

**STATE OF CALIFORNIA  
CALIFORNIA ENERGY COMMISSION**

**DOCKET**

**08-AFC-4C**

DATE May 28 2009

RECD. June 04 2009

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Petition to Amend Decision  
Of Certification

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Docket No.  
08-AFC-4C

**PETITION TO MODIFY  
FOR THE ORANGE GROVE PROJECT**

May 28, 2009

In conformance with the requirements 1769(a) of the CEC's Siting Regulation (20 CCR 1769(a)) Orange Grove Energy, L.P., project owner, petitions the California Energy Commission (CEC) based on the following:

**DESCRIPTION OF THE MODIFICATION**

The proposed modification is to allow a temporary work space to be utilized for stringing pipe outside of the previously designated project construction disturbance footprint in an area that has already been 100 percent disturbed by former dairy farm activities. Allowing pipe stringing outside of the previously designated construction disturbance footprint will facilitate the completion of the horizontal directional drilling (HDD) portion of the gas pipeline under riparian habitat. The work area (Stringing Area) would be approximately 50 feet wide and 1,300 feet in length. Exhibit 1 depicts the proposed Stringing Area on an aerial photo background. The Stringing Area will allow the construction contractor to lay out and weld together the total length of pipe needed for the HDD so that the pipe can be pulled into the bore in one smooth motion. There are no changes being requested to construction activities except for the allowance to assemble this pipe segment outside the previously designated construction footprint.

The northeast side of the horizontal directional boring has been identified as the candidate stringing area instead of the southwest side of the boring because this will allow stringing work to maintain the 100-foot setback from riparian habitat that is required by BIO-7 for work between March 1 and September 15. To accommodate stringing of the pipe on the northeast side of the boring, the HDD rig may need to drill from the southwest side of the boring instead of from the

northwest side, but there would be no work outside the environmentally approved limits except for the Stringing Area.

The proposed Stringing Area would be located on disturbed land formerly used as dairy farm and currently owned by Gregory Canyon Ltd. Currently, the area is occupied by a storage area as can be seen in the aerial photo base in Figure 1. Pipes, poles, steel plates, cargo containers and other materials and equipment currently stored in rows in the area will be removed by the owner or relocated within the storage area.

The Conditions of Certification, as outlined within the Final Commission Decision (FCD), will not have to be revised in any way in response to the proposed modification. The FCD Conditions of Certification are adequate for reducing all potential impacts associated with the proposed modification.

### **NECESSITY FOR THE MODIFICATION**

The project description in the AFC, responses to data requests, and other input provided by the Applicant during the licensing process was based on information from pipeline construction contractors and initial project design work available at the time. Further progression of the design and construction contracting process has revealed that the proposed stringing of the total length of pipe in a single pull through the horizontal boring could substantially benefit the project. A single pull will maximize the likelihood that the HDD pipe segment will be successfully installed in the least amount of time and with the most efficient use of labor, equipment, materials and resources. The intent is to install the length of the pipe in one pull once the horizontal boring is reamed to the correct size, rather than pulling it in short segments, one at a time. Installing the pipe in a single pull will provide the highest likelihood of successful installation on the first attempt. In contrast, pulling short segments, one at a time requires pipe movement through the boring to stop each time a new segment is added to allow for x-ray and coating of each joint. This process increases the risks during the pull, of the pipe sticking that could lead to a need to abandon and re-drill the boring. Besides this benefit to construction, it also minimizes the environmental impacts, since a quick, successful completion of HDD segment of the pipeline will lessen the length of time that construction work occurs near the sensitive habitat.

Since the pipe string must be aligned with the boring to be pulled, stringing of the full pipe segment will require that the stringing occur outside the construction area footprint identified during the certification process. Therefore, this modification is being requested (Stringing Area – Figure 1).

### **INFORMATION NOT KNOWN AT THE TIME OF THE CERTIFICATION**

The Applicant initially determined that additional stringing area could potentially be a benefit after the Applicant had finished responding to CEC staff on all workshop questions, issues and requests. Based on new information received after these submittals, the Applicant directed the development of evaluations to determine feasible stringing area configurations and potential impacts. It was not

determined that the proposed modification would be a benefit to the project until after these evaluations were conducted and the certification process had been completed.

