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October 24, 2012

Attn: Joddi Leipner
Senior Engineering Environmental Manager
County of Santa Barbara
Public Works Department
Resource Recovery and Waste Management Division
130 E. Victoria Street
Santa Barbara, CA 93101

Subject: Proposal for Air Quality and Biology Support Services
Resource Recovery Project (RRP), County of Santa Barbara, California

Re: AECOM OPP-135086

Dear Ms. Leipner:

AECOM Technical Services, Inc. (AECOM) is pleased to submit this proposal to support Santa Barbara County Public Works Department, Resource Recovery and Waste Management Division (RRWMD) with California Environmental Quality Act (CEQA) support for the Resource Recovery Project (RRP) at the Tajiguas Landfill in Santa Barbara County, California. Specifically, AECOM will provide air quality (including criteria pollutant, health risk, greenhouse gas, and odor impact assessments) and biological support services for the CEQA document being prepared by the County for the project proposed by Mustang Renewable Power Ventures, LLC (Mustang Power), as well as various alternatives.

Project Understanding

The Tajiguas Landfill is an existing County-owned and operated municipal solid waste disposal facility located in a coastal canyon known as Cañada de la Pila, approximately 26 miles west of the City of Santa Barbara, and 1,600 feet north of U.S. Highway 101. The RRWMD is the owner and permitted operator of the landfill. In 2002/2003, the County obtained all the necessary approvals and permits to expand the landfill both vertically and laterally. In May 2009, RRWMD prepared and the Board of Supervisors certified a Subsequent Environmental Impact Report (EIR) and obtained all permits for a reconfiguration of the Tajiguas Landfill footprint and for biological restoration activities on Baron Ranch (Tajiguas Landfill Reconfiguration and Baron Ranch Restoration Project). The proposed waste footprint design change (reconfiguration) did not modify any of the landfill's operational parameters, but did involve physical changes to the approved location of the waste footprint and associated disturbances for construction and equipment operations.

Since the Tajiguas Landfill was last approved for an expansion in 2002, the County has been looking into alternatives to landfilling. The proposed construction and operation of a Resource Recovery Project at the landfill would allow further recovery of recyclable material from the communities' waste stream, provide an alternative to burying organic waste, generate green energy and reduce the amount of waste requiring burial. The County of Santa Barbara proposes to develop a Resource Recovery Project that would process municipal solid waste from the communities currently served by the Tajiguas Landfill. The Resource Recovery Project will be

designed and constructed to process various waste streams delivered to the Tajiguas Landfill from unincorporated areas of the South Coast of Santa Barbara, the cities of Santa Barbara, Goleta, Buellton and Solvang as well as the unincorporated Santa Ynez and New Cuyama Valleys. The waste stream anticipated to be delivered for processing is mixed municipal solid waste. As an optional project element, commingled source separated recyclables and source separated organic waste could also be brought to the Resource Recovery Project for consolidated processing. The Resource Recovery Project would include a Materials Recovery Facility (MRF, to recover recyclable materials), a Dry Fermentation Anaerobic Digestion Facility (to process organic waste into biogas and digestate), and an Energy Facility that would use the biogas from the Anaerobic Digestion Facility to produce electricity. The permanent long-term curing of the digestate would occur on the Top Deck of the landfill. Temporary curing sites have been identified within the Tajiguas Landfill footprint and may have to be assessed. At full capacity, the facilities could operate 24 hours/day, 365 days per year. Residual waste (residue) from the processing would be disposed of in the landfill. No change in the landfill's permitted capacity is proposed.

The RRWMD is the Lead Agency responsible for preparation of the Subsequent EIR for the RRP. The Subsequent EIR will compare the environmental impacts associated with the previously approved and modified Tajiguas Landfill Expansion Project with the environmental impacts associated with the modification from the proposed construction and operation of the RRP. Our proposal is based on the project description provided in the Notice of Preparation (NOP) published by RRWMD on May 18, 2012 along with information provided by the RRWMD during an August 1, 2012 conference call with the RRP EIR Preparation Team. Our proposal includes the tasks necessary to evaluate the RRP's potential impacts related to air quality and biological resources. AECOM's deliverables will provide the basis for preparation of the air quality, climate change, nuisance (odors), and biological resources sections of the Subsequent EIR.

Scope of Work

The AECOM project team will develop, draft and finalize the air quality and biological resources technical reports in support of the RRWMD CEQA Subsequent EIR process. This activity will entail assessment of air emissions and biological conditions associated with the currently permitted Tajiguas Landfill, as documented in the prior Environmental Impact Reports prepared for the project, which have been prepared for the currently permitted operation. The Tajiguas Landfill Expansion EIR (01-EIR-05), December 5, 2006 Addendum, and Tajiguas Landfill Reconfiguration and Baron Ranch Restoration EIR (08EIR-00000-00007) are herein after referred to as the "Tajiguas Landfill EIRs".

AECOM will respond to information requests from the RRWMD, Santa Barbara County Air Pollution Control District (SBCAPCD), and other agencies. At the request of the RRWMD, AECOM will participate in public meetings and hearings and provide additional support as described in the tasks below.

The scope of work for this proposal consists of four tasks. The following subsections provide details for each of these tasks.

- Task 1: Air Quality Criteria Pollutant, Health Risk, Greenhouse Gas and Odor Impact Assessments;
    - Criteria Pollutant Impact Assessment
    - Health Risk Assessment
    - Greenhouse Gas Assessment

- Odor Impact Assessment
- Cumulative Impact Assessment
- Air Quality Impact Assessment of Project Alternatives
- Prepare Air Quality Technical Report

- Task 2: Biological Resources Impact Assessment
  - General Habitat Assessment for the Proposed Project;
  - General Habitat Assessment for the Project Alternatives;
  - Prepare Biological Resources Technical Report
- Task 3: Respond to Information Requests;
- Task 4: Coordination Calls/Meetings/Hearings/Project Management

Task 1 – Prepare Air Quality Impact Assessments

AECOM has divided the Air Quality Impact Assessment into four subtasks, each dealing with a different type of air emissions, i.e., criteria pollutants, air toxics/health risks, greenhouse gases, and odors. A description of the analyses expected to be performed for each of these four emissions types is provided below. In addition, subtasks to address cumulative impacts and air quality impacts of alternatives, as well as preparation of the air quality technical report, are also described below.

Task 1.1 Criteria Pollutants

Criteria pollutants are those pollutants for which specific health standards have been set under federal and/or California regulations. For this analysis, AECOM will first assess the air emissions baselines for both the existing conditions and permitted conditions by reviewing the Tajiguas Landfill EIRs. Next, the CalEEMod emissions estimating tool will be used to quantify potential criteria pollutant emissions generated during construction and operation of the project. Estimated emissions will then be compared to the SBCAPCD significance thresholds.

It is expected that air dispersion modeling of the potential criteria pollutant (e.g., NO_2, CO, SO_2, PM10 and PM2.5) air quality impacts associated with the RRP will be performed for normal operations with the MRF and the results compared to ambient air quality standards. Because SBCAPCD has approved meteorological data sets formatted for USEPA's ISC-PRIME air dispersion model, SBCAPCD recommends the use of the ISC-PRIME model for air dispersion modeling in the district until the district has completed development of AERMOD-ready meteorological data sets. Therefore, AECOM will use ISC-PRIME for this analysis, unless AERMOD-ready meteorological data are available at the time the modeling work begins. Air dispersion modeling for construction emissions is also included in this scope of work, in the event that construction emissions exceed SBCAPCD emissions thresholds[1]. ISC-Prime would also be used for construction modeling, if it is necessary.

[1] SBCAPCD guidance "Scope and Content of Air Quality Sections in Environmental Documents" Prepared by the Technology and Environmental Assessment Division, Updated December 2011, indicates that construction

Representative background values will be determined. Air modeling results will be combined with the applicable background concentration and compared to the current state and federal ambient air quality standards.

Task 1.2 Health Risk Assessment

A Health Risk Assessment (HRA) will be completed for operational emissions to assess the toxic air contaminant (TAC) emissions from the entire stationary source. The HRA from the EIR for the most recent expansion of the Tajiguas Landfill will be expanded to include the proposed project. In addition to the onsite stationary sources, emissions from onsite equipment such as dozers, compactors, scrapers, trucks, etc will be analyzed in the HRA. For the HRA, we propose to use HARP version 1.4F. AECOM will coordinate with SBCAPCD's Engineering and Compliance Division staff to ensure the HRA is consistent with SBCAPCD's modeling guidelines for HRAs.

Task 1.3 Greenhouse Gas Assessment

A cursory analysis of greenhouse gas (GHG) emissions was provided in the previous Tajiguas Landfill EIRs, as they were prepared before or on the heels of the adoption of Senate Bill 97 and the resulting CEQA Guidelines mandating the evaluation of GHG emissions under CEQA. Therefore, AECOM will assess GHG emissions associated with the existing landfill operation and the existing landfill plus permitted conditions pursuant to the CEQA Guidelines and County guidance regarding thresholds of significance in compliance with CEQA requirements and the County's GHG Guidelines.[2] GHGs generated during construction and operation of the proposed project will be quantified using the CalEEMod emissions estimating tool. If feasible, applicable GHG reduction measures will be identified. AECOM will also evaluate the use of the EPA Waste Reduction Model (WARM), a tool used to estimate GHGs generated by landfills.

Task 1.4 Odor Impact Assessment

Potential odorous substances can be formed in the residual digestate during the anaerobic digestion process. Emissions of these odorous substances can occur at several stages during the process, including loading the digestate for transport, transporting it, unloading the digestate at the composting area, turning of the compost piles during composting, and loading the finished compost for transport from the facility. The primary data required for an odor assessment consists of the composition of the odorous substances formed during the digestion and composting processes, the quantity of these substances released during each part of the process, and the emission release characteristics of each source. This information is required to establish the odor characteristics of the source (i.e., the source term of the air quality model). Additionally, odorous emissions can occur during processing of materials received at the MRF.

Once the source characteristics are quantified, an odor modeling analysis will be performed. The odor release will be specified in terms of odor units, which is the concentration of the emitted odorous substance divided by the odor threshold for that substance. This ratio corresponds to the dilution required of a given release to achieve a concentration of the substance at the odor threshold. The air quality dispersion model ISC-PRIME will be used to estimate this dilution requirement for each emission source unless AERMOD-ready meteorological data are available at the time the modeling work begins.

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modeling is only needed for major projects for which construction emissions exceed identified thresholds. Note, these guidelines specify that a health risk assessment is not required for construction emissions.

[2] See e.g., CEQA Guideline §§ 15064.4, 15126.4(c).

The model produces estimates of 1-hour concentrations while odor threshold is typically assumed to apply for a much shorter period of 10 minutes or less. Therefore, the air quality model dilution results will be adjusted using common peak to mean ratios to obtain a dilution ratio representative of a 10-minute averaging period. It is unlikely that a true speciated composition of the digestate will be available from either the project developer or from a literature search. Consequently, the initial odor concentration (in odor units) of the released gases will be estimated from the available information identified during a limited literature review.

The result of the odor analysis will be a summary table of the modeling results providing the distance from each source category modeled at which odor concentrations at or above the odor threshold could reasonably be expected to occur under the meteorological conditions modeled. Included with the summary table will be a discussion of the emission estimation methodology, the modeling methodology, and a general discussion of the uncertainty in the modeling results.

Task 1.5 Cumulative Impact Analyses

RRWMD has indicated that they will provide the cumulative project list for the cumulative air quality impact analysis. AECOM will assess cumulative air quality impacts as well as RRP's contribution to those impacts. For this proposal, a qualitative analysis of cumulative impacts is assumed and modeling of cumulative emissions is not proposed. Subsequently, if the modeling of cumulative air quality impacts becomes necessary, a separate proposal will be prepared. Typically, the following information is needed for modeling cumulative air quality emissions, at a minimum:

- For all pollutants identified as required, the total annual emissions for each facility in the cumulative projects list along with their respective permitting status.
- For all facilities identified as part of the modeling inventory, specific stack parameters and short term emissions data for each source to be included in the modeling.
- ISC-PRIME or AERMOD modeling files for the inventory sources.

The completion of the air quality and public health technical report (see task 1.7) assumes one review and comment cycle with the RRP Team prior to finalizing for submittal to RRWMD. AECOM assumes one set of consolidated comments will be submitted to AECOM for review and inclusion where appropriate.

Task 1.6 Air Quality Impact Assessment of Project Alternatives

In addition to the analysis of project impacts, AECOM will evaluate air quality criteria pollutant, health risk, GHG emissions, and odor impacts of up to 7 proposed project alternatives. For the most part, the analysis of the alternatives' impacts will be qualitative in nature and will discuss the severity of each alternative's impacts in relation to the impacts of the proposed project. AECOM will prepare a more detailed analysis of specific alternatives, including the following:

- Alternative MRF Locations (urban area);
- Aerobic Composting Alternative for Organics;
- Landfill Expansion; and
- Waste Exportation after Tajiguas Permitted Capacity Reached (Simi Landfill or Santa Maria Landfill).

Task 1.7 Prepare Air Quality Technical Report

AECOM will prepare the Air Quality technical report for the CEQA document in accordance with SBCAPCD's *Scope and Content of Air Quality Sections in Environmental Documents* (2011). This report will provide the results of AECOM's air quality impact assessment of criteria pollutants, air

toxics, GHG emissions, and odors. The format of the technical report will follow the Technical Study template provided by RRWMD. The technical report will include an existing setting section and regulatory setting section. A description of the methodologies and assumptions used to assess impacts will be provided. The results of the impact analysis will be presented in tables when applicable. Project-specific mitigation measures and SBCAPCD standard mitigation measures will be included, as necessary. Worksheets used for quantifying and modeling air emissions will be provided in the appendices to the Air Quality technical report.

Task 2 Prepare Biological Resources Impact Assessment

The biological resources impact assessment will be composed of the following three subtasks:

Task 2.1 – General Habitat Assessment for the Proposed Project

Since numerous focused surveys for sensitive species have been conducted for previous Tajiguas Landfill projects and results were included in the two previous EIR's for those projects, this proposal assumes that only general habitat surveys and vegetation mapping will be required. Although AECOM has performed several surveys over the past 5 years, the majority of this work was conducted outside of the RRP footprint. We will use what data we can from the prior work in the Biological Resources Technical Report (BRTR) in an attempt to reduce costs. AECOM requires a site layout diagram in electronic format (preferably in GIS) in order to minimize cost and avoid confusion in the field.

Although there are several years of data, AECOM biologists will need to conduct a general habitat assessment survey to update and document general biological conditions on the Tajiguas Landfill project site and the buffer areas. During the reconnaissance survey, AECOM biologists will identify current biological resources, map vegetation types, and identify other resources not previously documented, such as suspected jurisdictional waters. The survey of the buffer areas will address potential indirect effects of the proposed project on existing vegetation communities and/or special-status species.

A list of wildlife and plant species observed during the survey will be generated along with a photograph log. Focused surveys for sensitive species, delineation of jurisdictional waters, and agency submittals/approvals are not anticipated due to past studies, the disturbed nature of the proposed project area, and the limited biologically sensitive habitat within the project area.

Task 2.2 – General Habitat Assessment for Project Alternatives

AECOM will conduct a desktop analysis for all of the alternatives and site visits for 3 of the alternatives to comply with the CEQA requirements for alternatives analysis. The Anaerobic Composting Alternative may require a site visit if the footprint of the alternative is changed from the preferred project but would only require one visit as both alternatives are at the Tajiguas Landfill. The Waste Exportation Alternatives have already been analyzed in their respective EIRs and will not require site visits. The alternative sites will be analyzed at a reconnaissance level using aerial photographs, California Natural Diversity Database records, and one daytime site visit and will not require focused surveys.

Task 2.3 – Preparation of a Biological Resources Technical Report

Upon completion of Tasks 2.1 and 2.2, AECOM will prepare a BRTR, which will be suitable for inclusion in the appendices of the CEQA document. The report will include a literature review, a description of field survey methods, survey results, suspected jurisdictional waters, current site conditions, vegetation map, identified plant communities on the project site, photograph log, and a

compendium of all species observed. The BRTR will identify the biological resources and potential direct, indirect, and cumulative impacts and provide recommended mitigation measures for the project components, which includes both the construction and operational phases. The operational components will include the increased night time noise and lighting activities on the operations deck. Additionally, the analysis will include impacts of the selected wastewater disposal method currently anticipated as tank storage on site to use for landscape irrigation with no surface discharge to Pila Creek. A separate scope of work would be required if surface water discharge to Pila Creek is included as an alternative as the impacts are potentially greater if this method of discharge is selected. AECOM requests information on buildings and light sources that are part of the project in order to assess the operational phase of the RRP. The completion of this report assumes one review and comment cycle with RRWMD and Padre (the EIR consultant) prior to finalizing for submittal to RRWMD. AECOM assumes one set of consolidated comments will be submitted to AECOM for review and inclusion where appropriate.

Consultation under the Endangered Species Act and preparation of permits is not included in this scope of work. AECOM has extensive experience with section 10 and section 7 and will assist the RRP Team in the event such support is needed or requested.

Task 3 – Respond to Information Requests

AECOM will prepare written responses to information requests received from the SBCAPCD and other parties during the CEQA review process (response to public comments). For planning purposes, two rounds of information requests are estimated for the Subsequent EIR.

