also prepared analysis/modeling/and support mapping for natural resources, biological, cultural and historical data inventory.

Long Beach Naval Complex EIS/EIR, Los Angeles County, California. Task Manager responsible for analysis and mapping in support of the preparation of an EIS/EIR to evaluate the future environmental consequences of three alternatives for reuse of the 1,229-acre site, including an adaptive use feasibility study for the Roosevelt Base Historic District. The adaptive use feasibility study received an award for cultural resource reports from the California Preservation Foundation. **(1998)(Approx $300k)**

Conforming Storage Facility Environmental Assessment, MCB Camp Pendleton, San Diego County, California. Analyst involved in analysis and mapping for preparation of an environmental assessment that analyzed the environmental consequences associated with three alternative sites for a proposed conforming storage facility for hazardous wastes and hazardous materials.

Tomahawk Land Attack Missile Program, San Clemente Island, Los Angeles County, California. Task Manager responsible for modeling/ analysis, database compilation, and mapping relating to the preparation of an environmental assessment in support of the Tomahawk Land Attack Missile Program to consider effects of proposed test flights of land and sea launches at San Clemente Island.

MCAS Camp Pendleton Airfield Environmental Assessment, San Diego County, California. Analyst responsible for analysis relating to the preparation of an addendum to a 1988 environmental assessment for airfield improvements. The project included mapping sensitive species, calculating impacts to wetlands, and preparation of maps in support of the Corps of Engineers Section 404 Permit application and the Regional Water Quality Control Board Section 401 water quality certification and waiver request.

Others:
Miramar Landfill Reuse Plan, San Diego, California. Task Manager for landfill reuse plan. Sub-consultant to Onyx Group.
MCAS El Toro Closure EIS, Santa Ana, California. Oversaw analysis related to preparation of the environmental impact statement relating to the closure of MCAS El Toro. **(1996) (Approx $500k)**

MCAS Yuma EIS, Yuma, Arizona. Analyst for the preparation of the environmental impact statement relating to MCAS Yuma.
NAB Coronado EA, BA, and OTMMP, San Diego, California. Analyst for the preparation of several environmental documents for NAB Coronado.
Long Beach Shipyard EIS, Long Beach, California. Analyst for the preparation of the environmental impact statement.
Wire Mountain Housing EA, San Diego, California. Analyst for the preparation of the environmental assessment.
San Clemente Island OMP, Los Angeles, California. Oversaw analysis related to preparation of an operations management plan.
MCAS Camp Pendleton P-633 and 527B Archaeological Testing and Surveys, San Diego, California. Task Manager for archaeological mapping component.
Santa Margarita Complex Archaeological Surveys, San Diego, California. Task Manager for archaeological mapping component. Extensive historical modeling/mapping of the area was included.
Chocolate Mountain Aerial Gunnery Range, California. Task Manager for mapping related to archaeological surveys/reports.
NAVSTA Pier 10/11 EIS, California. Analyst for the preparation of the EIS. Sub-consultant to SAIC.
Deluz Housing EA, SWDIV, California. Analyst for the preparation of the environmental assessment of proposed new housing.
Yermo Test Track EA, SWDIV, California. Analyst for the preparation of the environmental assessment for the Yermo Test Track.

Professional Organizations

Association of Environmental Professionals, Member, 1998-present
Women's Environmental Council, Member, 2002-present

Urban and Regional Information Systems Association, Board Member, 2000-2002; Corporate Member, 1998-present

Honors/Awards

Fortune Magazine, Article on Renewable Energy/Solar Power, October, 2008
Outstanding Env. Analysis, Miramar Landfill EIR, AEP, 2007
Outstanding Env. Document, San Diego Flood Mitigation Plan, AEP, 2007
URS Project Manager of the Year, 2006.
Outstanding Innovative Practice Award, URS Corporation, 2006.
National Association of Counties Award, SD County HMP, 2005
Outstanding Env. Document, SD County HMP, AEP, 2004
Outstanding Env. Solution, BLM Otay/Kuchamaa GIS Database, AEP, 2002
Best Instructional Presentation, Second Place, ESRI Conference, 1999
Most Artistic Presentation, ESRI Conference, 1998

Brian Madigan, AICP, LEED AP BD+C

Environmental Specialist / Visual Resources

Areas of Expertise

Visual Resources
NEPA/CEQA
Environmental Planning
Staff Assistance to Regulatory Boards/Commissions
Land Use Planning
Project Permitting/Agency Coordination
Public Outreach and Meetings

Years of Experience

With URS: >1 Year
With other Firms: 5 Years

Education

MCPD/Master of Community Planning and Development/ 2009/Muskie School of Public Service/University of Southern Maine

BA/Geography/2004/Sonoma State University

Registrations

2011/American Institute of Certified Planners (AICP)
2008/Leadership in Energy and Environmental Design Accredited Professional – Building, Design, and Construction (LEED AP BD+C)

Association Affiliation

American Planning Association (APA)
US Green Building Council (USGBC)

Overview

Mr. Madigan has more than five years of diversified professional planning experience and specializes in visual resource analyses. He has conducted research, investigation and analysis for numerous land development and planning related projects. Additionally, he has experience in the in the production of Applications for Certification (AFC) with the California Energy Commission (CEC), and Environmental Impact Reports (EIR) pursuant to the California Environmental Quality Act (CEQA). He also has experience in the preparation of Due Diligence Studies, and Site Feasibility Analysis.

Project Specific Experience

Watson Cogeneration Steam and Electric Plant Expansion, BP, Inc., Los Angeles, CA. Visual Resources Analyst. 2011. Serving as visual resources analyst for a cogeneration plant expansion. The Watson Cogeneration Steam and Electric Reliability project is an expansion of an existing cogeneration plant. The project will be located within the existing Watson Cogeneration Facility, which is located within the existing BP Carson Refinery in Carson, CA.

Solar Confidential Client, Riverside County, CA, Visual Resources Analyst/Environmental Specialist. Specific duties included production of the visual resources section of the Application for Certification and preparation of a Visual Impact Assessment including a Visual Resources Inventory. The Visual Resources Inventory was used to develop an interim Visual Resources Management Classification using methodologies and guidelines from the Bureau of Land Management, US Forest Service, and US Federal Highway Administration.

Author, California High-Speed Train Project, Los Angeles to Palmdale Section, Visual Impact Assessment and Visual and Aesthetics Section of an EIR/EIS, Southern CA: Client: California High-Speed Rail Authority; 2011. In the process of updating a stand-alone Visual Impact Assessment technical report and a visual and aesthetics section of an EIR/EIS for the proposed California High-Speed Train (CAHST). This high-profile project would provide intercity, high-speed train service on over 800 miles of tracks throughout California, connecting major population centers from San Diego to the San Francisco Bay Area. The HST system is envisioned as a state-of-the-art transportation alternative that will allow trains to travel at operating at speeds of up to 220 miles per hour. The California HST project will be planned, designed, constructed, and operated under the direction of the California High-Speed Rail Authority (Authority), a state governing board formed in 1996. Because of the high cost of this project, several delays have occurred due to funding issues and the need to identify lest costly alternatives for the locations of the tracks. The project currently has

recently resumed, and Mr. Madigan is preparing an updated draft version of the VIA report based on new alignments selected. This effort requires additional field work and assessment of impacts based on relocation of previously selected alignments.