Task 4 – Coordination Calls/Meetings/Hearings/Project Management

AECOM assumes that there will be regular update communications with the RRP Team via conference calls. While the entire process, from commencing work on the technical studies through certification of a Final EIR, may take up to 24 months, our scope assumes that weekly conference calls would occur during the first four months following authorization to proceed, and then again for two more months during the time period that the RRP team is responding to public comments on the Draft EIR. Each call is assumed to last up to one hour and include the participation of up to three staff, e.g., the Project Manager, air quality specialist/coordinator, and biological specialist. Some preparation or follow-up time is assumed for a total of 94 hours.

In addition to these regular conference calls, AECOM will participate in meetings and hearings as requested by the RRP Team. These meetings could include CEQA scoping meetings, meetings with SBCAPCD to discuss specific analyses or protocols, and/or public hearings on the CEQA document. The cost proposal includes preparation for and attendance at up to three air quality meetings (with two staff each), two biology meetings (one staff each) and two hearings (two staff each), with a total of 88 hours assumed.

This project will require coordination with RRWMD, Padre, and potentially the other technical leads. Beside the regular communication during conference calls, project management includes providing project status reports; planning, staff coordination and keeping the project on schedule; quality assurance of technical reports, and budget reviews and invoicing. Project management time will vary from month to month depending on whether the project is highly active (e.g., during ADEIR preparation) or slower (e.g., during public comment periods). While a CEQA projects can last up to 24 months, AECOM has assumed that this project will last roughly a year, with project management provided at an average of four hours per month.

Additional project management; participation, support or number of conference calls; meetings and/or hearings will be provided upon request and budget augment.

Assumptions

Several assumptions are stated in the AECOM's Understanding of the Project and Scope of Work sections above and are reiterated below:

General

- RRWMD is the lead agency and a Subsequent EIR will be needed under CEQA.
- Padre Associates has been selected as the CEQA consultant and Padre in conjunction with the RRWMD will be completing templates for the technical reports which will be received by the time the notice to proceed is issued.
- RRWMD will provide AECOM with a complete and final project description prior to the commencement of work set forth in this proposal. Changes to the project description that occur after AECOM commences work on the project may require modifications to our scope of work and associated schedule.
- Weekly conference calls will occur during the first four months following authorization to proceed, and then again for two more months during the time period that the RRP team is responding to public comments on the Draft EIR.
- RRWMD will request AECOM's participation in several technical discussions, public meetings and/or hearings.
- AECOM's involvement with this RRWMD CEQA process is estimated to have up to a 12-month duration.
- The completion of the Air Quality technical report and BRTR assumes one review and comment cycle with the RRP Team prior to finalizing for submittal to RRWMD. AECOM assumes one set of consolidated comments for each technical report will be submitted to AECOM for review and inclusion where appropriate.

Air Quality

- Pre-processed meteorological data for modeling will be provided by SBCAPCD or is readily available from another source.
- A qualitative assessment only of cumulative air quality impacts is anticipated. A separate cost estimate will be prepared if modeling of the cumulative project list becomes necessary.
- Air quality emission monitoring of existing equipment or components at the landfill will not be required.
- A site visit by the air quality modelers is not required.
- Site layout diagrams with the MRF located at the Tajiguas Landfill and other alternatives that are to be analyzed in detail will be provided in electronic format (AutoCAD or PDF) by RRWMD and/or Mustang Power.
- Information on all sources and buildings that are part of the project, including criteria and toxics emissions and stack parameters for all emission sources and dimensions of all relevant structures will be provided by RRWMD and/or Mustang Power.
- Information on vehicle and equipment use during construction and operation will be provided by RRWMD and/or Mustang Power.
- If relocation of existing operations at the Marborg Industries facility is required, the analyses of the impacts of activities for the relocation will be qualitative only. As part of the qualitative analysis, AECOM will review the CEQA documents that were previously prepared for the existing facility at the Marborg Industries site.

- For the assessment of GHG emissions associated with the existing landfill operation, information pertaining to the current landfill operation such as total tonnage by year of deposit waste since landfill inception will be provided by RRWMD and/or Mustang Power. In addition, rainfall for the same period will be provided as well.

Biological Resources

- Focused surveys for sensitive species, delineation of jurisdictional waters, and agency submittals/approvals are not included as part of this proposal and will be addressed as a separate proposal if required.
- State and Federal permit preparation and/or consultation and submittals are not included in this scope of work.
- Information on vehicle and equipment use during construction and operation will be provided by RRWMD and/or Mustang Power.

AECOM will provide an updated proposal if any of the above assumptions are not correct and/or if additional services or support be identified during the performance of this project.

Schedule

At the request of RRWMD, AECOM will submit draft technical reports within 30 working days of receipt of written notice to proceed and all necessary project information, including, but not limited to a complete and final project description, construction schedule, equipment list, grading plans and site plans. The project team is prepared to begin work once the written notice to proceed is issued. AECOM provides the following time frames to complete each task for planning purposes:

- Task 1: Presuming a complete and final project description, 30 working days is assumed.

- Task 2: Presuming a complete and final project description, 30 working days is assumed.

- Task 3: As this is a client-driven activity AECOM will be prepared to respond in a timely manner when the comment period closes.

- Task 4: As mentioned earlier, although a CEQA process can take up to 24 months, AECOM has assumed a 12 month duration for this project, with roughly 4 months of activity on administrative and draft EIR preparation, 2 months to respond to comments and the other six months at a low level of effort, for instance while waiting for the next period of high activity. A different project schedule can be developed upon request.

Cost

AECOM proposes to complete the above scope of work on a Time and Materials basis in accordance with the Terms and Conditions to be executed by both parties prior to commencing project activities. AECOM currently holds contracts with the County of Santa Barbara, and we assume that a similar acceptable Services Agreement can be reached between AECOM and the County. A time and materials cost estimate with a contingency factor is provided as Attachment A to this proposal. The attached cost estimate details the estimated labor hours, labor costs, and other direct costs (ODCs) for the scope of work as outlined in this proposal.

AECOM would also be happy to discuss an alternative scope of work with RRWMD to fit your budget, schedule, or to conduct additional activities that are outside of the proposed scope. We can provide RRWMD a revised cost estimate if the scope of work is amended.

AECOM Qualifications

Our proposal aims to respond fully to your request with particular emphasis on our basic principles, which are reflected in the following key features:

- **AECOM** is providing CEQA and/or other permitting support for several complex industrials projects such as landfills, cement plants, petroleum refining and terminals, substations, renewable energy projects and power plants in Southern California. These projects include support to Ventura Regional Sanitation District for changes to the Toland Road landfill, as well as recent energy projects in Ventura, San Luis Obispo, Kern, and Los Angeles Counties.
- **Ms. Sara J. Head**, our proposed Project Manager, is an AECOM Vice President with more than 37 years of Southern California CEQA experience, with the last 15 years focused on project management of complex power generation environmental review and permitting projects. Ms. Head will ensure this important project receives the necessary resources and visibility within the AECOM organization to guarantee success, and she will ensure that any project performance issues are handled in an effective and expeditious manner.
- A team of **local experienced professionals** that understand of the challenges and potential complications in dealing with development projects in fast-growing Southern California.

AECOM proposes the project organization shown in Attachment B to provide support services for the RRP. Resumes of AECOM's key staff are also provided in Attachment B. As shown in these resumes, AECOM staff have experience in providing CEQA and permitting assistance to facilities in Santa Barbara County, including the Santa Maria Wastewater Treatment facility, the Southern California Gas Company La Goleta facility, and many of the oil and gas facilities.

AECOM can ensure the availability of the project team to meet the RRP Team's needs in the context of our national workload balancing system, the array of technical resources available to AECOM within the 45,000 employees of the AECOM Corporation, the high priority assigned to this project, and the collective commitment of the technical and operations staff to the project's success. The hallmark of AECOM's success is client responsiveness, knowledge of environmental law and regulations, and an ability to understand the specific needs of each project.

AECOM is one of the most experienced CEQA and renewable energy permitting consultancies in the western U.S. AECOM heritage companies have been active in environmental siting, permitting, and licensing of energy projects since the CEQA regulations were first adopted. Based on our experience in permitting similar facilities, AECOM understands the potential issues associated with permitting a Resource Recovery facility in Santa Barbara County. Starting from this understanding of permitting requirements, AECOM is able to provide RRWMD with air quality and biological resources CEQA support that will help position this potential project to secure approvals.

AECOM successfully completed numerous projects in California and nationwide. Some examples of this past relevant project experience of our staff include:

- **Landfill Permitting Support**
  - Ventura Regional Sanitation District's Toland Road sanitary landfill – Biological Resources, Air Permitting and CEQA Support, including conducting an HRA for the application of water recovered from biosolids drying for dust control at the landfill and responding to comments and requests for information from the Ventura County APCD.
  - Tajiguas Landfill Reconfiguration Project – Biological Permitting Strategy and Biological Assessment, Santa Barbara County, California.
- **Biomass and Waste-to-Energy Facility experience**
  - Urbaser, SA, Waste-to-Energy Facility - Preliminary Engineering/Design and Proposal Support, Los Angeles, California.
  - Confidential Client, PSD permit application and Title V application, Recovered Biogas from Wastewater Lagoon, USA
  - Fulcrum Sierra BioFuels, LLC., MSW to Ethanol Facility, Reno, Nevada.
- **Power Plant Permitting experience in California**
  - Victorville 2 and Palmdale Hybrid Power Projects, California.
  - SCE, Environmental Permitting Support, Peaker Power Plants, Ventura and Los Angeles Counties, California.
  - Los Angeles Department of Water and Power, Air Quality Permitting and CEQA Compliance, Los Angeles County, California.
- **Local Santa Barbara County Permitting Projects**
  - Confidential Client. Environmental Impact Review, Goleta, California.
  - The Gas Company, Permitting, Goleta, California.
  - Santa Maria Wastewater Treatment Plant, Air Quality Permitting, California.

Closing

Thank you for allowing us to provide this proposed work scope and cost estimates. If you would like additional information or have any questions, please feel free to contact the undersigned. We look forward to hearing from you and appreciate the opportunity to work with the County of Santa Barbara on this exciting project.

Sincerely,

Sara J. Head
Vice President/Project Manager
sara.head@aecom.com
805.233.3995

Travis Taylor
Associate Vice President/Project Director
Travis.Taylor@aecom.com
562.213.4162

Attachments:

A. Cost Estimate
B. AECOM Project Team Organization Chart and Resumes

ATTACHMENT A

COST ESTIMATE

AECOM Cost Estimate for Air Quality and Biological Resources CEQA Support Services
Resource Recovery Project – County of Santa Barbara, CA.

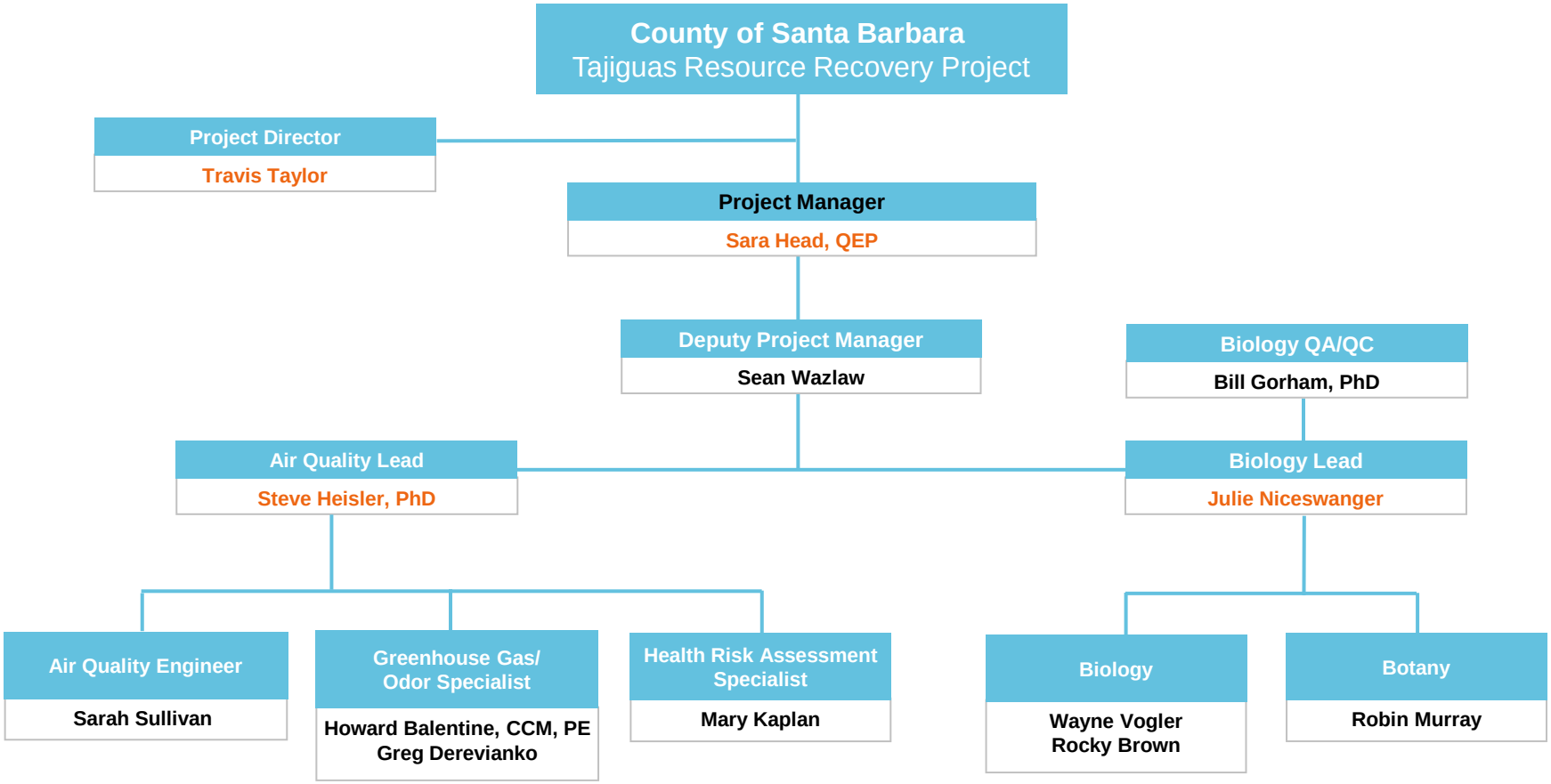
Task	AECOM Hours	AECOM Labor Cost	AECOM ODC Cost	Total
1 Prepare Air Quality Impact Assessments				
1.1 Criteria Pollutants	*276*	*$34,500*	*$0*	*$34,500*
1.2 Health Risk Assessment	*83*	*$10,200*	*$0*	*$10,200*
1.3 Greenhouse Gases	*72*	*$8,200*	*$0*	*$8,200*
1.4 Odors	*79*	*$9,200*	*$0*	*$9,200*
1.5 Cumulative Impact Analysis	*108*	*$12,900*	*$0*	*$12,900*
1.6 Alternatives Analysis	*100*	*$11,700*	*$0*	*$11,700*
1.7 Prepare Air Quality Technical Report	*312*	*$38,100*	*$800*	*$38,900*
Subtotal Task 1	1,030	$124,800	$800	$125,600
2 Prepare Biological Resources Impact Assessment				
2.1 General Habitat Assessment for the Proposed Project	*70*	*$8,000*	*$400*	*$8,400*
2.2 General Habitat Assessment for Project Alternatives	*62*	*$7,200*	*$200*	*$7,400*
2.3 Preparation of a Biological Resources Technical Report	*150*	*$17,500*	*$200*	*$17,700*
Subtotal Task 2	282	$32,700	$800	$33,500
3 Respond to Information Requests	140	$19,200	$300	$19,500
4 Coordination Calls/Meetings/Hearings/Project Management	230	$36,300	$500	$36.800
TOTAL	**1,682**	**$213,00**	**$2,400**	**$215,400**
Including Contingency @10%				**$237,000**

ATTACHMENT B

AECOM PROJECT TEAM ORGANIZATIONAL CHART and RESUMES

Resumes are enclosed for the following individuals:

- Sara Head
- Travis Taylor
- Sean Wazlaw
- Steve Heisler
- Sarah Sullivan
- Howard Balentine
- Greg Derevianko
- Mary Kaplan
- Julie Niceswanger
- William Gorham
- Wayne Vogler
- Rocky Brown


County of Santa Barbara
Tajiguas Resource Recovery Project
Project Director
Travis Taylor
Project Manager
Sara Head, QEP
Deputy Project Manager
Sean Wazlaw
Biology QA/QC
Bill Gorham, PhD
Air Quality Lead
Steve Heisler, PhD
Biology Lead
Julie Niceswanger
Air Quality Engineer
Sarah Sullivan
Greenhouse Gas/
Odor Specialist
Howard Balentine, CCM, PE
Greg Derevianko
Health Risk Assessment
Specialist
Mary Kaplan
Biology
Wayne Vogler
Rocky Brown
Botany
Robin Murray

Sara J. Head, QEP
Vice President/Regional Program Manager

Professional History

AECOM

AeroVironment, Inc.