Due Diligence for Various Solar Confidential Client Sites, CA, Visual Resources Specialist. Assisted with preliminary visual resources analyses for various sites to aid client in identification of potential solar power plant (power tower) siting areas in the southwestern United States.

BASF Kauai Environmental Assessment. Visual Resources Specialist. Preparation of an Environmental Assessment for development of a field office on 10 acres of agricultural land on Kauai, Hawaii. (URS, 2011).

Town of Bar Harbor, Maine. Assistant Planner. The Town of Bar Harbor is the gateway to Acadia National Park and the destination for more than 150 cruise ships, and nearly three million tourists every year. As an Assistant Planner for the Town, Mr. Madigan provided staff support to various Boards, Committees, and Commissions, including the Planning Board, Town Council, Design Review Board, Conservation Commission, Economic Development Task Force, and Town Council.

San Joaquin Regional Water Quality Improvement Project, Environmental Impact Report, San Francisco Public Utilities Commission, San Francisco, CA, Environmental Analyst. As an Environmental Analyst for this project Mr. Madigan conducted research and environmental analysis of various sections of the EIR, including Hazards and Hazardous Materials, Geology, Soils and Seismicity, and Energy Resources. The project proposed improvements to the Tesla Portal Disinfection Station and Thomas Shaft Chlorination Facility.

Hercules New Town Center, Environmental Impact Report, City of Hercules, CA, Environmental Analyst. Responsible for research and preparation of the Hazards and Hazardous Materials and Geology and Soils sections of the EIR. This EIR was prepared at both the program and project level. The program-level portion of the EIR addressed possible impacts that could result if the City implemented amendments to the General Plan and Zoning Ordinance. Specifically, the General Plan and Zoning Ordinance amendments would create a New Town Center (NTC) land use designation and zoning district. The new NTC land use designation and zoning district would allow a transit-oriented Town Center to be constructed at the core of Hercules. The NTC development would consist of a mix of residential, commercial, office and public and quasi-public uses. At the project-level, the EIR was prepared for the first phase of development of the NTC which included 400 townhouses, flats, and live work units, 60,000 square feet of retail space and 80,000 square feet of office space on a 6.62 acre parcel within the NTC planning area.

Target Store, Environmental Impact Report, San Rafael, CA, Environmental Analyst. Responsible for preparation of the Public Services and Utilities and Geology and Soils Sections of the EIR. The project included the construction of a 137,000 square foot Target Store

and parking lot on a 19.4-acre parcel. The store was sited atop a now closed landfill, a factor that presented a unique set of soil conditions which required extensive coordination with the geotechnical engineer to devise appropriate mitigation measures which would limit any long term potential damage which could have occurred as a result of differential settlement.

James Donlon Boulevard Extension, Environmental Impact Report, City of Pittsburg, CA, Environmental Analyst. Responsible for research and preparation of the Agriculture, Geology and Soils, Population and Housing, and Utilities and Service Systems sections of the EIR. Project responsibilities also included coordination with city staff and state regulatory agency officials.

ROSS METERSKY

4428 Olmsted Road
New Albany, Ohio 43054
(614) 270-5245
RMeters@aol.com

SUMMARY: Solutions-oriented business development and management professional with demonstrated ability to create, lead, structure and close complex transactions. Experienced in developing, evaluating, financing, managing, and marketing commercial opportunities. Improved bottom line by more than $150 million (NPV) by identifying prospects, creating and managing cross-functional teams, building and cultivating internal and external relationships, and negotiating agreements.

PROFESSIONAL EXPERIENCE

2008 to Present BP US Cogeneration (formerly part of BP Alternative Energy), Columbus, Ohio

BUSINESS DEVELOPMENT MANAGER

Responsible for expanding and optimizing gas-fired generation opportunities at BP facilities.

- Developing a $200 million cogeneration project at BP's refinery in Carson, California.
- Guiding project through the complex California Energy Commission licensing process.
- Maneuvering project through the CAISO interconnection process and the South Coast permitting process.
- Leading financial analysis and commercial discussions with partners.
- Directing a cross-functional team while managing all phases of development including contract negotiation, structuring, economic analysis, legal, permitting, electrical interconnection and public relations.

2005 to 2008 Nationwide Energy Partners, Ltd., Columbus, Ohio

BUSINESS UNIT LEADER

Responsible for optimizing portfolio of over 20,000 customer meters and developing new business opportunities. Led staff of nineteen in sales, account management, maintenance, construction, billing, accounting, financial reporting and customer service.

- Transformed business and culture from an unprofitable, self-centered operation to a profitable, team-oriented company. Improved profitability 450% during first year of leadership.
- Increased operational efficiencies by creating tools and coaching employees. Implemented web-based work order management system and a variety of tools to increase knowledge, promote sharing, and improve documentation, results and employee satisfaction.
- Improved financial review and structuring of new deals and developed model to analyze utility rate structures and optimize pricing to customers.

1998 to 2005 American Electric Power Company, Inc.

DIRECTOR, CAPACITY PLANNING AND ANALYSIS, Columbus, Ohio 2004 - 2005

Responsible for managing the commercial aspects of regulatory issues related to power generation assets.

- Developed models to track and forecast regional positions resulting in the implementation of a power generation acquisition program.
- Represented the commercial organization in corporate planning activities.

DIRECTOR, ENERGY MARKETING, Columbus, Ohio 2001 - 2004

Responsible for marketing medium- and long-term power supply packages to industrial, utility, and municipal customers.

- Initiated, negotiated and closed transactions valued at over $48 million (NPV).
- Led southeast marketing effort in 2001 and 2002.
- Led ERCOT (Texas) marketing effort in 2003 and 1Q 2004.

DIRECTOR, BUSINESS DEVELOPMENT, Houston, Texas 1998 - 2000

Responsible for identification, development and execution of asset-based transactions.

- Managed a diverse twelve-member team while leading business development activities and negotiation of agreements for the 900-MW, $425 million Dow Plaquemine cogeneration project in Louisiana. NPV of project at time of closing exceeded $105 million. Executed agreements with Dow and closed synthetic lease financing. Initiated discussions and supported negotiations to sell 900 MW to Tractebel.
- Directed all phases of development including contract negotiation, site selection, equipment selection, pricing, structuring, economic analysis, legal, permitting, and public relations.

1994 to 1998 Enserch Development Corporation, Houston, Texas

SENIOR BUSINESS DEVELOPMENT MANAGER
Responsible for identification, development and execution of asset-based transactions in the United States and Europe.

- Negotiated to near completion agreement for a 770-MW, $1.3 billion coal-fired project in Croatia. Enserch was acquired by TXU and exited the country.
- Negotiated agreement to acquire a central heating plant in Hungary. Developed site expansion plans based on a 180-MW, $150 million cogeneration project.
- Marketed full range of cogeneration applications to industrials in the United States.

1993 to 1994 Tenneco Power Generation Company, Houston, Texas

SENIOR FINANCIAL ANALYST
Responsible for providing development, financial and analytical support for Tenneco's development effort.

- Developed dynamic financial models to efficiently evaluate business opportunities.
- Evaluated assets of acquisition targets and assessed future development potential.
- Proposed inside-the-fence projects based on a "total energy" concept, which included electricity, steam, back-up power, and other requirements.
- Evaluated financing options for business opportunities.
- Served on management committee of MASSPOWER, a 236-MW cogeneration project.

1991 to 1993 Enserch Development Corporation, Houston, Texas

ASSET MANAGER
Responsible for the operations, accounting, permitting, and the maintaining, monitoring, and analysis of compliance with contractual obligations of cogeneration plants developed, constructed, owned and operated by ENSERCH Corporation and its affiliates.

- Managed the closing process for the financing for Encogen Northwest, a 160-MW, $160 million cogeneration project.
- Developed and maintained a detailed operating model to evaluate plant performance, perform monthly analyses, and prepare financial forecasts.
- Served as principal contact for business and administrative matters for partners, lenders, clients, ENSERCH entities, and other third parties.
- Reviewed quarterly unaudited and annual audited financial statements for three cogeneration projects with $174 million in revenues and $584 million in assets.
- Prepared annual operating budget for a cogeneration project with $84 million in revenues and $337 million in assets.

1988 to 1991 Lone Star Gas Company, Dallas, Texas

SENIOR ACCOUNTANT
Responsible for partnership accounting and financial reporting for cogeneration investments.

EDUCATION/CERTIFICATIONS/AFFILIATIONS

The Ohio State University, Columbus, Ohio
Master of Business Administration, 2004

Texas A&M University, College Station, Texas
Bachelor of Business Administration in Accounting, 1988

Certified Public Accountant, State of Texas, 1991

Board Member and Treasurer, Columbus Speech and Hearing Center, 2001 – 2004

President, New Albany Little League, 2007 - 2008

Stephen Moore
Civil Engineer

Job Function
Stephen serves KPE as a civil engineer. He has been with KPE for over two years and focuses on site development, performing hydrologic and hydraulic calculations as well as grading and drainage design through Microstation and Geopak.

Kiewit Experience

Task	Description
Blythe Solar Power Project 06/2010-8/2011 Blythe, California	Civil Engineer Provided engineering support in multiple facets for a solar parabolic trough power plant. Performed hydrology and hydraulic calculations for onsite stormwater runoff of over 7,000 acres sizing drainage swales, channels, and pipe. Performed grading operations utilizing Microstation's Geopak on 7,000 acres to minimize earthwork movement during construction. Developed horizontal and vertical alignment for approximately 5 miles of access road including sizing box culverts for cross drainage of roadway. Assisted in writing drainage reports as well as a Drainage, Erosion, and Sediment Control Plan.
Pio Pico Energy Center Chula Vista, California 03/2010-5/2010	Civil Engineer Developed hydrology and hydraulic calculations for the licensing of a simple cycle gas power plant. Provided grading and drainage plans as well as earthwork quantities to support calculations. Also provided preliminary road alignment and improvements for access road between local water treatment facility and power plant. Closely coordinated between other disciplines to find optimal plant arrangement as well as with owner's consultant to provide accurate deliverables on schedule.
Oakley Generating Station Antioch, California 01/2010-03/2010	Civil Engineer Developed hydrology and hydraulic calculations for the proposal of a 2x1 combined cycle power plant. Provided grading and drainage of the site according to local laws and ordinances. Closely coordinated with construction partners to find best constructability plan.
BP Watson Carson, California 09/2009-02/2010	Civil Engineer Developed hydrology and hydraulic calculations through software for the expansion of a cogeneration power plant to serve an oil refinery. Coordinated with Owner as well as permitting agency through the permitting process of the project.
Brayton Point Closed Loop Cooling Somerset, Massachusetts 6/2009-8/2009	Civil Engineer Assisted lead civil engineer for a closed loop cooling renovation project. Calculated retaining wall quantities as well as hydraulic quantities. Assisted in post-development drainage design with the use of Hydraflow Hydrographs and design criteria research.

Other Relevant Experience

Project Name	Description
Victoria to Rosenberg Corridor Rosenberg, Texas	Assisted project manager and engineers in the design of 90 miles of railroad between Victoria, TX and Rosenberg, TX. Responsible for updating cost estimates for 86 bridges, designing 3 alternate bypasses, and preparing a presentation to show local communities the economical impact.
Corpus Christi to Victoria Corridor Victoria, Texas	Responsible for the conceptual alignment of 85 miles of railroad between Corpus Christi, TX to Victoria, TX. Researched FEMA flood plain maps for most optimal route and tie-in locations.
Civil & Site Services Kansas City, MO	Assisted project engineer in local drainage studies and site development projects. Created due diligence reports for prime consultant. Assisted engineers in drainage studies by use of HEC-HMS and TR-55 modeling. Researched new "Green" engineering techniques to implement in current and future projects.

Education

B.S. Civil Engineering – University of Missouri, 2009

Registrations and Organizations

Engineer In Training – Missouri

Associate Member- American Society of Civil Engineers

Omar Olivares, P.E.
Project Manager

Job Function
Omar develops civil engineering tasks, including managing the civil department, producing grading, drainage and survey requirements as well as providing support during construction. His assignments include both office design and field services.

Kiewit Experience

Project Name	Description
Victorville II, Solar Field Victorville, California Owner: Inland Energy Scope: EPC	Produce grading and drainage drawing for the development of a 320 acre site. The work included hydrology and hydraulic calculations for the proposed 300 solar field and the power generation isle.
Thorold Cogen Ontario, Canada Owner: Northland Energy Scope: EPC	Engineer of record, responsible for storm water and grading design. Work included the revision and improvement of an existing storm water management plan for the 20 acre facility. The project required provision for quality and quantity storm water management. Deliverables were a set of 30 drawing, storm water management plan per Ontario standards and specification for earthwork, fencing and storm water
Panoche Energy Center Fresno County, California Owner: Panoche Energy Center, LLC Scope: EPC	Engineer of record, responsible for checking and coordinating the production of storm water management and grading for the 60 acre site, the design involved an infiltration pond capable of handling all the storm water runoff without discharging offsite.
Ethanol Plants (Mt Vernon & Aurora) Indiana and Nebraska. Owner: Aventine Renewable Energy, Inc. Scope: EPC	Responsible in charge for the civil portion of an Ethanol Plant developed near the city of Mt Vernon Indiana. Involvement in closely reviewing hydraulic and hydrology calculation and sizing of storm water features. Developed hydrology and hydraulic calculation for an ethanol plant in Aurora, Nebraska. Design including sizing of pond, implementing a drainage erosion and sediment control plan, road design and parking layout.
Copper Mountain and Cherry Point, power plants Nevada and Washington. Scope: EPC	Developing grading and drainage package for a power plant near Blaine, Washington. Assisting in a proposal for a power plant near Boulder City, Nevada.