Education

BS, Atmospheric Sciences, University of California at Davis

Registrations

Qualified Environmental Professional (QEP)

Years of Experience

With AECOM 19

With other firms 18

Technical Specialties

Air Quality Compliance Design, Implementation & Management

Compliance Database Development

Environmental Impact Assessments, Reports & Statements

Federal, State, Province & Local Regulatory Interface & Negotiation

Impact Mitigation Planning

Major Capital Projects Permitting

New Source Review (NSR) Regulatory Consulting

Program Management for Project Permitting

Project Feasibility, Siting & Planning

Ms. Head is a Vice President of AECOM who has over 37 years of experience in environmental permitting and compliance. She has managed environmental and air permitting projects for many facilities across the western U.S., including power plants (solar, wind, combined-cycle, cogeneration and coal-fired power generation), oil and gas operations, refineries, cement plants, manufacturing facilities, etc. For these projects, she provides project management and/or oversight on all environmental aspects, including air quality, biology, cultural, traffic, visual, and water resources. Air Quality permitting is her expertise, and she has obtained Prevention of Significant Deterioration (PSD) and/or Title V permits for many facilities. She oversees projects that require environmental review documents under the California Environmental Quality Act (CEQA) and/or National Environmental Policy Act (NEPA). She has significant experience with California Energy Commission (CEC) permitting (a CEQA-equivalent process), having permitted over a dozen facilities through that process, as well as permitting many energy projects throughout the Southwestern U.S. She has assisted in obtaining air permit modifications and CEC Post-Certification Amendments for several power plants, including Elk Hills Power, Blythe Energy Project, and High Desert Power Project. She provided consulting services to the Santa Barbara County Air Pollution Control District (APCD) for over five years. She is currently the Vice Chair of the Ventura County APCD Advisory Committee.

Representative Project Experience

Inland Energy, Environmental Permitting and Compliance, CA. Managed two projects to develop 570 megawatts (MW) hybrid combined-cycle and solar electric generating plants in Victorville (VV2) and Palmdale (PHPP). Projects involved preparation of an Application for Certification (AFC) to the CEC and PSD permit applications to the US Environmental Protection Agency (EPA), as well as all other local, air district and regional permits. Projects will use reclaimed water for cooling from the local water treatment plants. Section 7 consultation was conducted with the US Fish & Wildlife Service (USFWS) through EPA's PSD permit and California Department of Fish and Game (CDFG) §2081 Incidental Take Permit (ITP) and Streambed Alteration Agreement (SAA) requirements were addressed for both projects. The VV2 Project was licensed by the CEC in 2008 and the PHPP was licensed by the CEC in 2011. The PSD permit issued for PHPP was the first one issued by EPA that contains Greenhouse Gas (GHG) Best Available Control Technology (BACT) requirements. She also managed the completion of many pre-construction compliance plans for the VV2 Project before it was put on-hold.

NextEra Energy Resources, Environmental Permitting, CA. Managed the environmental permitting for the Beacon Solar Energy Project (BSEP), a 250-MW solar thermal electric generating plant near California City in Kern County, which will use parabolic trough mirrors. Project involved preparation of an AFC to the CEC, and the ensuing permitting assessment which is functionally equivalent to a CEQA process. The site is over 2,000 acres, and required biological permitting under the Endangered Species Act (ESA) and CDFG 2081 ITP and SAA. Permitting also included obtaining a Lot Line

Professional Affiliations

Air and Waste Management Association, Fellow Member and President-Elect

Ventura Co. Air Pollution Control District Advisory Committee, Vice Chair

Publications and Presentations

Issues Related to Gas Turbine Startup Emissions
Sara J. Head and Robert Fraser, AECOM
Presented at the EUEC 8th Annual Conference on Air Quality, Global Climate Change, and Renewal Energy, January 25, 2005

Permitting Solar Energy Projects – Lessons Learned
Sara J. Head, AECOM
Presented at EUEC 2011, Energy & Environment Conference, February 1, 2011

Palmdale Hybrid Power Project – Permitting Case Study:
GHG BACT Analysis.
Sara J. Head and Howard Balentine, AECOM
Presented at EUEC 2012, Energy & Environment Conference, January 31, 2012

Palmdale Hybrid Power Project – Permitting Case Study:
1-NO_2 NAAQS Analysis.
Richard Hamel and Sara J. Head, AECOM
Presented at EUEC 2012, Energy & Environment Conference, February 1, 2012

Adjustment from Kern County Planning Department (KCPD), as well as working with KCPD on other land use and water use issues. Air permits were obtained from Eastern Kern County Air Pollution Control District (EKAPCD) and Lahontan Regional Water Quality Control Board, as well as other required permits. Use of groundwater for power plant cooling was a major issue, and the site has a major earthquake fault running through it.

Although the CEC license was obtained, the project is currently being re-permitted as a photovoltaic (PV) solar project. Ms. Head is managing this effort to obtain an Environmental Impact Report (EIR) from KCPD. The project involves limited additional biological surveys, preparation of a new Project Description, and a CUP application. Biological, Cultural, and Paleontological Technical Resource Reports; Air Quality & Greenhouse Gases (GHG) Report; Soils Characterization Report; Traffic Analysis; Hydrology Study; and a Water Supply Assessment (WSA) were prepared under her direction. Existing buildings and underground storage tanks on the site were also removed, after obtaining required permits from Kern County Environmental Health Dept.

Newport Generation, Focused Fatal Flaw Analyses, CA. For two sites, one within the SCAQMD and one within Ventura County, managed a project to review potential fatal flaws for expansion of two existing power plant operations. The analyses focused on air quality issues, including the availability of offsets, land use (including California Coastal Commission requirements), and biological resources.

Sempra Generation, Permitting & Compliance Assistance, CA. Managed and assisted with projects for post-permitting environmental requirements for the Elk Hills Power (EHP) plant in Kern Co. Tasks have included development of permit modification strategy, variances, acid rain notifications, review of commissioning plans, offset analysis, permit revisions, storm water plans, risk management plans (RMP) and other consultation. Assisted with the development of EHP's Title V permit renewal application and increased permit allowances related to a change in water quality.

NRG Energy, Permit Amendments, CA. Assisted with the amendments to both the South Coast Air Quality Management District (SCAQMD) air permit and the CEC Final Decision for the El Segundo Repowering Project to revise the source of emission reduction credits/offsets for the project. The amendment included the shut down of existing units at the facility, which required analyses related to all resources as well as air quality. Currently managing efforts to provide various compliance plans (e.g., SPCC), and monitoring, as well as facilitate air permit modifications.

Sempra Generation, National Environmental Policy Act (NEPA) Support, Mexico and Imperial County, CA. For the Termoeléctrica de Mexicali (TDM) project, assisted Sempra with litigation support related to a challenge of the NEPA document developed by the U.S. Department of Energy (DOE). The judge ruled in favor of the plaintant, and the DOE was required to prepare an EIS for the impacts of the transmission lines within the U.S. (Imperial Couty) that would connect two power plants in Mexico to the power grid, including an assessment of the power plants impacts on ozone and particulate air quality, health risks, and GHG emissions. She led efforts to provide consulting and assistance with ozone box modeling to support project impact assessment, as well as expert testimony on ammonia emission transformation, GHG impacts, and review of the EIS. AECOM also prepared a health risk assessment (HRA) that was provided to Argonne Labs, the DOE contractor preparing the EIS, and the EIS used our HRA.

High Desert Power Project (HDPP), Air Permitting and Other Support, CA. Managed a project to satisfy all the air quality requirements for a new merchant power plant. The permitting requirements included a PSD permit from EPA Region 9, a local air permit from the MDAQMD, and a License from the CEC. The project involved development of a strategy to obtain offsets for the project, including obtaining approvals of an interpollutant, interbasin trade of volatile organic compound offsets for oxides of nitrogen emissions. Assistance with hazardous materials (ammonia) handling, FAA stack height and visible

plume analysis, biological impacts, and other topics was also provided. Subsequent to licensing, on-going support has been provided for permit modifications, protocol review, water permitting, reporting and other compliance services.

Mountainview Power Company, Environmental Permitting, CA. Managed a project to prepare an AFC and related CEC process for a 1,056-MW expansion of an existing power plant in San Bernardino County. The project included a new 17-mile natural gas pipeline and wastewater connector line. The project completed the CEC process in less than a year from being deemed data adequate.

Sempra Generation, Ozone Modeling, AZ. Provided oversight and coordination of AECOM assistance with ozone modeling requirements and evaluations. For the Mesquite project, AECOM provided Urban Airshed Modeling (UAM) to support project permitting.

Sempra Generation, Wind and Solar Energy Asset Due Diligence. Managed seven due diligence project related to the potential purchase of solar or wind farm assets in the permitting phase in several different States. The projects included review of materials in an electronic “data room”, status of permits acquired and in process, environmental permitting liabilities and costs for potential mitigation requirements, and other information to assist with the preparation of a bid decision and proposal. Some of the projects were completed on an expedited basis to meet the bid schedule.

Sempra Generation, Feasibility Studies, CA. Provided oversight for AECOM studies to determine the feasibility of potential project sites. Studies included Phase I due diligence site assessments; surveys to determine the availability of emission reduction credits to use for offsets; water studies to evaluate different options for water supply and discharge including use of contaminated agricultural run-off water, groundwater, underground injection, dry cooling and water swaps with water agencies; and biological surveys.

Major Power Producers, Offset Availability Analysis, CA. Managed several projects to investigate the feasibility of generating PM10 emission reduction credits (ERC) from road paving or other means for potential new power plants in the SJVAPCD, SCAQMD, Bay Area AQMD, and San Diego APCD. Potential PM10 ERC sufficient for the projects' needs were identified, however, other ERC options were utilized.

Edison Mission Energy, Offset Strategy Assistance, CA. Assisted with the development of a strategy and applications to provide offsets for a peaking facility in the SCAQMD.

California Portland Cement Co., Environmental Impact Report (EIR), CA. Managed a project to prepare an EIR to allow burning tires for fuel at the Mojave cement plant. The EIR was prepared in response to a lawsuit filed against the Kern County Air Pollution Control District (KCAPCD) claiming the district had not sufficiently addressed the California Environmental Quality Act (CEQA) when issuing permits for the modifications.

Confidential Cement Company, PSD Lookback Audit, CA. Managed a project to review modifications made at cement plants over the past ten years to determine if any of the projects done as minor source permitting should have been done as PSD modifications.

TXI Riverside Cement Co., Air Permiting, CA. Managed a project to provide assistance with air permitting and air toxics health risk assessment for modernization of the Oro Grande cement plant. The modernization project included replacing several old kilns and related equipment with new facilities. Through emissions netting, the project was done as a minor modification of the facility’s Mojave Desert Air Quality Manangement District (MDAQMD) permit. CEQA was also addressed.

Petroleum Refineries, Clean Fuels Projects EIRs, CA. Provided support on EIRs for several projects to produce reformulated gasoline (both CARB Phase I and II). Projects included the Chevron El Segundo refinery, ARCO and Unocal Los Angeles refineries, Unocal Rodeo refinery, and the Shell Martinez refinery. For these EIRs, assisted with management, air quality impact analyses, response to comments, and/or document QA.

Petroleum Projects, Air Permits/ EIRs. Managed many projects involving regulatory review, impact analysis, control technology assessments, permitting, and EIR preparation for petroleum facilities. Projects included offshore oil development, tertiary oil recovery, oil and gas processing facilities, and oil shale projects. Assisted Mobil Exploration and Producing to develop a PSD permitting strategy and BACT analysis for operations in the SJVAPCD. Assisted ARCO to prepare an EIR and air permit applications for a polypropylene plant and expanded cogeneration fifth train to meet the requirements of both the SCAQMD and CEC. Provided expert testimony for a refinery on modeling issues regarding impacts to a PSD Class I area.

Petroleum Operations, Title V Operating Permits. Managed a Title V project for ARCO Western Energy to prepare a permit application in the SCAQMD and a project for ARCO Pipe Line Company to determine Title V applicability and/or requirements for 60 facilities in seven southwestern states, including four California air districts and three Indian tribes. Managed or assisted with many projects to obtain Title V Operating Permits for petroleum refineries: TPI Petroleum's Alma, Michigan refinery; Ultramar's Wilmington refinery and terminal; Unocal's Los Angeles refineries and terminal; Unocal's Santa Maria refinery; ARCO Los Angeles refinery; and BHP Petroleum Hawaii refinery. For the BHP refinery, the Title V permit application included a detailed emissions inventory and modeled assessment of compliance with applicable ambient air quality standards. For ARCO's Los Angles refinery, assistance was provided to reconcile existing equipment and permits with the facility wide permit to meet the requirements of the SCAQMD's RECLAIM and Title V permitting programs. Served as Principle-In-Charge for Texaco projects to assess Title V applicability and prepare permit applications for terminals in eight western states. Additionally, worked on two projects to identify applicable requirements, evaluate enhanced monitoring techniques, and develop generic permit condition language for Title V permits for refineries and oil and gas production facilities in California for the Western States Petroleum Association.

American Petroleum Institute, Compliance Assurance Monitoring (CAM) Guidance. Managed a project to prepare a CAM Information Document to assist petroleum source (refining, marketing, and production) operators to develop CAM Plans.

Oil and Gas Production, Due Diligence and Compliance Assessment, CA. Managed an evaluation of environmental compliance on a potential purchase of oil and gas producing facilities, including an old oil field and new offshore platforms and processing facility in Santa Barbara County. The evaluation included an assessment of potential permitting requirements associated with several facility expansion scenarios and a synopsis of probable key future regulatory requirements. Also assisted with other projects with this client to evaluate operations throughout California and to provide potential costs associated with purchase of an operation in the San Joaquin Valley.

Ventura County APCD, Advisory Committee, CA. Have served as Vice Chair or member of the Ventura County APCD Advisory Committee for the past 20 years. This committee reviews all VCAPCD draft rules, attainment plans, and Carl Moyer proposals for the District, and makes recommendations to the Board.

Santa Barbara County APCD, Air Permitting and Compliance, CA. Served as SBCAPCD's contract project manager for the Exxon's Santa Ynez Unit Project and various ARCO facilities. In this role, she developed air permits, tracked compliance issues, and obtained variances. These projects included oil and gas processing facilities, cogeneration units, offshore platforms, marine terminals and vessels. Responsibilities included making presentations to other agencies, including the Santa Barbara County Resource Management Department and the Planning Commission. Once the permit was issued, she continued to lead SBCAPCD efforts to ensure that the project was constructed and then operated according to its PSD permit requirements. Also, provided review of, and input on, many SBCAPCD CEQA documents; air quality attainment plans; protocols, policies, and procedures; and proposed rules.

Travis Taylor
Senior Project Director – Associate Vice President

Education

MBA, Management, San Diego State University, 1994
BA, Biology/Zoology, University of California, Santa Barbara, 1991

Years of Experience

With AECOM 11
With other firms 11

Professional Memberships

Construction Management Association of America (CMAA)
Groundwater Resource Association (GRA)
National Ground Water Association (NGWA)
Professional Environmental Marketing Association (PEMA)
Solid Waste Association of North America (SWANA)
United States Green Building Council (USGBC)

Training and Certifications

LEED for New Construction, US Green Building Council, 2007
Construction Stormwater Compliance, BIA, 2002
Geographic Information System Applications, ESRI, 2000
Risk Based Corrective Action Training, ASTM, 1996
Remediation Facilities Engineering, UC Berkeley, 1995

Mr. Taylor is a senior project director and operations manager with 22 years of professional experience in project management and implementation of solid waste management programs, waste-to-energy and conversion projects, site investigations, innovative remedial strategies, stormwater pollution prevention projects, and sustainable corrective action plans. Mr. Taylor has a background in waste conversion (and waste-to-energy) planning, technology evaluation, architecture, design, engineering, permitting, diversion strategies, cost estimating, and construction scheduling and preparation . By combining management skills and technical expertise, he provides clients with creative and cost-effective solutions that satisfy both their short- and long-term needs.

In addition, Mr. Taylor has considerable experience with international environmental projects. He has planned various international ventures in South America, and organized and implemented a start-up of a branch office in Buenos Aires, Argentina. Mr. Taylor is currently the operations managers for AECOM's Long Beach office.

Experience

Urbaser, Waste Conversion Facility – Conceptual Design, County of Santa Barbara, California. Project manager for preparation of a conceptual design for a waste conversion facility at the Tajiguas Landfill. The conceptual design included site layouts, civil drawings, architectural rendering, structural analysis, permitting requirements, facility logistical considerations, preliminary engineering and design documents, and cost estimating for capital and operational expenses. The conceptual design was used as part of a proposal package to the County of Santa Barbara.

Urbaser, SA, Waste Conversion Facility Design and Proposal Assistance - Johnson Canyon Resources Management Park Assistance, Salinas, California. Program manager for preliminary design and DBFO proposal for Urbaser which included preparation of proposal documents, cost analysis, and negotiations with the Salinas Valley Solid Waste Authority. Proposal to SVSWA was a DBFO waste conversion (or waste-to-energy) facility for treatment and processing an estimated 1,000 tons per day of MSW. Managing architectural design process, preliminary CEQA analysis, planning documents, engineering and design support, site conditions assessment, regulatory issues, estimating, proposal preparation, and logistical and strategic support.

Urbaser, SA, Waste-to-Energy Facility - Preliminary Engineering/Design and Proposal Support, Los Angeles, California. Program manager for DBFO MSW waste-to-energy (or waste conversion)

facility preliminary design and proposal. Directed preparation of proposal documents and negotiations in response to an RFP released by the city of Los Angeles Department of Public Works, Bureau of Sanitation. Managed preliminary design documents, engineering evaluation, cost estimation, scheduling, support for proposal preparation, and assistance during the proposal negotiation period.

Confidential Client, Waste Conversion Planning Support, Southern California. Consulted with developers for design, permitting and construction of an integrated waste conversation facility including anaerobic digestion and gasification technologies. Tasks included evaluation of technologies, community planning, regulatory requirements, cost reviews, and renewable energy assessments.