Project Name	Description
Bartow Repowering Project St. Petersburg, Florida Owner: Progress Energy Scope: EPC	1,260 MW combined cycle power plant with four (4) Siemens SGT6-5000F combustion turbine generators, four (4) Vogt heat recovery steam generators, and one (1) Mitsubishi Heavy Industries steam turbine. This project will replace the existing P.L. Bartow Plant and will use the existing intake structure for once through cooling. Engineering services provided for this EPC project included design, construction support and assistance with performance testing. Omar served as the lead civil engineer.
Hovensa GT-13 Project St. Croix, U.S. Virgin Islands Owner: Hovensa L.L.C. Scope: Engineering	25 MW cogeneration facility with one General Electric Frame 5 combustion turbine generator and one Deltak single pressure heat recovery steam generator. Kiewit was a subcontractor with TICI in providing engineering services for the project, including detailed design and performance testing services. Omar was responsible for grading and drainage design, erosion control plans and coordination with other disciplines.
Palomar Energy Project Escondido, California Owner: Sempra Energy Resources Scope: EPC	554 MW combined cycle power plant with two (2) GE 7FA combustion turbines, two (2) Nooter/Eriksen heat recovery steam generators, and one (1) GE D11 steam turbine. This project is located in an urban area with stringent noise, aesthetic and permitting requirements. The facility burns natural gas. Responsible for providing engineering services, including design, procurement, training, testing and field engineering services. This project won *Environmental Protection Magazine's* Facility of the Year Honorable Mention, *Combined Cycle Journal's* Pacesetter Plant Award and Adobe's Success Story of the Year. Omar assisted in the design of erosion control and drainage.

Other Relevant Experience

Project Name	Description
Solari Underpass Pittsburg, California Owner: BNSF and City of Pittsburg	Project manager and engineer of record for improvements and reconstruction of the Solari Underpass.
Kaiser Multimodal Facility Fontana, California	Engineer of record for this railroad facility, design consisted in developing a 90-acre lot to a multimodal facility.
BNSF Capacity Improvements Texas, Oklahoma and California Owner: BNSF	Designed grading and track work for several capacity improvement projects, including the Coburn to Canadian segment.

Education and Experience

B.S. Civil Engineering – Universidad Autonoma de Nuevo Leon, 1998

Master Degree – Engineering Management – University of Kansas 2008

Registrations and Organizations

Professional Engineer – California, Maryland, Washington, Arizona, Nevada, Indiana, Utah, Ontario, Canada and Mexico

Andrea Parker

Environmental Scientist

Areas of Expertise

Ecological surveys and assessments

NEPA Compliance

Permitting and Coordination with Regulatory Agencies

Project Management

Years of Experience

With URS: 11 Years
With Other Firms: 2 Years

Education

MS/Environmental Science/2000/ Texas A&M University

BA, with Honors/Botany/1996/ University of Texas

Registration/Certification

OSHA 40-hour

HAZWOPER

Rosgen Level I: Fluvial Geomorphology/Stream Restoration

Overview

With 13 years of experience, Ms. Parker has demonstrated her aptitude in the arenas of environmental science and permitting for a variety of federal and private sector clients for energy-related projects. She has worked on projects nationwide in Colorado, New Mexico, California, Utah, Kansas, Washington D.C., Maryland, Virginia, New York, New Jersey, Massachusetts, Mississippi, Pennsylvania, Texas, Oklahoma, Louisiana, West Virginia and Minnesota. Representative projects are described below:

Project Specific Experience

BP Alternative Energy, CA: Prepared a technical soils report for an Application for Certification (AFC) for the Watson Cogeneration Project. The proposed project consists of a cogeneration facility that will produce electricity and steam. The facility will be located within an existing industrial zoned area in the City of Carson, in southern California.

Prepared a technical soils report for the Carson Hydrogen Project AFC. The proposed project consists of an Integrated Gasification Combined Cycle (IGCC) facility that will gasify petroleum coke to fuel combustion turbines operating in combined cycle mode. The Project will produce electricity, raw hydrogen, and cogenerated steam while reducing greenhouse gas emissions by capturing carbon dioxide (CO_2) and sequestering it.

BP Alternative Energy, CA: Prepared a technical soils report for an AFC for the Kern Front Project. The Project consists of a base load facility consisting of two natural gas-fired combustion turbine-electrical generators (CTGs) (or equivalent General Electric technology) and one condensing steam turbine generator. The electric power generated by this Project will be provided into the wholesale California market via an interconnection to the two existing electric transmission lines.

RES Americas, CO: Prepared a technical soils report as part of the permitting process of a 300 MW wind farm and associated transmission line in eastern Colorado. Applications for development and special use permits for the Cedar Point Wind Power Project were filed with three counties where the turbines and transmission lines will be located.

Kinder Morgan, CO: Author of FERC Environmental Report (ER) technical Resource Reports for Kinder Morgan's proposed natural gas pipeline lateral from the Rockport Hub to Greeley, Colorado. The Project consisted of 40 miles of 16-inch diameter pipeline and 13.5 miles of smaller diameter (6, 8, or 12-inch) pipeline.

Kinder Morgan, KS: Author of FERC Environmental Report (ER) technical Resource Reports in support of the Kinder Morgan Interstate Gas Transmission LLC (KMIGT) Otis Compressor Station project in Rush County, KS. Conducted a site visit and assessed potential impacts to existing land uses and wildlife habitat.

Natural Gas Pipeline Company of America, OK: Prepared a Noxious Weed Management Plan and a technical soils report for the Sayre NSS Project in Beckham County, Oklahoma. Conducted analyses of the potential impacts from drilling 22 new natural gas storage wells and installing 7.33 miles of pipeline and associated facilities.

Natural Gas Pipeline Company of America, TX: Prepared a technical soils report for the North Lansing Expansion Project in Harrison County, Texas. Conducted analyses of potential impacts from drilling 12 new storage wells, recompleting 16 wells, and installing 10.4 miles of pipeline and associated facilities.

Southern Star Central Gas Pipeline Company, OK. Author of FERC Environmental Report (ER) technical Resource Reports for Southern Star's 14.5 mile natural gas pipeline lateral in Woods County, OK. The Waynoka Lateral Project was designed to connect Anadarko's Waynoka Gas Plant to Southern Star's distribution system.

Virginia Dominion Power, WV and VA: Habitat evaluation and route selection for a proposed natural gas pipeline between Charleston, West Virginia and Durham, North Carolina. Duties included habitat characterization, wetland delineation, vegetation mapping, and evaluation of threatened and endangered species' habitats within the proposed project corridor.

Ronald E. Reeves

Senior Project Scientist

Areas of Expertise

Industrial Noise Assessments

Airport Environmental Studies

Highway Noise Assessments

Construction Noise Assessments

FAR Part 150 Noise Land Use Compatibility Studies

Aircraft Noise Abatement Procedures Development and Evaluation

Years of Experience

URS: Three Years

Over 15 Years Noise Control Experience With Other Firms

U.S. Marine Corps
Rank of Captain, Tactical Pilot
Combat Qualified in F-4S/RF-4B Aircraft (Eight Years)

Education

B.S. Information Systems 1982
Western Carolina University

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

Registration/Certification

Institute of Noise Control Engineering-Member

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

Overview

Mr. Reeves has over seventeen years of transportation and industrial noise control experience. Included in this experience are numerous airport, power generation facility, and transportation-related 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 preparation of NEPA/CEQA documents, 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.

Representative Project Experience

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 a mix of fourteen coal fired, natural gas fired, and nuclear facilities throughout the U.S. Potential noise impacts from cooling system conversion 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.

Hydrogen Energy California, Kern County, California: Noise Task Manager for the preparation of the California Energy Commission Application for Certification and Department of Energy environmental analysis. The project involved the transportation and gasification or petroleum coke feedstock, gas separation, gas turbine electricity generation, gas separation and CO_2 transport and sequestration.

Granite Wind LLC., Granite Mountain Wind Energy Project: This project, located in San Bernardino County, CA, involved the analysis of environmental impacts associated with the introduction of 28 Siemens-2.3-101 wind turbine generators on rural private land and lands owned by the U. S. Bureau of Land Management. The study analyzed potential construction and operational noise impacts under varying meteorological conditions and acoustical propagation environments.

NextLight Renewable Power LLC., Antelope Valley Solar Ranch One Energy Project: The Antelope Valley Solar Ranch One Project is a solar energy project utilizing photovoltaic technology and 80,000 panels to generate 230 megawatts of clean, renewable energy. The project is located 15 miles northwest of Lancaster, CA, in unincorporated Los Angeles County, CA. Potentially significant noise issues for these types of projects

are construction activities, particularly pile driving for solar panel installation, and operational noise associated with electrical distribution. The project utilized innovative pile driving methods to reduce noise exposure.

NextLight Renewable Power LLC., Lost Hills Solar Energy Project: The Lost Hills Solar Project utilizes photovoltaic technology generates 30 megawatts of renewable energy. The project is located in an unincorporated area of Kern County, CA.

Contact Information

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Jean Sanson, AICP

Senior Transportation Planner

Areas of Expertise

- Transportation Planning
- Land Use Planning
- Agency Coordination & Public Involvement

Experience

- Senior Planner, 2001 – Present, URS Corp., Denver, CO
- Land Use Planner, 1999 – 2001, RNL Design, Denver, CO
- Planner II, 1998 – 1999, City of Longmont, CO
- Community Planner, 1995 – 1997
- U.S. Peace Corps, Philippines

Education

- Masters of Regional Planning/ 1995/University of North Carolina, Chapel Hill
- B.A./Urban Studies & Planning/1993/University of California, San Diego

Registration/Certification

- American Institute of Certified Planners
- American Planning Association

Overview

Ms. Sanson is a senior planner with over 15 years of experience in transportation and land use planning. Her professional experience includes transportation impact analysis and transportation master planning. She is particularly skilled at guiding agencies, stakeholders and the general public through often complex and controversial decision-making processes related to transportation and land use.

Environmental Impact and Assessment Experience

Power and Energy Projects

Medicine Bow Fuel and Power EIS, Medicine Bow, WY. Responsible for the inventory of existing transportation facilities and transportation impacts and mitigation in the vicinity of the project.

Watson Cogeneration Steam and Electric Reliability Project, Carson, CA. Responsible for the inventory of existing land uses and land use impacts in the vicinity of the project, as per requirements of the California Energy Commission and local jurisdictions.

Niland Gas Turbine EIS, Imperial County, CA. Responsible for the inventory of existing land uses and land use impacts in the vicinity of the project, as per requirements of the California Energy Commission and local jurisdictions.

Bridgeview Energy Facility EIS, Contra Costa, CA. Responsible for the inventory of existing land uses and land use impacts in the vicinity of the project, as per requirements of the California Energy Commission and local jurisdictions.

Roadway Projects

I-70 & Havana Interchange Reconstruction/Relocation Environmental Assessment (EA), CO. Public involvement task leader for a controversial project to redesign and/or consolidate interchanges within the Stapleton area.

US 36 Corridor EIS, Denver-Boulder, CO. Task leader responsible for developing initial station plans around potential Bus Rapid Transit stations associated with highway improvements.

Alamosa Mobility Study, CO. Task leader for a study to develop short and long-term roadway improvement projects.

Transit Corridor Projects

I-10 West EIS, Phoenix, AZ. Task leader for a light rail corridor between downtown Phoenix and the West Valley.

Southwest-to-Northeast Rail Corridor EIS, TX. Lead station and TOD planner for a 40-mile corridor linking southwest Fort Worth with DFW International Airport. Project included station design and station area planning for 14 commuter rail stations, along with TOD analysis for 7 stations.

Gold Line Corridor EIS, Denver-Wheat Ridge, CO. Station planner assisting with the development of station concepts and land use assessment for an 11-mile commuter rail corridor.

Denton County Transportation Authority EIS, TX. Lead planner for a project evaluating transit alternatives along a 36-mile corridor between Denton and Dallas Counties.

East-West Corridor Multimodal EIS, New Orleans, LA. Task leader responsible for assessing station location feasibility and TOD opportunities around eleven potential stations between Louis Armstrong International Airport and the New Orleans Central Business District.

Charles B. Schwartze, P.E.

Manager, Electrical and Controls Engineering

Job Function
Charles serves Kiewit as manager of electrical and controls engineering and has served as lead electrical engineer on several projects. He has more than 25 years of experience in the power industry, including project design management and system engineering, business development, EPC contract development and negotiation, equipment specification and procurement contract development and negotiation, domestic and international field engineering, and field team management.

Kiewit Experience

Project Name	Description
Manager, Electrical and Controls Engineering Department	Responsible for administration of electrical and controls engineers in support of power projects. In addition to project work and consultation, Charles is responsible for project staffing and department technical resources, training, project assignments, department guide specifications and design guide procedures.
345kV Barbour Hill Substation Modification Project (Proposal) South Windsor, CT Owner: Northeast Utilities (NU)	Developed and bid firm price for EPC project, including technical and commercial effort for the modifications to existing substation including addition of 345kV to 115kV autotransformers, changing 115kV aboveground to underground, addition 115kV and 345kV breakers, revising substation layout, and modify sequence of switching to allow for operation with minimal interruption. Charles served as proposal sponsor for this effort.
Beseck 345kV Switching Station Project (Proposal) Wallingford, CT Owner: Northeast Utilities (NU)	Developed and bid firm price for EPC project, including technical and commercial effort for the 345kV Switching Station consisting of 4 transmission line connections and seven (7) breakers. Charles served as proposal sponsor for this effort.
Palomar Energy Project Escondido, California Owner: Sempra Energy Resources Scope: EPC	554 MW combined cycle power plant with two (2) GE 7FA combustion turbines, two (2) Nooter/Eriksen heat recovery steam generators, and one (1) GE D11 steam turbine. This project is located in an urban area with stringent noise, aesthetic and permitting requirements. The facility burns natural gas. Responsible for providing engineering services, including design, procurement, training, testing and field engineering services. This project won *Environmental Protection* magazine's Facility of the Year Honorable Mention, *Combined Cycle Journal's* Pacesetter Plant Award and Adobe's Success Story of the Year. Lead electrical engineer responsible for electrical systems design, equipment specification and procurement, and contract administration.
Business Development Proposal and Estimating Group	Proposal manager responsible for management of all proposal disciplines into coordinated proposal for presentation to management for bid approval.