Confidential Clients, Waste-to-Energy By-Products Analysis and Procurement, Southern California. Worked with client to identify and evaluate by-products produced by the facility and estimated quantities. Reviewed local and state regulatory standards and assessed feasible reuse alternatives with contingency plans. Procured potential buyers of materials and received letters of commitment to purchase material and negotiated pricing.

City of Long Beach, 55th Way Park Landfill Cover Design Review, Long Beach, California. As a subcontractor to EDSA, project manager for an initial review of the modified grading and drainage plans and geosynthetic clay liner details provided by others and review of a technical memorandum related to the landfill cover design change from an evapotranspiration cover to a GCL and general fill cover.

City of Long Beach, Landfill Investigation, Long Beach, California. Planned and supervised an investigation of an inactive landfill to be developed into a recreational facility and park. The investigation work plan was approved by the Los Angeles County Public Health Department. Collected ambient air samples, integrated surface samples, subsurface landfill gas samples, and soil samples of the existing landfill cover. The data were used to prepare a human health risk assessment, and design a closure and redevelopment plan for the former landfill. Managed WDR process with RWQCB and supervised semi-annual landfill groundwater monitoring program.

Mare Island Naval Shipyard, RCRA Landfill Gas Survey, California. Developed project work plan for the Navy and DTSC. Conducted meteorological study, ambient air sampling, integrated air sampling, and subsurface soil gas sampling at an inactive RCRA/facility landfill. Used a weather station and anemometers to collect the meteorological data. Used a GPS to establish and map the integrated air sampling grids and entered data into an ArcView GIS program. Prepared an investigation report that included a summary of survey activities, a human-health risk assessment, and recommendation for a presumptive remedy.

Energy Company, Remediation, Santa Barbara, California. Assisted with management of a large remediation project at a former manufactured gas plant site. The project consisted of shoring a historic

landmark building, constructing a tent and air abatement system over the remediation area, and excavating soil and removing the base of the former gas holder. Despite a very tight timeline, the project was completed on schedule.

Conference Presentations

“Benefits of Integrated Waste Management Facilities”, California Resource Recovery Association, Palm Springs, California, August 4, 2009.

“Sustainable Stormwater Pollution Prevention and Dust Control Program at the Port of Long Beach”, American Society of Civil Engineers, Carlsbad, California, March 2007.

"Remediacion de Suelos y Aguas Subterraneas Usando Tecnicas de Inyeccion," Jornadas Tecnico Comerciales, Buenos Aires, Argentina, August 2000.

"Groundwater Remediation using Chemical Oxidation Injection," Groundwater Resources Association seminar, Costa Mesa, California, Spring 1999.

"Remediation Injection Process," Groundwater Resources Association, Oakland, California, Fall 1998.

"In-Situ Bioremediation," University of California, Santa Cruz, Department of Biology, Santa Cruz, California, Summer 1997.

Publications

Rees, A. and Taylor, T., “Using High-Resolution MIP Data to Guide a Pilot-Scale Evaluation of Source Area Treatment by Activated Persulfate”, Battelle Conference, 2010.

Taylor, T. and Subramanian, R, “Remediation of Oil Refinery Related Waste at a Large Low Income Housing Complex,” Battelle Conference, 2006.

Drinkard, S. and Taylor, T., “Mixed-Plume Isolation: Chlorinated and Petroleum Hydrocarbons”, Battelle Conference 2006

Taylor, T., “Rapid Remediation of Impacted Soil and Groundwater using Injection Technology,” in *Ingenieria Sanitaria y Ambiental,* Buenos Aires, Argentina, 2000.

Jacobs, Ruslen, Macleod, and Taylor, “In-Situ High-Pressure Remediation Injection Process,” *Hydrovisions,* Fall issue, 1999.

Sean Wazlaw

Professional History

AECOM, CEQA/NEPA Project Manager, 2011-present

Rincon Consultants, 2006-2011

Education

B.S. (Ecology and Environmental Science) University of Maine
B.A. (Spanish) University of Maine

Years of Experience

With AECOM: 1
With other firms: 5

Technical Specialties

CEQA
NEPA
Constraints Analyses

Mr. Wazlaw has over six years of experience in managing and preparing NEPA and CEQA environmental reviews, such as Environmental Impact Statements, Environmental Assessments, Environmental Impacts Reports, and Mitigated Negative Declarations. In addition, Mr. Wazlaw has prepared specialized technical studies in the areas of aesthetic resources, air quality, environmental justice, greenhouse gas, hydrology/water quality, illumination, land use, noise, wastewater, and water supply.

Mr. Wazlaw has experience managing and contributing to numerous projects, ranging from renewable energy projects, to focused inner-city redevelopment projects, to large-scale mixed-use development projects, to public infrastructure projects. He has successfully managed projects involving a geographically dispersed team of clients, coworkers, subconsultants and permitting agencies.

Project Experience

County of Santa Barbara, Housing Element Action Phase. Assisted with the preparation of an Environmental Impact Report (EIR) for the Housing Element Action Phase (HEAP). Involved evaluating environmental impacts of numerous key sites throughout Santa Barbara County. Responsible for evaluating impacts related to air quality and public services and infrastructure, including landfill capacity, water supply and wastewater treatment.

Bureau of Land Management, Environmental Impact Report/Statement, Desert Stateline Solar Farm Project, San Bernardino County, California. Provided third-party review of applicant-prepared technical studies. Assisted with the preparation of the air quality, noise and traffic sections of the Environmental Impact Report/Statement.

NextEra Energy Resources, LLC, Environmental Permitting, Riverside County, California. Assisting with the environmental permitting for the McCoy Solar Energy Project, an up to 750-MW solar photovoltaic (PV) plant in eastern Riverside County. The project involves preparation of various technical studies and reports to provide to the BLM's third party consultant who is preparing the Environmental Impact Statement (EIS). Technical studies include cultural resources, groundwater and surface hydrology modeling and assessment, air quality and greenhouse gas (GHG)

assessment, and other tasks. The project included preparation of the first of its kind application for CEQA permit streamlining under the new AB 900 regulation.

NextEra Energy Resources, LLC, Environmental Permitting, Kern County, California. Assisting with the environmental permitting for the Beacon Photovoltaic Project, an up to 250-MW solar photovoltaic (PV) plant in Kern County. Like the McCoy Solar Energy Project, this project involves preparation of various technical studies and reports to provide to Kern County and their third party consultant who is preparing the EIR. Technical studies include cultural resources, groundwater and surface hydrology modeling and assessment, air quality and greenhouse gas (GHG) assessment, and other tasks. Also set up and maintains the project's SharePoint site.

NRG Solar, Compliance Matrix, Avenal Solar Facility, Kings County, California. Reviewed the Conditional Use Permits (CUPs) issued by Kings County for the Avenal Solar Facility and created a compliance tracking matrix for the Avenal Solar Facility. This tool translated over fifty compliance requirements into actionable items for facility personnel to follow, including a corrective action protocol and timing mechanisms. In addition, researched new permitting requirements associated with construction of a potential additional onsite outbuilding to support facility maintenance activities.

NRG Solar, Compliance Management System, Southwestern United States. Currently assisting with the identification of permit requirements, laws and regulations for NRG Solar's solar energy facilities in California, Arizona and New Mexico. Applicable permit and regulatory requirements are uploaded into NRG's Intelex system, which generates notifications to NRG staff when a certain action is required.

Confidential Clients, California. Provide assistance to various clients with determining the feasibility and permitting requirements to develop solar energy projects in the desert regions of California, including Kern, Riverside and San Bernardino counties. These projects involve both solar thermal and photovoltaic technologies. Key issues include land use, biological resources, geology, water resources, and cultural resources.

Confidential Solar Developer, Constraints Analysis, Kern County, California. Assisted with the preparation of a constraints analysis for a proposed solar project in Kern County. The project involved conducting a biological resources habitat assessment, formal jurisdictional delineation, and cultural resources literature search (Class 1) analysis. The project also involved investigation of agricultural land conversion, land use and flood plain issues. Potential mitigation requirements for these resources were identified. The results of the constraints analysis provided information to assist in the decision whether or not to continue option payments on the properties under review and proceed with development of the solar project.

AECOM

Camarillo, CA
Environment
August 2012

Steven L. Heisler, Ph.D., QEP
Senior Program Manager

Education

BS, Chemical Engineering, California Institute of Technology, 1970
MS, Environmental Engineering Science, California Institute of Technology, 1971
Ph.D., Environmental Engineering Science, California Institute of Technology, 1975

Years of Experience

Years with AECOM: 37

Professional Affiliations

Air and Waste Management Association

Training and Certifications

Qualified Environmental Professional (QEP)

Dr. Heisler has 36 years experience in air quality consulting. His specialties have included air pollutant emission estimation for both stationary and mobile sources, air quality impact analyses for California Environmental Quality Act (CEQA) documents, health risk assessments, data analysis, ambient monitoring, quality assurance and visibility studies.

Representative Project Experience

Ventura Regional Sanitation District, Air Permit Application, *Ventura County, California*. Served as the project manager for an application for an air quality Permit to Construct for a biosolids drying system and landfill-gas fired microturbines at the Ventura Regional Sanitation District's Toland Road sanitary landfill. Responsibilities included overall project management, conducting a health risk assessment (HRA) for the application of water recovered from biosolids drying for dust control at the landfill and responding to comments and requests for information from the Ventura County Air Pollution Control District.

Southern California Edison, Proponent's Environmental Assessment for Falcon Ridge Substation Project, *Southern California*. Managed preparation of the Proponent's Environmental Assessment (PEA) for the Falcon Ridge Substation Project for Southern California Edison. Oversaw and conducted quality assurance review for all PEA sections, conducted air and quality greenhouse gas impacts analyses and prepared the air quality and greenhouse gas impacts section.

Southern California Edison, Proponent's Environmental Assessment for Lakeview Substation, *Southern California*. Participated in preparation of several sections for the Proponent's Environmental Assessment (PEA) for the Lakeview Substation for Southern California Edison. Oversaw and conducted quality assurance review for several PEA sections, conducted air quality and greenhouse gas impacts analyses and prepared the air quality impacts section.

Southern California Edison, Proponent's Environmental Assessment for Alberhill System Project, *Southern California*. Managed preparation of several sections for the Proponent's Environmental Assessment (PEA) for the Alberhill System Project for Southern California Edison. Oversaw and conducted quality

assurance review for several PEA sections, conducted air quality and greenhouse gas impacts analyses and prepared the air quality impacts section.

Southern California Edison, Proponent's Environmental Assessment for Presidential Substation, *Southern California*. Managed preparation of several sections for the Proponent's Environmental Assessment (PEA) for the Presidential Substation for Southern California Edison. Oversaw and conducted quality assurance review for several PEA sections, conducted air quality impacts analyses and prepared the air quality impacts section.

Southern California Edison, **Mitigated Negative Declarations for Five Peaker Plants, *Southern California***. Participated in preparation of Mitigated Negative Declarations (MNDs) for the construction and operation of five peaking power plants for Southern California Edison. Calculated air pollutant emissions during construction, including emissions from off-road and on-road equipment and vehicles, developed air quality impacts mitigation measures, oversaw impacts analyses for other environmental areas, prepared portions of Draft MNDs, prepared responses to comments on the Draft MNDs, prepared Final MNDs and Mitigation Monitoring Plans (MMPs) for four of the peaker facilities, and calculated actual emissions during construction of four of the peakers as required by the MMPs.

Chevron Products Company, EIR for Heavy Crude Project, *El Segundo, California*. Managed preparation of an Environmental Impact Report (EIR) for modifications to Chevron Products Company's El Segundo refinery to allow the refinery to increase its capacity to process heavy crude oil. Calculated air pollutant emissions during construction and operation of the proposed project, including emissions from off-road and on-road equipment and vehicles, developed air quality impacts mitigation measures, oversaw impacts analyses for other environmental areas, prepared Draft EIR, prepared responses to comments on the Draft EIR, prepared Final EIR.

South Coast Air Quality Management District, Air Emissions During Power Plant Modification Construction, *Southern California*. Provided support to the South Coast Air Quality Management District (SCAQMD) for the preparation of an environmental impact report (EIR) for modifications to three Los Angeles Department of Water and Power generating stations. Activities included estimating direct and indirect emissions from construction of the station modifications and preparation of the corresponding sections of the EIR.

South Coast Air Quality Management District, Emission Estimation for Proposed Fleet Vehicle Rules, *Southern California*. Provided support to the South Coast Air Quality Management District (SCAQMD) for the preparation of a Program Environmental Assessment for its proposed fleet vehicle rules. Activities included estimating direct and indirect emissions from construction of alternative fuel refueling stations and from operation

of alternative fueled vehicles by public vehicle fleets in the California South Coast Air Basin.

BP/ARCO, Environmental Impact Report for MTBE Phaseout/CARB Phase 3 Reformulated Gasoline Project, *Southern California*. Oversaw air quality analyses for the preparation of an environmental impact report (EIR) for modifications to BP/ARCO's Los Angeles refinery and distribution terminals for the phase out of MTBE and the production of California Air Resources Board (CARB) Phase 3 reformulated gasoline. Specific activities included estimating direct and indirect air pollutant emissions associated with construction of the modifications and the development of air quality impacts mitigation measures.

Chevron Products Company, Environmental Impact Report for MTBE Phaseout/CARB Phase 3 Reformulated Gasoline Project, *Southern California*. Oversaw air quality analyses for the preparation of an environmental impact report (EIR) for modifications to Chevron Products Company's El Segundo refinery and distribution terminals for the phase out of MTBE and the production of California Air Resources Board (CARB) Phase 3 reformulated gasoline. Specific activities included estimating direct and indirect air pollutant emissions associated with construction of the modifications and the development of air quality impacts mitigation measures.

Mobil Oil Corporation, Environmental Impact Report for MTBE Phaseout/CARB Phase 3 Reformulated Gasoline Project, *Southern California*. Oversaw air quality analyses for the preparation of an environmental impact report (EIR) for modifications to Mobil Oil Corporation's Torrance refinery and distribution terminals for the phase out of MTBE and the production of California Air Resources Board (CARB) Phase 3 reformulated gasoline. Specific activities included estimating direct and indirect air pollutant emissions associated with construction of the modifications and the development of air quality impacts mitigation measures.

UNOCAL, Air Emissions During Site Remediation, *San Luis Obispo County, California*. Estimated direct and indirect emissions that would occur during excavation and remediation of two large sites, including exhaust emissions from on-site construction equipment and off-site motor vehicles as well as fugitive particulate matter emissions from construction activities.

Riverside Cement Company, Health Risk Assessment, *Oro Grande, California*. Served as the project manager for a health risk assessment (HRA) for the Riverside Cement Company’s Oro Grande cement plant. The HRA was required by and submitted to the Mojave Desert Air Quality Management District. Responsibilities included overall project management, calculating emissions of substances of potential concern, conducting the HRA utilizing the Hot Spots Analysis and Reporting Program (HARP) software package developed by the California Air Resources Board (CARB)

for conducting health risk assessments in California under the Air Toxics Hot Spots Program, and preparing the final report.

Riverside Cement Company, Health Risk Assessment, *Riverside, California*. Served as the project manager for a health risk assessment (HRA) for the Riverside Cement Company's Crestmore cement plant. The HRA was required by and submitted to the South Coast Air Quality Management District. Responsibilities included overall project management, calculating emissions of substances of potential concern, conducting the HRA utilizing the Hot Spots Analysis and Reporting Program (HARP) software package developed by the California Air Resources Board (CARB) for conducting health risk assessments in California under the Air Toxics Hot Spots Program, and preparing the final report.

CalPortland, Health Risk Assessment, *Colton, California*. Served as the project manager for a health risk assessment (HRA) for CalPortland's Colton cement plant. The HRA was required by and submitted to the South Coast Air Quality Management District. Responsibilities included overall project management, calculating emissions of substances of potential concern, conducting the HRA utilizing the Hot Spots Analysis and Reporting Program (HARP) software package developed by the California Air Resources Board (CARB) for conducting health risk assessments in California under the Air Toxics Hot Spots Program, and preparing the final report.

Electric Power Research Institute, Multimedia Health Risk Assessment for a Coal-Fired Power Plant, *California*. Managed the application of the Total Risk of Utility Emissions (TRUE) model to perform a multi-media health risk assessment for emissions from a coal-fired electric power plant.

Sarah Tierney Sullivan
Air Quality Staff Specialist

Education

MPA (Public Administration - Environmental Mgmt, Policy & Law) University of Colorado

BS (Environmental Management) Indiana University - Bloomington

Years of Experience

With AECOM 4
With Other firms 4

Sarah Sullivan has over 8 years experience in environmental policy and compliance, management, and regulatory affairs. Ms. Sullivan has specific experience working with state and local agencies to implement effective environmental programs and initiatives, including multiple mobile source and community outreach programs. Her project experience includes project management, environmental compliance such as auditing, monitoring, and sampling and reporting for construction and remediation sites within California. She has also developed permit applications and permit compliance evaluations per the South Coast Air Quality Management District (SCAQMD); and conducted air quality and climate change assessments pursuant to the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA) for various types of industry including, but not limited to, water and power, combined heat and power co-generation facilities, and municipal solid waste landfills.

Project Experience

Scholl Canyon Municipal Landfill, Air Quality Impact Analysis, Glendale, California. Completed air quality analysis for two expansion alternatives, including horizontal and vertical alternatives, for local landfill evaluating potential impacts of long-term operation. Completed analysis for baseline impacts, and potential impacts from implementation of various expansion options. Emission sources included flared landfill gas, fugitive surface gas, internal combustion engines, as well as on- and off-road equipment supporting operations. Analysis included a health risk assessment evaluating toxic air contaminants, and evaluation of criteria pollutants and greenhouse gas emissions.