Other Relevant Experience

Project Name	Description
Business Development Proposal Group	Proposal manager responsible for management of all proposal disciplines into a coordinated proposal for presentation to Proposal Review Board for bid approval. Lead electrical engineer in the group, coordinating all aspects of the electrical estimate, conceptual design and procurement strategy.
Marmara Combined Cycle Power Plant Istanbul, Turkey Owner: Enron	Lead electrical engineer responsible for coordination of electric systems design, equipment procurement and contract administration for a 600 MW combined cycle plant located in Turkey. The project consisted of two Siemens combustion turbines and one GE steam turbine.
Medway Generating Station United Kingdom Owner: Medway Power Limited	Lead electrical engineer responsible for electrical systems design for a 660 MW combined cycle plant located in the United Kingdom. The project consisted of two GE combustion turbines and one GE steam turbine.
Gadong Simple Cycle Project Brunei	Electrical engineer responsible for electrical aspects of proposal effort for addition of three GE Frame 6 combustion turbines.
Cardinal/Ingleside Cogeneration Projects Ontario, Canada Owner: Sithe Energies	Electrical engineer responsible for control and electrical estimating for two 150 MW combined cycle installations in Canada.
Allied Signal Auxiliary Power Upgrade	Electrical engineer responsible for electrical design of manufacturing plants auxiliary power system upgrade.
Valliant Mill Powerhouse Controls Upgrade Project Valliant, Oklahoma Owner: Weyerhauser Paper	Lead electrical engineer responsible for all electrical aspects of the plant control system upgrade and auxiliary electrical system upgrade. The project consisted of the upgrade of the paper mills auxiliary electric system switchgear and motor control centers and the replacement and upgrade of the plant control system.
Mungarra, Kalgoorlie and Pinjar Simple Cycle Gas Turbine Installation Owner: State Energy Commission of Western Australia	Field assignment. Assigned to construction management team at project sites in Geraldton, Kalgoorlie and Perth in Western Australia. Responsible for electrical/control construction and commissioning of two GE Frame 6 machines at Geraldton (Mungarra), one at Kalgoorlie and two at Perth (Pinjar).

Project Name	Description
Decordova Combustion Turbine Installation and ACE Cogeneration Company Argus Project Owner: Texas Utilities Electric Company	Short assignment for quality assurance check on construction documentation.
Butler Warner Generation Plant Combined Cycle Addition Fayetteville, North Carolina Owner: Public Works Commission of the City of Fayetteville	Field assignment. Member of the construction management team responsible for start-up and initial operation of the addition of three heat recovery steam generators with a common steam turbine. Specific responsibilities included conducting dynamic test procedures on construction completed systems and resolving field problems arising from start-up of the plant distributed control system.
J.K. Spruce Unit 1 San Antonio, Texas Owner: City Public Service of San Antonio	Responsible for control schematic design for coal yard addition and expansion. Systems included coal receiving, coal stockout, crushing and plant coal silo fill. Also assisted in design review of the main plant.
Morgan Creek Combustion Turbine Installation Colorado City, Texas Owner: Texas Utilities Electric Company	Responsible for control schematic design for various systems, including auxiliary power, generator and excitation, and turbine control and instrumentation. Also assigned to the project site. Member of start-up group responsible for start-up and initial operation of six GE Frame 7 combustion turbines. Specifically responsible for coordination of checkout and start-up on Units 1 and 2 and checkout of common support systems such as fuel supply, natural gas supply and auxiliary power.
Fayette Power Project Owner: Lower Colorado River Authority	Responsible for control schematic design for various plant systems, including flue gas desulfurization, dewatering, byproduct transport, limestone preparation and flue gas reheat.
Northern States Power Project, Sherburne County Unit 3	Assisted in the coordination and compilation of all documentation for the plant main control room, control board and design. Coordinated all plant local control stations.
Intermountain Power Project Units 1 and 2 Delta, Utah	Field assignment. Responsible for administration and expediting of control and electrical equipment procurement contracts.
Mt. Storm Units 1 and 2 Owner: Virginia Power	Turbine water induction prevention project. Responsible for the design of control schematics for the retrofit upgrade project.

Project Name	Description
South Bangkok Units 1 and 2 Gas Conversion Project Owner: Electrical Generating Authority of Thailand	Responsible for retrofit design of control schematics to facilitate the addition of gas-firing capability.

Education and Experience

M.B.A. – University of Kansas, 1997

B.S. Electrical Engineering – University of Missouri, 1984

B.S. Computer Engineering – University of Missouri, 1984

Registrations and Organizations

Professional Engineer – Missouri, California, New Mexico, Indiana, Washington, Ontario, Nebraska, Nevada, Kentucky, Hawaii, Wyoming, Arkansas, Idaho, North Carolina, Pennsylvania, Utah, Illinois, Connecticut, Arizona, Maryland, Iowa, Florida, Alaska, Maine, New Hampshire , Colorado, Minnesota, Oregon, Montana, Georgia, Texas, Mississippi, Delaware, Wisconsin, North Dakota, South Dakota, Louisiana, West Virginia, Kansas and Massachusetts

Institute of Electrical and Electronics Engineers (IEEE)

Tricia Winterbauer

Senior Environmental Specialist

Areas of Expertise

Environmental Regulatory Compliance and Permitting
NEPA/CEQA
Energy Development Projects
Occupational Health & Safety
Phase I & II Environmental Site Assessments

Years of Experience

With URS: 14 Years

Education

BA/Environmental Studies/1992

Overview

Ms. Winterbauer has 14 years of experience in environmental regulatory compliance and permitting projects, NEPA/CEQA, energy development projects, occupational health and safety projects, hazardous waste soil and groundwater investigations and individual and multi-site Phase I and Phase II Environmental Assessments.

Project Specific Experience

NEPA/CEQA/Energy Development Projects
Ms. Winterbauer has conducted Environmental Impact Reports (EIRs), Environmental Impact Statements (EISs) and Environmental Assessments (EAs) through the NEPA/CEQA process, as well as the permitting of power generating facilities through the California Energy Commission's Application for Certification (AFC) permitting processes for new power generation facilities. She has also assisted existing power generation facilities with the development of environmental and health and safety compliance plans and documentation.

First Solar Topaz Solar Energy Project. Performed Phase I Environmental Site Assessments and other due diligence work on all properties that comprise the proposed 550 MW solar farm project site and mitigation land in San Luis Obispo County. 2011.

NextLight Solar Ranch AV EIR. Served as task leader for Environmental Safety and Fire Hazards sections for the EIR in Los Angeles County. The EIR was submitted in December, 2009.

Stirling Energy Systems Solar One Generating Facility. Served as task leader for Hazardous Materials, Hazardous Waste, and Worker Safety for the AFC of a 850 MW solar power generating facility in San Bernardino County. The AFC was submitted to the CEC in December, 2008.

San Joaquin Solar 1&2 Hybrid Solar Thermal Generating Facility. Served as the task leader for Hazardous Materials, Hazardous Waste, and Worker Safety for the AFC of a 106.8 MW solar power generating facility in Fresno County. The AFC was submitted to the CEC in November, 2008.

Stirling Energy Systems Solar Two Generating Facility. Served as task leader for Hazardous Materials, Hazardous Waste, and Worker Safety for the AFC of a 750 MW solar power generating facility in Imperial County. The AFC will be submitted to the CEC in June, 2008

Carrizo Solar Power Generating Facility Project. Served as task leader for Hazardous Materials, Hazardous Waste, and Worker Safety for the AFC of a 163 MW solar power generating facility in San Luis Obispo County. The AFC was submitted to the CEC in October, 2007.

Anaheim Municipal Power Station. Served as task leader for Hazardous Materials, Hazardous Waste and Worker Safety for the AFC of a 200 MW energy facility in Anaheim, Orange County. The AFC was be submitted to the CEC 2008.

Larkspur 3 Energy Facility Project. Served as task leader for Hazardous Materials, Hazardous Waste, and Worker Safety for the AFC Amendment for the facility located in San Diego. The AFC Amendment was submitted to the CEC in May, 2007.