Los Angeles World Airports, Permit Applications, Los Angeles, California. Conducted engineering calculations, regulatory review, and best available control technology assessment in support of various permit applications to the SCAQMD. Specifically, Ms. Sullivan supported in the completion of an application for an onsite concrete batch plant needed to support the Los Angeles International Airport re-development program, which included Air Quality Impact Assessment modeling and offset calculations; Ms. Sullivan also supported the application for a Central Utility Plant re-power project, which included two combined-cycle combustion trains each comprised of a 4.2 MW gas turbine generator set, heat recovery steam generator, waste heat recovery boiler, and emission controls including selective catalytic reduction, a catalytic oxidation unit, and continued emissions monitoring system.

Southern California Gas Company, Aliso Canyon Turbine Replacement Project, Santa Clarita, California. Supported in the completion of the air quality and greenhouse gas emissions impact analysis for a turbine replacement project at one of Southern California's largest underground natural gas storage field, for application approval by the California Public Utilities Commission. Acted as the Environmental Coordinator for staff subject matter experts throughout the duration of the project including development of Proponent's Environmental Assessment and Draft Environmental Impact Report (DEIR). Acted as the Deputy Project Manager during the DEIR peer review process; provided quality control and quality assurance in order to maintain project schedule, budget, and other related milestones.

California State University Fullerton, Permitting and Compliance, Fullerton, California. Conducted engineering calculations and regulatory review in support of a permit application for a combined heat and power cogeneration unit, installed for the purpose of supplying base load power and chilled water to meet increasing energy needs on university campus. The overall goal of the project was to ensure greater electrical reliability, reduce campus dependency on utility power, and stabilize long-term energy costs to accommodate future enrollment and facility growth plans. The project components included commissioning and operation of one 4.5 MW gas-fired turbine and two 13.1 million BTU/hr gas-fired burners for absorption chillers to operate during periods without turbine exhaust gas.

County of Los Angeles, Will Rogers State Beach Improvements, Malibu, California. Completed air quality and greenhouse gas impact analysis for proposed improvements at Will Rogers State Beach including construction of a seawall, pedestrian bridge, view deck and parking area. Analysis conducted for completion of an Initial Study/Mitigated Negative Declaration environmental planning document, per CEQA requirements.

Fairmont Hotel, Greenhouse Gas Analysis, San Francisco, California. Completed greenhouse gas analysis in accordance with innovative methodologies recently drafted by the Bay Area Air Quality Management District for evaluating cumulative local community risks and hazard impacts due to the placement of new receptors in proximity to existing stationary sources. Performed evaluation for completion of the EIR.

Los Angeles Department of Water Power, Air Quality Impact Analysis, Los Angeles, California. Completed air quality analysis for construction and operational activities associated with a large scale re-power project, including installation of six natural gas-fired 100 MW combustion turbines, for Los Angeles Department of Water & Power. Criteria pollutant and greenhouse gas emissions (carbon dioxide) were quantified using the EPA-approved Urban Emissions Model (URBEMIS) developed for assessment of land-use projects. Based on analytical results, control strategies were recommended in order to maintain compliance with the established SCAQMD emission thresholds per CEQA guidelines.

Sacramento Area Flood Control Agency, Air Quality Impact Analysis, Sacramento, California. Performed air quality analysis for multiple-year, multiple air district construction project including levee and cutoff wall construction for lead-agency approval pursuant to CEQA requirements. Prepared Conformity Determination document, in compliance with EPA's General Conformity Rule, applicable to federally funded projects within areas designated non-attainment or maintenance with the National Ambient Air Quality Standards. Developed mitigation strategies and performed emission offset calculation to determine project requirements for implementation.

Howard W. Balentine, CCM. P.E.

Technical Leader, Climate Change

Education

ME, Environmental Engineering, University of Florida

MS, Business Administration, Boston University

BS, Physics, United States Air Force Academy

Technical Specialties

Greenhouse Gas Emissions and Verification/Climate Change

Emission Inventory Development and Analysis

Atmospheric Dispersion Modeling / Air Quality Analysis

Emission inventory, dispersion modeling, and meteorological training

Multivariate Statistical Analysis

Professional Registrations

Certified Consulting Meteorologist, Am. Met. Society, 1984, No 375

Registered Professional Engineer, Texas, 1990, No. 67215

Years with AECOM

14

Years with other firms

22

Mr. Balentine's areas of expertise include regional and facility emission inventory development for greenhouse gas (GHG), criteria, and toxic air pollutants; GHG verification, climate change issues, GHG Life Cycle Assessment, and analysis of GHG emission mitigation measures; meteorological analysis involving air pollution, boundary layer, and aviation issues; climatological analysis for air pollution and climate change studies; air quality modeling and health risk assessment; and expert testimony. He has experience in emission computations for numerous facility types including petroleum refineries, chemical plants, cement plants, and electrical generating units. He is expert in identification and evaluation of emission reduction and emission mitigation measures for GHG and air pollutant emissions. He has over 30 years of experience in conducting training covering emission inventory development, boundary layer meteorology, and air quality modeling.

Experience

California Climate Action Registry (CCAR), Lead Certifier, General Reporting Protocol and Power and Utility Protocol:

Former Lead Verifier for the California Climate Action Registry (CCAR) for verification of greenhouse gas (GHG) emission inventories registered with the CCAR by Registry participants. He was Lead Verifier or Independent Reviewer for over 50 GHG registration verifications.

Woodside Natural Gas, Life Cycle Assessment for the Proposed OceanWay LNG Deepwater Port, Southern California:

Principal Investigator for a Life Cycle Assessment (LCA) for the OceanWay LNG Deepwater Port offshore of Los Angeles. On this project, he provided technical oversight for the Goal and Scope document and the selection of the independent review panel, supervised the LCA modeling contractor to ensure that most appropriate data were used as input to the LCA, and was the lead author on the LCA draft report documenting the GHG footprint of the LNG lifecyle for the OceanWay project. In addition, he directed the development of GHG emission metrics and estimates for the entire LNG supply train from exploration and development of natural gas resources offshore of Australia to combustion of the natural gas by the end user in Southern California.

Alberta Environment, GHG Inventory Audits:

Lead Verifier or Senior Independent Reviewer for GHG verification audits at multiple industrial facilities in Alberta including coal fired power plants, coal mines, a gas processing facility, and a natural gas transmission company. The audits were conducted in 2009 and 2010 to verify compliance with the Alberta Environment (AENV) Specified Gas Reporting Standard (SGRS) for greenhouse gases (GHGs). Operations reviewed include power generation, coal handling, coal

mining operations, coal cleaning, natural gas transmission, record generation and retention procedures, computation methodology, and documentation of the GHG emission inventory development process.

Confidential Client, Carbon Credit Analysis and Project Proposal for Registration:

AECOM prepared a draft project proposal for a proposed carbon emission reduction project for submittal to the California Climate Action Reserve. The proposed project was an innovative "first of its kind" GHG emission reduction project that appeared to meet stringent requirements for creation of carbon credits. The project objective was to examine the feasibility of developing a protocol to be used to quantify the expected carbon emission reductions in a manner that would be verifiable under third party verification.

Confidential Client, Audit of Credit Generation from Destruction of High Global Warming Potential Ozone Depleting Substances:

Lead auditor to assess compliance by a facility with the Climate Action Reserve Ozone Depleting Substance Protocol in an operation involving the thermal destruction of qualified ODS under the ODS protocol.

Riverside Cement Company, Facility Emission Inventory Reports, Oro Grande and Riverside, California.

Project manager for multiple projects to develop comprehensive emission inventory plan and reports (CEIP/CEIR) for criteria and toxic pollutants for the Oro Grande and Crestmore cement plants. The inventories were based on an emission inventory plan that was approved by the local air district that included all sources of criteria pollutant emissions for the cement plants and associated quarry. The completed CEIRs were submitted to the districts in electronic format.

Covanta Energy, California. GHG Emission Reporting for Waste-to-Energy Facilities, 2005-2010.

AECOM has prepared the GHG emission inventory for Covanta Energy's 10-14 waste-to-energy facilities in California since 2005. Currently, GHG reporting for Covanta is underway for calendar year 2010 for ARB and EPA Mandatory GHG reporting and involves emissions from two landfill gas generating facilities, six biomass power plants, and three Energy from Waste (EfW) facilities. Since 2005, annual GHG emissions report were prepared and submitted to the California Climate Action Registry, the Climate Registry, the California Air Resources Board and U.S. EPA.

City of Palo Alto, Wastewater Treatment Plant GHG Emission Inventory:

Mr. Balentine directed the development of the CH4 and N2O emission inventory for direct and fugitive GHG emissions from the City of Palo Alto (California) wastewater treatment plant. The inventory was prepared following the Local Government Operations Protocol (LGOP) for development of GHG emission inventories for municipal facilities. Emission estimates were based on LGOP, IPCC, and U.S. EPA emission Factors. The project included development of the inventory and assessment of the feasibility of GHG emission control measures that could be implemented to reduce GHG emissions at the facility.

Gregory J Derevianko
Air Quality Project Specialist

Professional History

AECOM

Education

B.S., Applied Physics, Rensselaer Polytechnic Institute

M.S., Atmospheric and Oceanic Science, UCLA

Ph.D. Level Research, Atmospheric and Oceanic Science, UCLA

Years of Experience

With AECOM 2
Ph.D Research 3

Technical Specialties

Air Quality
Climatology
Meteorology
Oceanography

Training and Certifications

Certified Air Permitting Professional (CAPP) for the San Joaquin Valley Air Pollution Control District (SJVAPCD)

Gregory Derevianko is an atmospheric scientist with nearly two years of experience with AECOM and three years of research experience as a PhD candidate at the University of California, Los Angeles. He has a B.S. degree in applied physics and an M.S. degree in Atmospheric and Oceanic Science. While at AECOM, he has been involved in a number of emission inventory development projects including estimating mining, haul road, storage pile, and process emissions from a limestone quarry and cement plant, auditing a national retail store in California to identify paint products with out of compliance VOC content, emission computations for GHG reporting for a company operating biomass, waste-to-energy, and landfill gas power plants in California, and estimation of fugitive dust emissions due to soil disturbance at a proposed solar power plant construction sites. He has also been involved in several permitting projects including regulation, emissions, and modeling reviews for the installation of thermal oxidizers at coating facilities and landfills, and permitting for gasoline dispensing facilities. Through this work he has gained extensive knowledge of the rules and regulations of the California Air Resources Board, the South Coast Air Quality Management District, and other air districts in southern California.

Experience

AIR QUALITY

Lockheed Martin, Emissions Calculations for Plant Expansion, Goleta, California. Prepared emissions estimate of volatile organic compounds (VOCs) and other compounds from a major expansion of the silicon wafer coating facility. Included were controlled and uncontrolled emissions from a proposed regenerative thermal oxidizer.

Confidential Client, CEQA Analysis of Greenhouse Gas Emissions Estimate and Potential Effects of Global Warming on a Proposed Project, Goleta, California. Prepared an analysis of greenhouse gas (GHG) emissions from a proposed project, as well as the risk from a 100-year coastal flood, as modified by potential climate change.

Ventura Regional Sanitation District, Health Risk Assessment, Santa Paula, California. Performed a risk assessment from toxic emissions resulting in the treatment of municipal solid waste.

Enterprise Rent-A-Car of Los Angeles, LLC, Permit Application for Increased Throughput, Los Angeles, California. Developed a permit application for the South Coast Air Quality Management District on behalf of several refueling locations operated by Enterprise. Proposed emissions were analyzed for impacts on local health risk and the potential need for offsets and BACT.

Abengoa Solar, Lead Air Quality Construction Mitigation Manager, Hinkley, California. California Energy Commission (CEC) approved air quality task lead. Perform on-site monitoring to ensure compliance with California Energy Commission requirements for minimizing impacts of fugitive dust and diesel particulates during construction of a solar power plant in the Mojave Desert. Develop air quality compliance plans, construction plans, and reports.

Ball Corporation, Health Risk Assessment (HRA), Oakdale, California. Performed a risk assessment due to potentially toxic emissions from a large can coating operation. This assessment involves an emissions inventory, air dispersion modeling, and risk analysis at and within several kilometers of the plant.

TXI Riverside Cement, Emission Inventory Development, Oro Grande, California. Currently performing a health risk assessment. Previously assisted in the development of a spreadsheet tool for accounting of air pollutant, air toxic, and greenhouse gases emitted from a large cement plant in an ongoing project. The inventory includes tracking emissions from the quarry to the point of cement leaving the plant.

Covanta Energy, Greenhouse Gas Auditing and Compliance, Various Locations, California. Assisted in the calculations for greenhouse gas reporting for municipal solid waste, landfill gas, and biomass burning power plants in California and Hawaii.

AECOM, Greenhouse Gas Business Development presentations. Various Locations. Presented developments in national and international requirements for greenhouse gas reporting, including information on agreements reached at recent Conference of Parties, that provide business opportunity for AECOM in the European, North American, Asian, and Australian markets.

Taylor Processing, Greenhouse Gas Auditing, Harmattan Sour Gas Processing Plant, Alberta, Canada. Assisted in the quality control and assurance for the greenhouse gas audit of a sour gas processing plant in Alberta, Canada.

Triumph (formerly Vought) Aircraft Facilities, Annual Emissions Reporting (AER) to the South Coast Air Quality Management District (SCAQMD), Hawthorne, California. Completed report of emissions reporting of volatile organic compound (VOC), toxic air contaminant (TAC), and particulate (PM) emissions due to coating operations at an aircraft painting facility.

Triumph (formerly Vought) Aircraft Facilities, EPA Information Request for the Aerospace Manufacturing and Rework, Hawthorne, California. Completed an EPA questionnaire for operations regulated under the National Emission Standards for Hazardous Air Pollutants (NESHAP) to determine hazardous air pollutants from aerospace coating and painting processes, including emissions from the use solvents, blast depainting, spray booth painting, and fugitive emissions.

Mary Michelle Kaplan
Air Quality Meteorologist

Years Experience: 12

Education

BS, Meteorology – St. Louis University
MS, Environmental Science, Atmospheric Concentration – University of Massachusetts (Lowell)

Technical Specialties

Air Quality Modeling:
AERMOD, ISCST3, ISC-PRIME, IGM, CALPUFF, CTSCREEN, SCREEN3, OBODM, HEM3, HEM-AERMOD, OCD

Deposition Modeling:
ISCST3, AERMOD, CALPUFF

Risk Assessment Modeling:
HARP, DEGADIS, SLAB, VCLOUD

Meteorological Data Analysis and Processing:
AERMET, CALMET, MPRM, PCRAMMET, MAKEMET

Wind Energy Assessments:
WindFarm

Emission Inventory Development and Analysis

Visibility Modeling:
VISCREEN, CALPUFF

Software:
Lakes Environmental (ISC-AERMOD View and CALPUFF View), CALDESK, Arcmap GIS

Computer Programming:
FORTRAN

Ms. Mary Kaplan is a Senior Project Specialist in AECOM's Westford, MA office. Ms. Kaplan has 12 years experience in emissions inventory development, source characterization, air dispersion modeling, and deposition modeling. She has conducted a wide range of air dispersion modeling analyses involving emissions from combustion stacks and fugitive sources in complex dispersion environments. Mary has also used Arcmap GIS, CALDESK and Lakes ISC-AERMOD View and CALPUFF View in the course of her project work. She also has considerable experience on projects involving health risk assessments in California and across the country, as well as industry wide risk assessments for coal-fired power plants and forest product mills. Ms. Kaplan holds a B.S. in Meteorology from Saint Louis University and M.S. in Environmental Science (Atmospheric Concentration) from the University of Massachusetts-Lowell.

Representative Project Experience

San Francisco VA Medical Center, Risk Assessment, San Francisco, California. Ms. Kaplan conducted HARP modeling in support of long-term construction and renovations at the VA Medical Center.

Delta Airlines, Risk Assessment, Los Angeles, California. Conducted HARP modeling for a portable engine at Los Angeles International Airport.

California Department of Corrections and Rehabilitation, Risk Assessment, San Luis Obispo, California. Ms. Kaplan conducted a site wide risk assessment using the HARP model for six diesel-fired generators located at the California Men's Colony in San Luis Obispo.

Los Angeles Department of Water and Power, Risk Assessment, Los Angeles, California. Ms. Kaplan conducted a site wide risk assessment using the HARP model as part of the permit application to repower the Scattergood Generating Station.

Solar Millennium, Solar Energy Projects, Mojave Desert, California. Conducted HARP modeling for the Ridgecrest solar project located in the Mojave Desert using USEPA's AERMOD dispersion model.

Shell, Health Risk Assessment, Martinez, California. Conducted HARP modeling in support of Boiler Installation at the Martinez Refinery.

Professional Affiliations

Air & Waste Management Association

Massachusetts Department of Environmental Protection, Dispersion Modeling, Newburyport, Massachusetts. Ms. Kaplan conducted dispersion modeling on behalf of MADEP to evaluate impacts of emissions from landfill gas flaring at nearby schools, hospitals and residential locations using USEPA's AERMOD dispersion model.

Confidential Client, Air Quality Modeling, Iraq. Ms. Kaplan conducted a review of an air quality modeling analysis for uncontrolled flares in the Rumailia region as part of an Air Quality Assessment. The review included meteorological data processing, flare locations, and hourly emissions characterization.