Panoche Energy Center. Served as task leader for Hazardous Materials, Hazardous Waste and Worker Safety for the AFC of a 400 MW energy facility in Fresno County. The AFC will be submitted to the CEC July, 2006.

Bullard Energy Center. Served as task leader for Hazardous Materials, Hazardous Waste and Worker Safety for the AFC of a 200 MW peaking energy facility within Fresno County. The AFC was be submitted to the CEC November, 2006.

Magnolia Power Project. Served as task leader for Hazardous Materials, Hazardous Waste, and Worker Safety for the AFC of a 250 MW energy facility within the City of Burbank. The project was licensed in 2003. Assisted in the management of condition compliance activities from 2003-2005. Developed construction and operations Hazardous Materials and Hazardous Waste Management Plans, Stormwater Pollution Prevention Plans, A Health & Safety Program and a Risk Management Plan for the facility.

Agua Mansa Power Project. Assisted in the preparation ad processing of an application to develop a 49 MW power facility in Colton, California. Project was constructed in 2003. Assisted in environmental compliance activities from 2003-2004. Developed Construction and Operations Hazardous Materials and Hazardous Waste Management Plans, a Spill Prevention Countermeasures and Contingency Plan, the operations Health & Safety Program and a Risk Management Plan for the facility.

Duke Energy Moapa Power Project. Assisted Duke Energy of North America in environmental permitting and construction compliance activities for a power plant in Clark County, Nevada from 2000-2002. Prepared and submitted compliance documents to various local, state and federal agencies. Prepared a permit matrix to track the completion of each of the permits required prior to construction, during construction, and prior to operations. Also assisted with NEPA compliance and coordination with the Bureau of Land Management for the power plant and project linears.

Environmental Regulatory Compliance
Ms. Winterbauer has provided regulatory compliance assistance to various industrial and commercial facilities. Has developed and updated regulatory compliance documentation including hazardous waste management programs, hazardous materials management programs, Form R evaluations, hazardous material business plans, risk management plans, storm water pollution prevention plans, spill prevention control and countermeasure plans risk management plans and training programs.

Occupational Health and Safety
Has provided occupational health and safety compliance assistance to various industrial and commercial facilities. Has developed health and safety programs that include all required Cal-OSHA plans and programs.

Conducted occupational health and safety audits for the numerous industrial and manufacturing facilities to determine compliance of the Occupation Safety and Health Administration standards.

Phase I and Phase II Site Assessments
Managed and conducted more than 400 Phase I Site Assessments of industrial and commercial facilities in Northern and Southern California. Investigations have focused on the potential for soil and groundwater contamination resulting from past and present site use. Specific tasks have included proposal preparation, budget tracking, site reconnaissance, historical land use investigation, topographic map and aerial photo review, and review of regulatory agency records concerning site compliance issues. Additional tasks have included collection of drinking water samples for analysis of lead content, and visual inspections and characterization of possible asbestos containing materials.

Performed groundwater and soil sampling, at hazardous waste sites throughout California. Assisted on large Phase II projects conducting field work and preparing reports of findings.

Contact Information

URS Corporation
130 Robin Hill Road, Suite 100
Santa Barbara, CA 93117
Tel: 805.964.6010
Fax: 805.964.0259
Tricia_winterbauer@urscorp.com

APPENDIX B
Declarations

Declaration of
F. Gene Amrhein

I, F. Gene Amrhein, declare as follows:

1. I am presently employed by Kiewit Power Engineers Co. as Senior Structural Engineer.

2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.

3. The attached testimony on the structural engineering aspects of Facility Design and the Project Description was was prepared under my direction for the Watson Cogeneration Steam and Electric Reliability Project and is based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: September 29, 2011 Signed: _____

At: Lenexa, KS

Declaration of
David Bernal

I, David Bernal, declare as follows:

1. I am presently employed by URS Corporation as Principal Geologist

2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.

3. The attached testimony on Waste Management was prepared by me for the Watson Cogeneration Steam and Electric Reliability Project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: September 30, 2011 Signed: David M Bernal

At: Santa Barbara, Cailfornia

Declaration of
Arnel Bicol

I, Arnel Bicol, declare as follows:

1. I am presently employed by URS Corporation as Principal Geotechnical Engineer.

2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.

3. The attached testimony on Geologic Hazards and Resources was prepared under my supervision for the Watson Cogeneration Steam and Electric Reliability Project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: September 30, 2011 Signed: 

At: Los Angeles, California

Declaration of
Stephen Blakely

I, Stephen Blakely, declare as follows:

1. I am presently employed by PaleoResource Consultants as Staff Paleontologist.

2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.

3. The attached testimony on Paleontological Resources was prepared by me under my direction for the Watson Cogeneration Steam and Electric Reliability Project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 30 September 2011 Signed: 

At: Auburn, California

Declaration of
Richard B. Booth

I, Richard B. Booth, declare as follows:

1. I am presently employed by AEROWEST as a Senior Air Quality Consultant and Sole Proprietor.

2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.

3. The attached testimony on Public Health and the preparation of the Off-site Consequence Analysis for ammonia was either prepared by me or under my direction for the Watson Cogeneration Steam and Electric Reliability Project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: September 30, 2011 Signed: Richard B. Booth

At: Shingletown, California

Declaration of
Katie Carroz

I, Katie Carroz, declare as follows:

1. I am presently employed by Carroz Consulting as President.

2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.

3. The attached testimony on Socioeconomics was prepared under my direction for the Watson Cogeneration Steam and Electric Reliability Project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: September 30, 2011 Signed: Katie Carroz

At: Issaquah, WA

Declaration of
Noel V. Casil

I, Noel V. Casil, declare as follows:

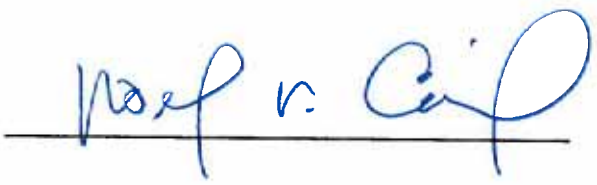
1. I am presently employed by URS Corporation as Senior Transportation Engineer
2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.

3. The attached testimony on Traffic/Transportation was prepared by me for the Watson Cogeneration Steam and Electric Reliability Project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: September 30, 2011 Signed: 

At: Santa Ana, California

Declaration of
Robert Collacott

I, Robert Collacott, declare as follows:

1. I am presently employed by URS Corporation as Principal Scientist

2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.

3. The attached testimony on Water Resources was prepared by me for the Watson Cogeneration Steam and Electric Reliability Project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: September 30, 2011 Signed: 

At: Santa Ana, California

Declaration of
Gregory S. Darvin

I, Gregory S. Darvin, declare as follows:

1. I am presently employed by Atmospheric Dynamics, Inc. as Meteorologist.

2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.

3. The attached testimony on Air Quality and the testimony on the Off-site Consequence Analysis for Ammonia were either prepared by me or under my direction for the Watson Cogeneration Steam and Electric Reliability Project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: September 30, 2011 Signed: 

At: Carmel-by-the-Sea, California

Declaration of
Lanny H. Fisk, PhD

I, Lanny H. Fisk, PhD, declare as follows:

1. I am presently employed by PaleoResource Consultants as Principal Paleontologist.

2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.