Electric Power Research Institute, Coal-Fired Utility Health and Ecological Risk Assessment. The client retained AECOM to evaluate inhalation and multi-pathway health risk from coal-fired power plants across the United States. Ms. Kaplan reviewed the source location data and performed the inhalation risk modeling using the Human Exposure Model (HEM-AERMOD) for over 400 plants. She advised EPRI members as to which sources had high risk and provided GIS illustrations and data review as required and assisted with the submittal of a written report to the client which has since been published by EPRI.

Publications

Journal: Atmospheric Environment, Volume 35, Issue 36, December 2001, Pages 6245-6258. Atmospheric deposition of polycyclic aromatic hydrocarbons near New England coastal waters. D. Golomb, E. Barry, G. Fisher, P. Varanusupakul, M. Koleda (Kaplan), and T. Rooney.

Conference Proceedings: Air & Waste Management Association, June 2003. CALPUFF Modeling and Evaluation Using RUC-derived MM5 Data. Mary M. Kaplan, Robert J. Paine, and Dennis A. Moon.

Conference Proceedings: Air & Waste Management Association, June 2004. Application of CALPUFF to Assess Compliance with PSD Increment Consumption for SO2 at Class I Areas in North Dakota and Montana. Robert J. Paine and Mary M. Kaplan.

Conference Proceedings: Air & Waste Management Association, June 2005. Air Quality Impact Assessments for Army Training Activities. Robert J. Paine and Mary M. Kaplan.

Conference Proceedings: Air & Waste Management Association, June 2008. Modeling the Consequences and Understanding the Uncertainties Associated with Releases from Emergency Vents. David Heinold and Mary Kaplan.

Conference Proceedings: Air & Waste Management Association, June 2012. Comparison of AERMOD Modeled 1-Hour SO2 Concentrations to Observations at Multiple Monitoring Stations in North Dakota. Mary M. Kaplan and Robert. J. Paine.

Julie A. Niceswanger
Biology Lead

Education

MA, Psychology, University of Santa Monica
BS, Biology, California Polytechnic University

Years of Experience

With AECOM 4.5
With other firms 13

Professional Affiliations

Surfrider Foundation Ventura Chapter
California Native Plant Society
Association of Environmental Professionals

Training and Certifications

Training
Wetland Delineation, Wetland Training Institute
Conservation Partnerships, National Conservation Training Course
Habitat Conservation Planning Refresher, CNO Presentation
Wildlife Restraint and Handling, DFG Wildlife Investigations Laboratory

Permits
California Red-legged Frog – Federal 10(a)(1)(A) Endangered Species Act Recovery Permit Number TE196188-0

Ms. Julie Niceswanger has over 17 years of natural resource management, regulatory permitting, and terrestrial ecosystem monitoring and analysis experience throughout California. Her project experience includes developing monitoring protocols and management plans for endangered species, planning and conducting biological resource investigations, working with project proponents to minimize impacts, and supervising and training project staff. She has broad knowledge of land use regulations and has worked extensively implementing the Endangered Species Act (ESA), including coordination and consultation under sections 7 and 10. Ms. Niceswanger has also prepared technical reports and permits, including CEQA/NEPA documents, USFWS biological opinions, and wetland permitting.

Ms. Niceswanger's wildlife and botanical experience encompasses projects within coastal, valley, mountain, and desert habitats and includes various threatened and endangered species. Ms. Niceswanger holds a an ESA section 10 (a)(1)(A) recovery permit which authorizes her to survey and handle California red-legged frogs. In addition to general surveys for common and sensitive wildlife species, Ms. Niceswanger has experience performing focused, protocol-level, presence/absence surveys for the California red-legged frog, southwestern arroyo toad, California tiger salamander, San Joaquin kit fox, vernal pool fairy shrimp, Morro shoulderband snail, California clapper rail, California black rail, salt marsh harvest mouse, least Bell's vireo, northern spotted owl, bald eagle, and several listed plants in a variety of habitats. She has also performed avian monitoring and banding, general pitfall traps for herpetofauna, and standard small mammal grid trapping. Her botanical experience includes rare plant presence/absence surveys, vegetation classification sampling, rare plant monitoring, general vegetation monitoring, and consultations with the USFWS.

Ms. Niceswanger served as a biologist for the USFWS, Fort Hunter Liggett Military Installation, California National Guard, and California Department of Fish & Game. Her responsibilities at these organizations included a broad range of implementation, review, and analysis of the ESA; preparation of NEPA and CEQA documents; permitting; surveys for sensitive wildlife and plants; and conservation planning. She also assisted in the implementation and development of restoration and monitoring programs.

Experience

Biological and Permitting Services for the Laguna Sanitation District Recycled Waterline, Santa Maria, CA. Ms. Niceswanger assisted in the development of the permitting strategy for a 10-mile waterline project which bisected Santa Maria airport property and private property. The project involved both federally and State listed species as well as special-status plants. Additionally the project involved jurisdictional waters and wetlands. Ms.

Niceswanger assisted in writing the federal permit applications, coordinating with the agencies, and mitigation strategies.

Biological and Permitting Services for the Santa Maria Airport Landfill, Santa Barbara County, CA. Ms. Niceswanger assisted the County of Santa Barbara in developing a permitting strategy for a closed landfill within the Santa Maria Airport Property. The landfill is within occupied habitat for federally and State listed species and will require permits from the US Fish and Wildlife Service and California Department of Fish and Game to complete landfill repairs on the site.

Biological and Permitting Services for the Tajiguas Landfill, Santa Barbara County, CA. As Project Manager, Ms. Niceswanger developed the permitting strategy for a landfill reconfiguration project involving impacts to federally listed species, and federal and state waters and wetlands. She coordinated the completion of the biological assessment, a restoration plan, and the biological analysis to support CEQA. Additionally she coordinated the 404 permit with the ACOE and wrote the least environmentally damaging practicable alternative analysis to support this application; developed the 401 Certification with the RWQCB; and developed and coordinated with the California Department of Fish and Game for a Streambed Alteration Agreement. The project included a wetland delineation/jurisdictional determination, sensitive wildlife and plant surveys, and the development of a restoration plan to mitigate impacts. Ms. Niceswanger wrote the California red-legged frog habitat assessments for the project site and the targeted restoration watershed and developed a California red-legged frog management plan for the project.

Santa Catalina Island Conservancy, Eagles Nest Lodge investigation, Santa Catalina Island, CA. As project manager for this biological constraints analysis Ms. Niceswanger managed the budget, coordinated personnel, conducted a site survey for sensitive plants and wildlife, and wrote the biological constraints analysis. Ms. Niceswanger coordinated with Conservancy staff for review of the document and analyzed the potential impacts of the project relative to the Los Angeles County guidelines for designated sensitive ecological areas.

Baseline Ecological Surveys for the Imperial Irrigation District's HCP, Imperial County, CA. As Task Lead for the amphibian and small mammal surveys for this project, Ms. Niceswanger developed sampling protocols for three targeted amphibians and two target small mammals. This project focused on establishing the baseline conditions for a large project area using a random plot project design over multiple years of sampling to be used to prepare the HCP and Natural Communities Conservation Plan.

Matilija Reservoir Invasive Species Removal Plan and California Red Legged Frog Study and Relocation Plan, Ventura County, CA. As Task Lead for California red-legged frog surveys, Ms. Niceswanger coordinated with the USFWS and conducted presence/absence surveys for the California red-legged frog. Ms. Niceswanger wrote the management plan for the California red-legged frog to aid in the development of protection measures to comply with the biological opinion requirements during project activities.

U.S. Fish & Wildlife Service Office, Ventura, CA. Fish and Wildlife Biologist, responsible for implementation of ESA and review of actions which would affect federally listed species in the Counties of Monterey, Santa Cruz, and San Benito, CA. Ms. Niceswanger conducted ESA Section 7 consultations, both informal and formal, for Federal species. Projects included an FAA project on the Monterey Airport for construction projects and dune restoration; Pacific Grove Municipal Golf Course property transfer and dune restoration; Caltrans and Federal Highways for various highway improvement projects; FAA and Marina Airport for radar tower installation; and State Parks, Hollister Hills State Vehicular Recreation Area for a park expansion project. Ms. Niceswanger also reviewed and conducted analysis of ESA section 10 permit requests for HCP's for Federal species. She was Lead Biologist for Section 10 HCP with California

State Parks, Hollister Hills State Vehicular Recreation Area for continued operation of their off-road vehicle park. Ms. Niceswanger has prepared technical assistance and comment letters for projects pursuant to CEQA/NEPA; provided comments on requests for section 10(a)(1)(A) recovery permits and recommended conditions for permit issuance for listed species; and coordinated and prepared a critical habitat designation for a rare plant.

California National Guard, Camp Roberts, Sacramento, CA. Associate Wildlife Biologist, analyzed military projects for impacts to federally- and state-listed species and discussed compliance regulations related to the ESA, consulted informally with USFWS, and discussed implementation and approval of their Integrated Natural Resource Management Plan

California Department of Fish & Game, Stockton, CA. Associate Wildlife Biologist, led completion of Environmental Permitting for the Hill Slough West Demonstration, a project which included CEQA, 404 Army Corps of Engineers Permit, NEPA, DFG Incidental Take permit, and USFWS Biological Opinion. She assisted in development of CALFED Environmental Restoration Program for the Suisun Marsh, which included planning for enhancement of managed and tidal wetlands, development of species and habitat conceptual models, and monitoring programs for the Suisun Marsh Implementation Plan and she participated in the planning team for the Los Vaqueros Reservoir Expansion Project outlining permitting requirements and CEQA mitigation requirements for the project. Ms. Niceswanger conducted wildlife studies for endangered species in the Suisun Marsh including the salt marsh harvest mouse, clapper rail, and black rail and also conducted California red-legged frog surveys in the East Bay Regional Parks. She organized and conducted vegetation surveys in the Suisun Marsh for marsh wide vegetation classification and change detection study.

Fort Hunter Liggett Military Installation, Fort Hunter Liggett, CA. Wildlife Biologist/Botanist, prepared documents such as Conservation Agreement for endemic plants on Fort Hunter Liggett Military Installation (FHL) and Management Plan for the arroyo toad on FHL. She was the Lead for endangered species surveys for rare plants and the arroyo southwestern toad; presented yearly endangered species educational compliance briefings to personnel stationed on FHL and contractors; and conducted sensitive species investigations for ESA and NEPA compliance. Additionally, she conducted bald eagle surveys and nest monitoring; and California tiger salamander and vernal pool fairy shrimp surveys, San Joaquin kit fox spotlighting including reporting and protocol development in coordination with the USFWS. She assisted in preparation of biological assessments for pre-construction/project review and worked with USFWS; reviewed and prepared NEPA documents including the conceptual and developmental phases; prepared sections of the Integrated Natural Resource Management Plan; conducted auditory songbird surveys targeting the least Bell's vireo; and ensured compliance with ESA and NEPA requirements especially during military training exercises by conducting pre-activity, and pre-construction surveys.

William T. Gorham, PhD
Senior Scientist, Senior Regional Program Manager

Education

PhD, Biological Sciences, University of Southern California, 1984
MS, Marine Studies, University of Delaware, 1978
BS, Biological Sciences, Stanford University, 1975

Years of Experience

With AECOM 22
With other firms 10

Professional Affiliations

American Fisheries Society
Association of Environmental Professionals
National Association of Underwater Instructors
Society of Environmental Toxicology and Chemistry

Dr. Gorham is a senior scientist and senior regional program manager with 32 years of experience in multidisciplinary environmental assessments and a special focus on managing larger, multidisciplinary projects in Southern and Central California. He has managed fast-track, multi-office projects utilizing resources from many AECOM offices, both nationally and globally, as well as dozens of environmental analyses for compliance with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). Specifically, Dr. Gorham has supported CEQA and NEPA related projects for refineries, pipelines, power plants (solar, geothermal, wind, and conventional gas), schools, roadways, ports, railroads, and various other infrastructures. He has led environmental feasibility analyses for solar development, oil, natural gas and water pipeline replacement, and integrated liquefied natural gas (LNG) facility projects. Additionally, he has managed biological surveys for both terrestrial and marine resources in both tropical and temperate locations.

Experience

Ventura Regional Sanitation District, Biological Monitoring Support, Ventura County, California. VRSD needed to comply with a wide variety of mitigation measures that resulted from the EIR for their most recent expansion. Managed the preparation of revegetation plans, wetlands studies, lichen studies, and a variety of other plans and studies required by the District. Supported the District when a geotechnical contractor inadvertently destroyed some wetlands. Directed the preparation of annual mitigation monitoring plans for submission to the CDFG, Ventura County, RWQCB, and Army Corps of Engineers.

Ventura County Planning Department, CEQA support on biology issues, Ventura County, California. The Ventura County Planning Department regularly receives projects subject to CEQA. Managed the preparation of the biological resources sections of the Initial Studies prepared by the County. When issues surface that require more focused support, provided that additional support. Issues have included previously graded land likely to have supported special-status species and the conversion of dune coastal habitat to wetland habitat to satisfy mitigation requirements.

ExxonMobil Pipeline Company, Biological Surveys for Fiber Optic Line, Angeles National Forest, California. Mobil needed to convert an idle crude oil pipeline section into use for fiber optics. Developed the required field studies to evaluate the presence of and potential impact to special-status species located along the pipeline. Surveys for both biological and cultural resources were required at the roughly 160 locations of ground disturbance in the Angeles National Forest. Direct knowledge of the pipeline and fiber optic cable installation allowed for a focused set of studies that met the USFS requirements

for a Biological Assessment and SHPO consultation.

Confidential Client, Municipal Solid Waste to Ethanol Manufacturing Facility, Southern California. A developer of MWS to ethanol facilities proposed to construct a facility in Southern California. Dr. Gorham managed the preparation of a feasibility analysis that considered the key environmental hurdles that the project was likely to face. Issues of air permits and emissions credits, water availability and quality, special-status species, traffic, and regulatory compliance were all evaluated. In addition, the study required a strategic recommendation about time frames and potential factors that could significantly affect the project's schedule. Dr. Gorham had to coordinate AECOM experts from several offices to tap into the breadth of knowledge of the key experts within AECOM.

Southern California Gas Company, Programmatic Biological Assessment, Southern and Central California. SCG wanted to establish a set of programmatic permits with the USFWS and CDFG for operations and maintenance on their extensive pipeline system in Southern and Central California. Managed the preparation of a biological assessment for submission to the BLM and USFWS (federal) and the CDFG (state) for each agency to use in the preparation of programmatic agreements. Helped SCG strategize on who would be the best lead agency (federal) and how best to keep the project moving forward. Developed the description of activities that SCG would be doing and identified impacts and appropriate mitigation to offset or avoid those impacts. Participated in agency meetings to negotiate terms of the Biological Opinion (federal) and Memorandum of Understanding (state). Since SCG needed to satisfy both federal and state agency requirements, coordinated the various parties to ensure a minimum of duplication of effort or conflicts between allowed actions and required mitigation.

Cities of Oxnard and Ventura, Biological Resources Assessment and Wetland Delineation for EIR/EIS, Ventura & Oxnard, California. Prepared wetlands delineation and assessment of impacts to biological resources for replacement of the U.S. 101 bridge across the Santa Clara River. Prepared a Natural Environmental Status Report for conformance with California Department of Transportation (Caltrans) and Federal Highway Administration requirements. Worked closely with California Department of Fish and Game (CDFG) and Caltrans biologists to identify potentially impacted species and mitigate impacts. Prepared CDFG 1601 permit (streambed alteration), 404 permit (wetlands dredge and fill), and other associated water quality permits.

Mobil Oil Corporation, Biological Survey, Kern County, California. ExxonMobil Pipeline Company was required to complete a variety of analyses and upgrades to their crude oil gathering and transport system in Kern County in an area well known as habitat for a number of special-status species. Managed the review of the sites by AECOM staff and specially qualified contractors. The team determined conservation measures to avoid impacts to biological resources while allowing EMPCo to maintain an aggressive schedule. This preclearance of the sites precluded subsequent project delays.

Texaco, Inc., Site Assessment, Filmore, Ventura County, California. Performed as project manager for two biological resource reviews of 1,000 acres in the open country of Fillmore, California, adjacent to and surrounding Lake

Piru. Conducted site visits, aerial reconnaissance, and database review. Determined potential uses and benefits from conservation of land.

Confidential Client, Critical Issues Analysis, Los Angeles, California. A confidential client sought to develop numerous sites in Southern California for photovoltaic solar power. AECOM was retained to conduct Critical Issues Analyses for over a dozen properties under consideration for development. Provided guidance and senior review for the development of the CIAs and associated documents. Due to the large areas under consideration by this client as well as other developers, prepared a "white paper" laying out the permitting challenges relating to biological issues in the Western Mojave area. As follow on to this task, worked closely with the client team to convene a panel of regional experts to address the problems of habitat loss for both individual special-status species but the desert region as a whole.

Wild Goose Gas Storage Company, Fatal Flaw Analysis and Environmental Permitting, Colusa County, California. Managed the preparation of fatal flaw analysis and environmental permitting documents. Conducted surveys for protected plants and animals; delineated wetlands, provided guidance for alignment to avoid environmental issues; and negotiated with agencies for appropriate levels of compensation and mitigation. Prepared a preliminary environmental assessment (PEA) for review by Wild Goose attorneys and submission to local planning agency representatives.