3. The attached testimony on Paleontological Resources was prepared under my direction for the Watson Cogeneration Steam and Electric Reliability Project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 30 September 2011 Signed: Lanny H. Fisk, PhD

At: Auburn, California

Declaration of
Stephen Garrett

I, Stephen Garrett, declare as follows:

1. I am presently employed by Kiewit Power Engineers Co. as a Senior Project Manager.

2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.

3. The attached testimony on Facility Design, Power Plant Efficiency, Power Plant Reliability, and the design-related and stormwater-related portions of the Project Description and Water Resources was prepared under my direction for the Watson Cogeneration Steam and Electric Reliability Project and is based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: September 30, 2011 Signed: 

At: Lenexa, KS

Declaration of
Jeremy Hollins

I, Jeremy Hollins, declare as follows:

1. I am presently employed by URS Corporation as a Senior Architectural Historian

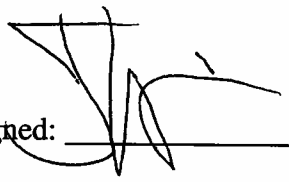
2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.

3. The attached testimony on Cultural Resources was prepared by me for the Watson Cogeneration Steam and Electric Reliability Project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: September 30, 2011 Signed: 

At: San Diego, California

Declaration of
Casey Lee Jensen, PG, CEG

I, Casey Lee Jensen, declare as follows:

1. I am presently employed by URS Corporation as a Project Engineering Geologist.

2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.

3. The attached testimony on Geologic Resources was prepared by me for the Watson Cogeneration Steam and Electric Reliability Project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: September 28, 2011 Signed: 

At: Los Angeles, CA

Declaration of
David Kisner

I, David Kisner, declare as follows:

1. I am presently employed by URS Corporation as a Project Ecologist and Santa Maria Biology Group Lead.

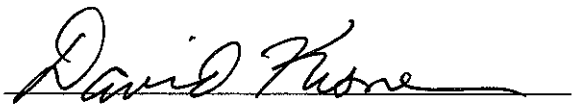
2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.

3. The attached testimony on Biological Resources was prepared by URS under my supervision for the Watson Cogeneration Steam and Electric Reliability Project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: September 30, 2011 Signed: 

At: Santa Maria, California

Declaration of
Joseph B. Landwehr

I, Joseph B. Landwehr, declare as follows:

1. I am presently employed by Kiewit Power Engineers Co. as Lead Mechanical Engineer.

2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.

3. The attached testimony on the chemical engineering aspects and mechanical engineering aspects of Facility Design, Power Plant Efficiency, Power Plant Reliability, and the Project Description was prepared under my direction for the Watson Cogeneration Steam and Electric Reliability Project and is based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: September 30, 2011 Signed: Joseph B Landwehr

At: Lenexa, KS

Declaration of
Angela Leiba

I, Angela Leiba, declare as follows:

1. I am presently employed by URS Corporation as VP, Senior Visual Resources Specialist.

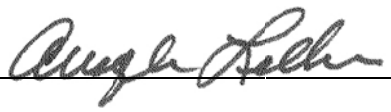
2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.

3. The attached testimony on Visual Resources was prepared under my direction for the Watson Cogeneration Steam and Electric Reliability Project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: September 30, 2011 Signed: 

At: San Diego, CA

Declaration of
Brian Madigan

I, Brian Madigan, declare as follows:

1. I am presently employed by URS Corporation as an Environmental Specialist.

2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.

3. The attached testimony pertaining to the Watson Cogeneration Steam and Electric Reliability Project, Visual Resources Analysis was prepared by URS, which I have reviewed for technical accuracy and consistency based on my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: September 30, 2011 Signed: 

At: San Diego, CA

Declaration of
Ross Metersky

I, Ross Metersky, declare as follows:

1. I am presently employed by BP Products North America Inc. as Director, Business Development

2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.

3. The attached testimony on the Project Description, Transmission System Engineering, and Alternatives was either prepared by me or under my direction for the Watson Cogeneration Steam and Electric Reliability Project and is based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: September 30, 2011 Signed: 

At: New Albany, Ohio

Declaration of
Stephen Moore

I, Stephen Moore, declare as follows:

1. I am presently employed by Kiewit Power Engineers Co. as Civil Engineer.

2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.

3. The attached testimony on the stormwater-related portions of the Project Description and Water Resources was prepared under my direction for the Watson Cogeneration Steam and Electric Reliability Project and is based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: September 30, 2011 Signed: Stephen Moore

At: Lenexa, KS

Declaration of
Andrea Parker

I, Andrea Parker, declare as follows:

1. I am presently employed by URS Corporation as an Environmental Scientist.

2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.

3. The attached testimony on Agriculture/Soils was prepared by me for the Watson Cogeneration Steam and Electric Reliability Project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: September 30, 2011 Signed: Andrea Parker

At: Denver, Colorado

Declaration of
Omar Olivares

I, Omar Olivares, declare as follows:

1. I am presently employed by Kiewit Power Engineers Co. as Project Manager.

2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.

3. The attached testimony on the civil engineering aspects of Facility Design, Power Plant Efficiency, Power Plant Reliability, Project Description, and Water Resources was prepared under my direction for the Watson Cogeneration Steam and Electric Reliability Project and is based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: September 30, 2011 Signed: Omar Olivares

At: Lenexa, KS

Declaration of
Ron Reeves

I, Ron Reeves, declare as follows:

1. I am presently employed by URS Corporation as a Senior Project Scientist.

2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.

3. The attached testimony on Noise and Vibration was prepared by me for the Watson Cogeneration Steam and Electric Reliability Project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: September 30, 2011 Signed: Ron Reeves

At: Santa Ana, California

Declaration of
Jean Sanson

I, Jean Sanson, declare as follows:

1. I am presently employed by URS Corporation as Senior Planner.

2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.

3. The attached testimony on Land Use was prepared by me for the Watson Cogeneration Steam and Electric Reliability Project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: September 30, 2011 Signed: Jean Sanson

At: Denver, Colorado

Declaration of
Charles Schwartze

I, Charles Schwartze, declare as follows:

1. I am presently employed by Kiewit Power Engineers Co. as Manager of Electrical and Controls Engineering.

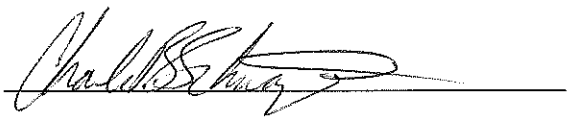
2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.

3. The attached testimony on the electrical engineering aspects of Facility Design, Power Plant Efficiency, Power Plant Reliability, and the Project Description was prepared under my direction for the Watson Cogeneration Steam and Electric Reliability Project and is based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: September 30, 2011 Signed: 

At: Lenexa, KS

Declaration of
Tricia Winterbauer

I, Tricia Winterbauer, declare as follows:

1. I am presently employed by URS Corporation as a Senior Environmental Specialist.

2. A copy of my professional qualifications and experience are attached hereto and incorporated herein by reference.

3. The attached testimony on Hazardous Materials Handling, Waste Management and Worker Safety was prepared by me for the Watson Cogeneration Steam and Electric Reliability Project based on my independent analysis, supplements thereto, data from reliable sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issue(s) addressed herein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: September 30, 2011 Signed: Tricia Winterbauer

At: Santa Barbara, California