Wayne Vogler
Project Manager/Senior Biologist

Professional History

AECOM, Project Manager
2010-present
URS Corporation, Project Scientist
2006-2010
(sd)^2 ecology, Owner, Biologist
2003-2006
LFR Levine Fricke, Scientist,
1995 – 1998

Education

BS, Biological Sciences, Concentration in Ecology and Environmental Science, University of California, Irvine

Years of Experience

With AECOM: 2
With other firms: 15

Training and Certifications

Certified Project Manager, 2009, URS Corporation
USFWS Project Authorized to Survey, Handle, and Relocate California Red-legged Frogs
USFWS Project Authorized to Survey, Handle, and Relocate Tidewater Goby
California Scientific Collection Permit (SC-008527)
CDFG Authorization to Collect Voucher Specimens

Technical Specialties

Project Management
Listed Species Take Permitting
Listed Species Surveys
Wetland Delineation
Mapping Services
NEPA/CEQA Permitting and Environmental Analysis
Safe Work Culture

Mr. Wayne Vogler's understanding of the project's and client's goals have led to his successful involvement in several large and complex projects. Mr. Vogler communicates effectively and efficiently with clients and regulators finding resolution even amongst competing interests of multiple regulatory agencies. Mr. Vogler's familiarity with both the natural environment and project needs has proven particularly successful in minimizing effects to natural resources while allowing for project completion. Mr. Vogler developed and instituted resource protection measures, prepared restoration plans, and conducted construction monitoring at one of the largest hydrocarbon remediation projects along the Western Coast of the U.S. He has maintained compliance with Health and Safety training requirements, including specialized training, since 1996; he is fully-versed and indoctrinated in a behavior based health and safety culture.

Mr. Vogler's clients have ranged from multi-national oil and gas firms to independent oil producers, airports, municipalities, counties, and alternative energy developers. Mr. Vogler has been active in all phases of a project life cycle from initial assessment and siting studies, to entitlement and endangered species permitting, through construction monitoring, and finally restoration implementation and monitoring. As a seller-doer, Mr. Vogler is adept at recognizing client's needs and suggesting appropriate approaches resulting in successful projects. Mr. Vogler has also operated profitably as an independent consultant.

Project Management Experience

Chevron Environmental Management Company, McKittrick Gathering System Pipelines, Kern County, CA. Project Manager for the biological study and endangered species permitting (federal and state) in support of the removal of three pipelines with an aggregate length of approximately two miles. Services included project approach development, biological surveys, jurisdictional waters determinations, and endangered species permitting. Additional tasks included work scope development, health and safety systems, agency coordination, protocol botanical and wildlife surveys, budgeting, and client interactions.

Santa Maria Pacific, Client Service Manager, Santa Maria, CA. A key team member in attracting and retaining this new independent oil and gas producer. Acting as the champion in maintaining client satisfaction and growing opportunities with client, work with a multi-disciplinary team in completing individual projects while presenting a unified and uniform image. Managing over $600,000 in project budgets with services ranging from listed plant and animal studies, oak tree restoration, CEQA permitting, and construction monitoring.

Chevron Environmental Management Company, Program Biologist TDPI and Unocal Legacy Pipelines, Kern, San Luis Obispo, Santa Barbara, Ventura, Monterey Counties, CA. Program Biologist for a large pipeline portfolio identifying programmatic biological needs and efforts; both conducting work efforts and directing biologists from multiple offices in work efforts. Implementing the appropriate level of biological oversight to maintain regulatory compliance while not taxing work efforts.

Chevron (Unocal), Guadalupe Restoration Project, San Luis Obispo County, CA. Ecological Field Coordinator/Monitoring Task Leader for the Guadalupe Restoration Project. Developed, coordinated, and conducted biological monitoring and permit compliance of 2,800-acre remediation site. Consulted and coordinated

with agencies' Onsite Environmental Coordinator about project work activities and permit compliance. Participated and directed personnel in performance of botanical and wildlife survey and monitoring efforts. Interacted with construction personnel and coordinated efforts to avoid disturbance to sensitive species and habitats. Developed and provided senior review of ecological reporting documents. Initiated protocols to ensure compliance with over 1,200 permit conditions. Delineated federal and state jurisdictional wetlands. An active team member for over ten years of the life of the project.

Multiple Projects. Concurrently performing as the Project Manager of biological survey efforts (budgets in excess $100,000), endangered species permitting efforts, wetland studies, oak tree restoration, and project monitoring. Has lead the office in biological sales through the addition of new clients and the diversification of existing work efforts. Projects have included wetland delineations, oak tree restoration, permitting, habitat assessment, flora and fauna surveys, pipeline removals, remediation sites, and several others.

Phase I ESAs, Asbestos and Lead Surveys. Managed and trained staff in site assessment and asbestos/lead investigations. Conducted 100+ site assessments in California, Colorado, Hawaii, Illinois, Indiana, Nevada, and New Mexico. Subject properties ranged from multi-acre vacant, natural lands to large industrial facilities to a pharmaceutical manufacturing plant. Tasks included historic aerial photo interpretation, historical property usage research, site investigation, data interpretation, and report preparation.

Project Experience

ConocoPhillips RM&R, Program Biologist California Orphan Pipeline Abandonment Program, Kern, San Luis Obispo, Santa Barbara Counties, CA. Managing pipeline identification, assessment, and mapping efforts. Program Biologist for an approximate 500 mile pipeline portfolio identifying programmatic biological needs and efforts; both conducting work efforts and directing biologists from multiple offices in work efforts. Implementing appropriate level of biological oversight to maintain regulatory compliance while as abandonment efforts continue.

Laguna County Sanitation District. Recycled Waterline Phase 3, Santa Barbara County, CA. Performed biological surveys, prepared submittal applications, and negotiated with USFWS and CDFG toward obtaining Incidental Take Permits for several threatened and endangered species, including California tiger salamander and California red-legged frog. Prepared and submitted local entitlement documentation. Pipeline is 10.5 miles in length and will be installed using numerous techniques to avoid and minimize impacts to sensitive resources.

Santa Maria Pacific. Multiple Oil Fields, Santa Barbara County, CA. Prepared application packages for state and federal jurisdictional waters permits, federal and state incidental take permits, and local entitlement permitting. Performed and managed exhaustive biological and cultural resource surveys over several thousands of acres of active and new oil field properties. Successful in obtaining authorizations to allow for the expansion of oil and gas extraction activities.

Southern California Edison. Gale-Pisgah-Lugo Transmission Corridors, San Bernardino County, CA. Vegetation mapping and habitat assessment along transmission corridors in support of re-conductoring and other corridor improvements. Field manager for protocol desert tortoise surveys.

Ausra, Inc. Carrizo Energy Solar Farm AFC, San Luis Obispo County, CA. Performed biological surveys in support of Application for Certification for an 180MW thermal power generating facility located within San Luis Obispo County. Efforts included two years of protocol surveys for blunt-nosed leopard lizard of the 1,300-acre site.

SunPower California Valley Solar Ranch, San Luis Obispo County, CA. Performed biological surveys over approximately 5,700-acres in support of county entitlement studies for an 250MW solar generating facility. Tasks included habitat assessment, small mammal trapping, San Joaquin kit fox and blunt-nosed leopard lizard assessment, waters/wetlands assessment, and vegetation mapping, and rare plant surveys. Act as a technical approach review body advising the project

manager in project needs and methods.

Anonymous Client, Solar Energy Facility AFC, Johnson Valley, San Bernardino County, CA Biologist on survey team in support of Application for Certification for a 9,000-acre solar array siting. Conducted habitat assessment, general floristic surveys, rare plant surveys, and team leader for protocol desert tortoise surveys.

Stirling Energy Systems Solar One Energy Facility AFC and EIS, San Bernardino County, CA. Biologist on survey team in support of an Application for Certification for an 800MW thermal generating facility located within San Bernardino County. The project will cover 15,000 acres and will include over 36,000 solar dishes. Desert tortoise, Mohave ground squirrel, Mojave fringe-toed lizard, vegetation mapping, and rare plant surveys were conducted over majority of project area.

BP Alternative Energy Watson Cogeneration Steam and Electric Reliability Project AFC, Carson, CA. Lead biologist in support of Application for Certification for the construction of a combustion turbine generator and two cooling towers within the existing Watson Cogeneration Facility. Tasks included site surveys, impact analysis, report preparation, and meeting with and coordinating with the California Energy Commission staff.

BP Alternative Energy Hydrogen Energy California AFC, Kern County, CA. Biologist in support of an Application for Certification for an 390MW Integrated Gasification Combined Cycle power generating facility within Kern County. This project will capture carbon dioxide byproducts for injection at the Elk Hills Oil Field Unit as an enhanced recovery technique. Role included team leader for blunt-nosed leopard lizard surveys and senior biologist advising survey approach, jurisdictional waters determinations, and conducting surveys.

Reliant San Gabriel Generating Station Project AFC, San Bernardino County, CA Primary author of biology section in Application for Certification for a 696MW peaker power plant. This project consists of two natural gas-fired combined cycle generators located on 60 acres within the existing Etiwanda Generating Station power plant site. Tasks included biological surveys of plant and lay down areas, federal and state jurisdictional waters determinations and permit preparation, and report preparation.

CPV Sentinel Energy Project, Riverside County, CA. Primary author of biology section in Application for Certification for an 850MW peaker power plant. This project consists of eight natural gas-fired combustion turbine generators over 37 acres of undeveloped, Sonoran desert terrain. Tasks included biological surveys of plant and lay down areas, desert tortoise and Coachella Valley fringe-toed lizard habitat assessment, federal and state jurisdictional waters determinations, and report preparation.

Solar Millennium Blythe and Palen Solar Energy Projects, San Bernardino, CA. Protocol surveys for desert tortoise in support of permitting a 1,000MW and a 500MW solar-thermal generating facilities. Tasks included over 50 miles of transects to locate and record desert tortoise sign.

BP Alternative Energy Kern Front AFC, Kern County, CA. Lead biologist in the characterization and surveys of the proposed project site. Floristic survey of proposed site, San Joaquin kit fox assessment, agency consultation, and presentation of findings in support of Application for Certification preparation. Proposed project not submitted due to re-siting as the Hydrogen Energy California project.

BP Alternative Energy Lost Hills AFC, Kern County, CA. Lead biologist in the characterization and biological constraints evaluation during site selection. Floristic survey of proposed site, San Joaquin kit fox assessment, and presentation of findings in support siting analysis. Proposed project not submitted due to re-siting as the Hydrogen Energy California project.

Listed Species Experience

California Red-legged Frog (*Rana aurora draytonii*) identified presence through

eyeshine survey techniques for hundreds of individuals, pit-tagged dozens of individuals, identified and differentiated individuals from other amphibian species.

- San Luis Obispo and Santa Barbara County. Conducted presence/absence surveys for California red-legged frogs and mapped habitats. Surveys and habitat assessment throughout several water courses and numerous other aquatic habitats.
- Chevron Guadalupe Restoration Project. Permitted to survey, capture, handle, and relocate California red-legged frogs. Includes pit-tagging and radio-tracking of individuals to monitor relocation efforts. Adult surveys include quarterly census surveys, presence/absence, and construction site clearance surveys. Survey efforts for tadpoles, including dip-netting and use of minnow traps.
- Chevron Wylie Remediation Project, Santa Maria, CA. Habitat assessment, clearance surveys of work areas, and consultations with regulatory agencies.
- Rancho Arroyo Grande Winery, County of San Luis Obispo, CA. Conducted a habitat assessment and USFWS protocol surveys for California red-legged frog, including two-striped garter snake (*Thamnophis hammondii*), and western spadefoot (*Spea hammondii*). Mr. Vogler was the primary author of the report submitted June 2003 to the County of San Luis Obispo.
- Capture, Handling, and Pit Tagging Workshop, Grover Beach, CA. Small group led by Galen Rathbun on techniques to safely capture and handle California red-legged frogs, using bullfrogs (*Rana catesbiana*) as surrogates. Hands-on use of pit tag equipment on live bullfrogs. Workshop conducted in support of obtaining U.S. Fish and Wildlife approval to conduct such activities under the Guadalupe Restoration Project Biological Opinion.

California Tiger Salamander (*Ambystoma californiense*)

- California Tiger Salamander Workshop, Monterey, CA. April 2009.
- California Tiger Salamander Upland Habitat Workshop, Monterey, CA. June 2010.
- Santa Maria Pacific Careaga Lease, Orcutt, CA. County entitlement permitting, species avoidance and minimization measures development, burrow scoping, burrow collapse, and construction monitoring. Survey included using a fiber optic burrow scope to investigate burrows within a 4-acre work area.
- Chevron Wylie Remediation Project, Santa Maria, CA. Lead Designated Biologist. Burrow scope surveys, burrow collapse, construction monitoring, and agency consultation. Survey included using a fiber optic burrow scope to investigate burrows within an 8-acre work area. Daily morning clearance surveys prior to work initiation.
- Aera Energy, Oil Field Assessment, Cat Canyon, CA. Assessment of sampling locations to determine potential for California tiger salamander presence.

Blunt-nosed Leopard Lizard (*Gambelia sila*) have found and identified adult and juvenile individuals, able to differentiate individuals from other lizard species, including side-blotched lizard (*Uta stansburiana*) and western whiptail (*Aspidoscelis [Cnemidophorus] tigris*).

- Pipeline Removal Project, McKittrick, CA. Two years of protocol breeding season for presence. Reported findings to regulatory agencies.
- Sunpower California Valley Solar Ranch, California Valley, San Luis Obispo County, CA. Co-technical lead biologists for protocol adult season and juvenile survey efforts. Developed survey strategy, logistical methods, and approach for deploying over 24 biologists throughout a 9 square mile project site under rigorous protocol conditions. Developed approach to ensure survey met strict California Department of Fish and Game survey

standards.

- Solar Energy Project, California Valley, San Luis Obispo County, CA. Conducted two years of protocol adult breeding season and juvenile surveys over a one and a half square mile parcel.
- Energy Production Facility, Elk Hills, Kern County, CA. Conducted protocol adult breeding and juvenile surveys over a half square mile parcel and linears. Acted as survey lead.
- Attended The Wildlife Society workshop in survey and monitoring techniques for blunt-nosed leopard lizard.

Desert Tortoise (*Gopherus agassizii*)

- Southern California Edison, Gale-Pisgah-Lugo Corridors, San Bernardino County, CA. Field manager for habitat assessment and survey of 80+ linear miles of transmission corridors. Protocol surveys for desert tortoise.
- Solar Energy Project, Johnson Valley, San Bernardino County, CA. Habitat assessment and survey of 14 square miles. Protocol surveys for desert tortoise. Acted as survey crew leader. Other species commonly observed include desert horned lizard (Phrynosoma platyrhinos) and long-nosed leopard lizard (Gambelia wislizenii).
- Solar Energy Project, Johnson Valley and Hector Valley, San Bernardino County, CA. Survey area of over 20,000-acres for protocol surveys for desert tortoise. Surveyed project site and proposed transmission line corridors. Also conducted general habitat mapping, Waters of the U.S. delineations, rare plant surveys, and habitat surveys for the Mojave ground squirrel (Spermophilus mohavenissi).
- Desert Tortoise Council Annual Surveying, Monitoring, and Handling Techniques Workshop. Training included survey techniques for individuals and their sign, assessment of habitat, handling techniques, and burrow construction.

San Joaquin Kit Fox (*Vulpes macrotis mutica*)

- Sunpower California Valley Solar Ranch, California Valley, San Luis Obispo County, CA. Habitat assessment, den identification, and spot light surveys over 9 square mile site and surrounding habitat. Included identification and recognition of potential giant kangaroo rat (*Dipodomys ingens*) precincts and haystacks.
- Chevron EMC McKittrick Gathering Pipeline Removal Project, McKittrick, CA. Verification of presence through scat and tracks. Two years of surveys to locate suitable and occupied dens. Consult with both federal and state agencies regarding incidental take permitting for this species. Consulting with California Department of Fish and Game for incidental take of San Joaquin antelope squirrel (*Ammospermophilus nelsoni*).

Tidewater Goby (*Eucyclogobius newberryi*)

- City of Santa Barbara Laguna Channel Tide Gate Repair. Lead Biologist. Conduct survey for tidewater goby prior to work activities. Captured and relocated individuals prior to cofferdam placement and de-watering activities; monitored construction activities to avoid impacts to species. Field work included seining tidal lagoon channels, installation of blocking nets, capture and identification of listed and common species encountered, and transportation/release. Prepared biological monitoring report for ACOE and USFWS submittal.
- Santa Barbara Airport, Los Carneros and Tecolotito Creek Realignments. Captured and relocated individuals from the former creek channels. Population census in restored/realigned creek channels. Field work included seining creek channels, dip net capture, identification of listed and common species encountered, and transportation/release.

Burrowing Owl (*Athene cunicularia*)

- Chevron EMC McKittrick Gathering Pipeline Removal Project, McKittrick,

CA. Assessment surveys to determine burrowing owl presence in support of project permitting. Evaluate burrows for the presence of burrowing owl occupation. Documented a breeding pair of individuals.

- Sunpower California Valley Solar Ranch, California Valley, San Luis Obispo County, CA. Assessment surveys to determine burrowing owl presence in support of project permitting. Evaluate burrows for the presence of burrowing owl occupation. Documented active nest burrows.
- Chevron TDPI Legacy Pipeline Portfolio, Kern County, CA. Assessment surveys to determine burrowing owl presence prior to construction activities. Evaluate burrows for the presence of burrowing owl occupation
- Chevron Guadalupe Restoration Project. Assessment surveys to determine burrowing owl presence prior to construction activities. Evaluate burrows for the presence of burrowing owl occupation. Documented several occupied burrows and artificial burrows.

General Vegetation Surveys, Wildlife Surveys, and Habitat Assessments

- Shadow Mountain road Extension, San Bernardino County, CA. Wetland jurisdictional determination of the Mojave River in support of proposed road extension and bridge construction. Applied both federal and state criteria to delineate jurisdictional boundaries following protocol delineation methods. Conducted field work and completed technical report for submittal to Army Corp of Engineers and California Department of Fish and Game.
- Conducted regimented surveys and mapping efforts for La Graciosa thistle (*Cirsium loncholepsis*), surf thistle (*Cirsium rhothopilum*), and beach spectacle-pod (*Dithyrea maritima*). Initial survey and mapping of presence. Annual censusing of populations. Monitoring of construction activities to ensure avoidance of disturbance to individuals and habitat. Summer 1998 to June 2006.
- Lompoc yerba santa (Eriodictyon capitatum). Initial survey for and confirmation of presence of Lompoc yerba santa at independent oil field lease. Assist client in development of protection measures. Continued surveys for presence throughout remainder of leaseholds.
- Presence survey. Population mapping and habitat assessment for Gaviota tarplant (*Deinandra increscens* ssp. *villosa*) for a naturally vegetated 16-acres site at Vandenberg Air Force Base, California. June 2006.
- Habitat Assessment of 1,200 acre active oil field in support of CEQA permitting effort. Developed scope for survey effort, directed field crews to assure accurate and efficient data collection, directed reporting effort. Performed as project manager for this effort and $140,000 cultural resources survey effort; completing both within budget and to client satisfaction.
- Habitat Inventory and Ecological Database (HIED) development for the 2,800-acre Guadalupe Restoration Project. Scope included the initial mapping of sensitive flora, sensitive fauna, weed infestation, habitat quality, and several other parameters. Data developed from aerial photograph interpretation, qualitative and quantitative surveys, and specific presence/absence surveys per species. Updated annually. 2002 to 2006.
- Pre-disturbance assessment and restoration monitoring surveys to determine habitat composition and quality. Developed protocols for photograph documentation efforts. Spring 1998 to summer 2006.
- Construction monitoring to ensure compliance with over 1,200 permit conditions. Work with contractors and construction personnel to minimize native habitat disturbance and avoid sensitive and listed flora and fauna. Spring 1998 to present.

Rocky Brown
Project Biologist

Professional History

ENSR/AECOM
Impact Sciences, Inc.
Rincon Consultants, Inc.
West Coast Environmental and Engineering, Inc.

Education

BA, Environmental Science, The Colorado College

Years of Experience

With AECOM: 3
With other firms: 7

Technical Specialties

CEQA Documentation
Sensitive Plant and Wildlife Surveys
Jurisdictional Waters Delineations
Clean Water Act Section 404 Permitting
CDFG Section 1600 Streambed Alteration Agreement Permitting
Constraints/Impacts Analyses
Comprehensive Mitigation and Monitoring Programs
Mitigation Implementation/Monitoring

Professional Affiliations

The Wildlife Society, Western Section

Training and Certifications

38-Hour US Army Corps of Engineers Wetland Delineation and Management Training
LA County Cooperative Extension – Invasive Plant School
California Native Plant Society – Riparian Ecology and Plant Identification
Desert Tortoise Council – 2009 Desert Tortoise Workshop
Fairy Shrimp Identification Workshop

Mr. Brown has over ten years of experience in the environmental consulting field with experience in a wide variety of biological work throughout southern and central California. His experience includes conducting habitat assessments/constraints analyses; jurisdictional delineations and wetland permitting; habitat restoration/revegetation planning and implementation monitoring; tree and vegetation surveys/mapping; sensitive species surveys; and construction monitoring. He has drafted numerous biological resources technical reports documenting the results of these surveys as well as jurisdictional waters permits, such as Streambed Alteration Agreements, Section 404 and Section 401 certifications, and CEQA documentation. He has served as the lead biologist on projects for clients ranging from municipalities to private developers and also has experience providing on-call biological resources support for large utilities projects involving complex permitting, pipeline/ right-of-way maintenance issues, and construction monitoring. Mr. Brown holds a certification in Army Corps of Engineers Wetland Delineation and has completed several supplemental training courses, including the Los Angeles County Cooperative Extension's Invasive Plant Management program, the California Native Plant Society's Riparian Ecology and Plant Identification, the Desert Tortoise Council's 2009 Desert Tortoise Workshop, and a fairy shrimp identification workshop.

Project Experience

California Red-legged Frog Surveys, Baron Ranch Restoration, County of Santa Barbara, *Santa Barbara County, California*. Performed several nights of surveys along Arroyo Quemado in central Santa Barbara County for California red-legged frogs (*Rana draytonii*) (CRLF). Captured frogs and recorded information including GPS location, sex, weight, and length, as well as scanned each to determine whether PIT tags were present to determine if they had been previously capture. Prepared report detailing survey methods and results.

Biological Construction Monitoring/Wildlife and Nesting Bird Surveys, Tajiguas Landfill Reconfiguration, County of Santa Barbara, *Santa Barbara County, California.* Conducted weekly pre-construction surveys in areas of the landfill being altered to increase capacity. Surveys were focused on suitable habitat for California red-legged frog and for nesting birds. Assisted in a nighttime survey for CRLF, identifying one adult and translocating it off-site to an approved area of suitable habitat. Identified cliff swallow (*Petrochelidon pyrrhonota*) nesting activities and, at the direction of the California Department of Fish and Game, removed nesting materials before nests became active, allowing the project to proceed unimpeded. Also administered worker environmental awareness training for new

personnel focusing on CRLF.

Principal Biologist, Nesting Bird, Desert Tortoise, and Burrowing Owl Survey, Victor Substation Upgrade, Southern California Edison, *Victorville, California.* Performed a survey at SCE's Victor Substation to identify the presence of nesting birds, desert tortoise (*Gopherus agassizii*), burrowing owl (*Athene cunicularia*) and other sensitive biological resources. Identified several house finch (*Carpodacus mexicanus*) nests in equipment stored within the facility. Monitored the nests and, once determined inactive, removed the nesting materials to prevent reuse during implementation of the project. Monitored construction on several occasions to ensure compliance with regulatory requirements and prepared a report at the completion of the project detailing the results of the survey and monitoring efforts, which was submitted to the California Department of Fish and Game.

Desert Tortoise Survey, Three Solar Power Generation Facilities, Private Developer, *Blythe/Palen/Ridgecrest, California*. Performed over 280 hours of transect surveys for desert tortoise on three large sites proposed for development of solar power generation facilities and along their proposed transmission line routes. Assessed areas following USFWS survey protocols and documented tortoise sign through photography and GPS telemetry. Data used in preparation of the Application for Certification for submittal to the California Energy Commission. During project implementation, conducted pre-construction surveys at the Blythe site for desert tortoise, kit fox (*Vulpes macrotis*), burrowing owl, and American badger (*Taxidea taxus*) and monitored construction to ensure compliance with federal and state permit conditions.

Nesting Bird Surveys, Residential Development, Home Developer, *Newbury Park, Ventura County, California*. Performed nesting bird surveys throughout the breeding season on a lot vegetated by coastal sage scrub and coast live oak woodland. Observed nesting of several species, including mourning dove (*Zenaida macroura*), California towhee (*Melozone crissalis*), and Anna's hummingbird (*Calypte anna*).

Desert Wildlife Habitat Survey, Solar Power Plant Permitting Project, *San Bernardino/Riverside Counties, California*. Assisted species experts in conducting over 30 hours of habitat surveys on several parcels proposed for solar power generation facility development or mitigation preservation. Assessed each property for signs of use by sensitive desert wildlife, including desert tortoise, Mohave ground squirrel (*Spermophilus mohavensis*), and burrowing owl and utilized GPS-enabled camera to document site conditions. Prepared a detailed photograph log and coordinated with GIS technician to map photograph locations. Consolidated experts' findings and summarized results for submittal to client.

Principal Biologist, CEQA Biological Study and Documentation, Residential Development Projects, Home Developer, *Camarillo, California*. Conducted assessment of biological resources on a 28-acre former seminary site proposed for residential redevelopment adjacent to Calleguas Creek. Mapped vegetation and coordinated GIS mapping of that and other biological resources present on the site. Conducted research of regulatory framework and authored biology portion of the EIR document, including assessing impacts and outlining mitigation actions.

Robin Murray
Biologist

Education

BS, Botany, Environmental Biology, Humboldt State University

Years of Experience

With AECOM 2
With other firms 4

Technical Specialties

Listed Species Surveys
Vegetation Surveys
Plant Identification
Habitat Assessment
Wetland Delineation
Jurisdictional Determination
Technical Writing
NEPA/CEQA Permitting and Environmental Analysis
Safe Work Culture

Training and Certifications

Professional Development
California Tiger Salamander Workshop. The Wildlife Society, Livermore, CA. 2011.
Anostraca and Notostraca Identification Training. The Wildlife Society. San Luis Obispo, CA. 2010.
Desert Tortoise Handling Workshop. Desert Tortoise Council. Ridgecrest, CA. 2010.
Certified Project Manager. URS Corporation. 2010.
Rare Plants of Coastal San Luis Obispo County Workshop. California Native Plant Society, San Luis Obispo, CA. 2009.
Blunt-nosed Leopard Lizard Identification Workshop. The Wildlife Society, Bakersfield, CA. 2009.
ACOE Wetland Delineation Training, Wetland Training Institute, San Diego, CA. 2008.

Ms. Robin Murray is a biologist with six years of experience within California. Her expertise in the botanical field has led to the successful completion of rare plant surveys and habitat assessments, as well as wetland and waters determinations. As field crew lead, she has also trained biologists in the identification and habitat requirements for target species. Ms. Murray has extensive experience characterizing and evaluating plant communities in rugged and remote terrain. She has created vegetation community maps and conducted numerous target species surveys for rare and sensitive plant species on thousands of acres.

While Ms. Murray is particularly skilled as a botanist, she is also experienced as a wildlife biologist. She has a strong knowledge of plant and wildlife species of the San Joaquin Valley and Mojave Desert, as well as the central and northern coasts of California, with an emphasis on special-status species. Ms. Murray's focus on project and client goals, as well as her preparation of technical reports in support of project permitting efforts, has led to the successful accomplishment of project objectives.

Habitat Assessments and Botanical Experience

- Identified and documented a population of the Federally Endangered Gaviota tarplant (*Deinandra increscens* ssp. *villosa*) on Vandenberg Air Force Base.
- Merced, Madera, Tulare, Fresno and Kern Counties, CA- Participated in High Speed Train rare plant surveys for both the Merced to Fresno and Fresno to Bakersfield segments of the proposed alignment and alignment alternatives. Identified and documented populations of (*Myosurus minimus* ssp. *apus*) and recurved larkspur (*Delphinium recurvatum*).
- Elk Hills, near Tupman, CA- Identified and documented a large population (over 1,000 individuals) of Hoover's woolly-star (*Eriastrum hooveri*).
- Orcutt, CA- Supervised the installation of over 400 coast live oak (*Quercus agrifolia*) seedlings in accordance with the Oak Tree Management Plan for Santa Maria Pacific's Careaga oil field. Monitored the condition of the seedlings and provided adaptive management strategies to enhance the establishment of the seedlings and success of the restoration effort.
- Orcutt, CA- Conducted rare plant surveys and habitat assessment throughout the Careaga oil field to document sensitive plant species within the property. Generated a report including maps of the observed species and recommendations for avoidance and conservation of identified sensitive species.
- Orcutt, CA and surrounding area- Conducted rare plant surveys and habitat assessments throughout the Escolle, Curletti and Northwest

Safety
OSHA 40-Hour HAZWOPER
OSHA 8-Hour HAZWOPER Supervisor
PASSPORT
Loss Prevention System
Smith System Driver Training
CPR/First Aid/AED

Casmalia properties to document sensitive plant species within each property.

- Conducted a rare plant survey along an existing transmission line from Kramer Junction to Victorville, CA (32 miles).
- Identified and documented over 20 distinct populations of the rare black-flowered figwort (*Scrophularia atrata*).
- Identified and documented a population of California Endangered seaside bird's beak (*Cordylanthus rigidus* ssp. *littoralis*).
- Identified and documented a population of Federally Endangered Lompoc yerba santa (*Eriodictyon capitatum*).
- Conducted over 250 hours of surveying for rare and/or listed desert plant species in Johnson Valley, CA.
- Identified and documented a large population (over 1,500 individuals) of desert polygala (*Polygala acanthoclada*).
- Identified and documented first two confirmed populations of giant fawn lily (*Erythronium oregonum*) within California.
- Surveyed over 50 miles of logging roads for Howell's montia (*Montia howellii*) and identified over 50 populations.
- Identified and documented over 100 populations of running pine (*Lycopodium clavatum*).
- Surveyed for and identified populations of Bald Mountain milk-vetch (*Astragalus umbricatus*), small groundcone (*Boschniakia hookeri*), Meadow sedge (*Carex praticola*), coastal fawn lily (*Erythronium revolutum*), and indian pipe (*Monotropa uniflora*), among others.
- Successfully participated in Rare Plants of Coastal San Luis Obispo County workshop offered by the California Native Plant Society

Listed Wildlife Species Experience

Blunt-nosed Leopard Lizard (*Gambelia sila*)

Found and identified adult and juvenile individuals, able to differentiate individuals from other lizard species, including side-blotched lizard (*Uta stansburiana*) and western whiptail (*Aspidoscelis [Cnemidophorus] tigris*). Level II Surveyor.

- Pipeline Removal Project, McKittrick, CA. One year of protocol breeding season surveys for presence. Reported findings to regulatory agencies.
- Sunpower California Valley Solar Ranch, California Valley, San Luis Obispo County, CA. Biologist for protocol adult season and juvenile survey efforts. Worked with over 24 biologists throughout a 9 square mile project site under rigorous protocol conditions.
- Solar Energy Project, California Valley, San Luis Obispo County, CA. Conducted one year of protocol adult breeding season and juvenile surveys over a 1.5 square mile parcel.
- Successfully participated in The Wildlife Society workshop in survey and monitoring techniques for blunt-nosed leopard lizard.

Burrowing Owl (*Athene cunicularia*)

- Performed borrowing owl monitoring effort using project-specific protocol for the Imperial Irrigation District, El Centro, CA

California Tiger Salamander (*Ambystoma californiense*)

- Santa Maria Pacific Careaga Oil Field, Orcutt, CA. County entitlement permitting, species avoidance and minimization measures development, burrow scoping, burrow collapse, and construction monitoring. Survey included using a fiber optic burrow scope to investigate burrows within a 4-acre work area.
- Chevron Wylie Remediation Project, Santa Maria, CA. Burrow scope surveys, burrow collapse, construction monitoring. Survey included using a fiber optic burrow scope to investigate burrows within an 8-acre work area.
- Successfully participated in the California Tiger Salamander Workshop. Training focused on habitat requirements and sampling techniques for the species.

Desert Tortoise (*Gopherus agassizii*)

- Solar Energy Project, Johnson Valley, San Bernardino County, CA. Survey crew leader for habitat assessment and protocol survey of 14 square miles. Protocol surveys for desert tortoise. Other species commonly observed include desert horned lizard (*Phrynosoma platyrhinos*) and long-nosed leopard lizard (*Gambelia wislizenii*).
- Successfully participated in the Desert Tortoise Council workshop on desert tortoise. Training included survey techniques for individuals and their sign, assessment of habitat, handling techniques, and burrow construction.

Small Mammal Trapping

- Solar Energy Project, California Valley, San Luis Obispo County, CA. Under the permit and training of Paul Collins, curator of Santa Barbara Natural History Museum, baited Sherman's traps and processed small mammals, including San Joaquin pocket mouse, California pocket mouse (*Chaetodipus californicus*) and Heermann's kangaroo rat (*Dipodomys heermanni*).

Waters and Wetland Jurisdictional Determinations

- Delineated the limits of jurisdiction of the United States Army Corps of Engineers as well as the California Department of Fish and Game for multiple drainages near Lake Elsinore, CA.
- Delineated the limits of jurisdiction of the United States Army Corps of Engineers as well as the California Department of Fish and Game for a portion of the Mojave River near Helendale, CA.
- Delineated the limits of jurisdiction of the California Department of Fish and Game for multiple drainages for a large property proposed for further wind energy development. Tehachapi, CA

BP Deepwater Horizon Spill Response

June 2010-March 2011

Served as the Mississippi Natural Resource Advisor (NRA) Team Lead. The NRA program was created to provide Resource at Risk guidance to the Operations Task

Forces conducting beach cleanup activities. Resources at Risk included sensitive species, habitat, and archaeological sites. NRAs provided guidance to protect resources from further damage that may be caused by response and clean-up activities. As Team Lead, Ms. Murray coordinated with numerous agencies (U.S. Fish and Wildlife Service, Environmental Protection Agency, U.S. Coast Guard, Harrison and Hancock Counties) on a daily basis, and coordinated with multiple stakeholders to develop creative solutions for complex problems, facilitating project cleanup goals while also protecting sensitive resources. Ms. Murray also fostered a positive working relationship between operations crews and the NRA team.

Permits

- California Department of Fish and Game Scientific Collecting Permit SC-10928
- California Department of Fish and Game Authorization to Collect Voucher Specimens of State-Listed Endangered, Threatened, and Rare Plants Permit #2081(a)-09-73-V