### **MODIFICATION SHOULD BE PERMITTED**

This modification should be permitted because it will not result in any significant impact or material change in environmental impacts of the project compared to those already analyzed by CEC. The proposed modifications will reduce potential impacts associated with the installation of the pipe in the horizontal drill area.

### **ANALYSIS OF THE IMPACTS THE MODIFICATION MAY HAVE ON THE ENVIRONMENT**

There will be no significant impacts created by this modification because the Stringing Area does not contain any significant resources and does not pose any new risk to resources in surrounding areas. The Stringing Area is located within an existing disturbed area. No sensitive biological resource were located within the Stringing Area (refer to Exhibit 2) and no cultural resources were located within or adjacent to the Stringing Area (refer to Exhibit 3 – Cultural Review of additional stringing area for HDD under riparian area). Table 1 below outlines the potential impacts the proposed modification may have.

Conditions of Certification BIO-7, BIO-8, and BIO-9 provide protection for sensitive biological resource located within sensitive riparian habitat located adjacent to the proposed Stringing Area (refer to Exhibit 2). Specifically, these three conditions combine to limit work to at least 100 feet from the riparian habitat during breeding season, require focused nesting bird surveys if work will occur within 300 feet of riparian habitat, require visual/noise curtains if sensitive bird nests are located within 300 feet of construction activities, and require environmentally sensitive area (ESA) fencing around all riparian habitat located within 50 feet of construction activities. These measures, already included within the FCD, are more than adequate to mitigate any potential impacts utilization of the Stringing Area may have on sensitive biological resources in surrounding areas.

**Table 1: Impacts Associated with the Proposed Modification**

<b>Resource Area</b>	<b>Potential Impact</b>	<b>Rationale for Potential Impact(s)</b>
Air Quality	No new adverse impact.	The proposed modification will not increase emissions to air, but will help to minimize air impacts of project construction by facilitating efficient completion of the HDD pipe segment.
Biological Resources	No new adverse impact.	The Stringing Area does not contain any sensitive biological resources. Resources in surrounding areas will be protected by FCD Conditions of Certification BIO-7, BIO-8, and BIO-9. The proposed modification will help to minimize impacts of project construction on biological resources by facilitating efficient completion of the HDD pipe segment.
Cultural Resources	No new adverse impact.	No sensitive cultural resources were identified within the Stringing Area (refer to Exhibit 3).
Hazardous Materials	No new adverse impact.	The proposed modification will not result in any change in the use, storage, or disposal of hazardous materials. In addition, no significant disturbance of the ground will be required. Therefore no hazardous materials will be exposed.
Land Use and Agriculture	No new adverse impact.	The proposed modification will not hinder any other current or foreseeable land uses in the Project vicinity. The modification will not result in any conversion of, or impact to, any farmland (designated or otherwise).
Geology and Paleontology	No new adverse impact.	The proposed modification will not affect or be affected by geologic hazards. The Stringing Area is located on Holocene alluvium and artificial fill, neither of which have any potential for the occurrence of important paleontological resources.
Noise & Vibration	No new adverse impact.	Potential noise impacts to surrounding resources will not be materially different from those addressed in the CEC Final Decision. The proposed modification will help to minimize noise impacts of project construction by facilitating efficient completion of the HDD pipe segment.
Traffic and Transportation	No new adverse impact.	The proposed modification will not materially change impact traffic and transportation.
Waste Management	No new adverse impact.	The proposed modification will not materially alter waste generation, storage, or disposal.

<b>Resource Area</b>	<b>Potential Impact</b>	<b>Rationale for Potential Impact(s)</b>
Soil & Water Resources	No new adverse impact.	The proposed modification will not materially alter water usage or other impacts on water resources.
Transmission Line Safety and Nuisance	No new adverse impact.	The proposed modification does not involve proposed or existing transmission lines in any way.
Worker Safety and Fire Protection	No new adverse impact.	The proposed modification will not materially alter or impact worker safety or construction impacts on fire protection services.
Public Health	No new adverse impact.	The proposed modification will not materially alter construction impacts on public health.
Socioeconomics	No new adverse impact.	The proposed modification will not materially alter construction impacts on socioeconomic issues.
Visual Resources	No new adverse impact.	The proposed modification will not materially alter construction impacts on visual resources.
Power Plant Efficiency & Reliability	No new adverse impact.	The proposed modification will not impact power plant efficiency or reliability in any way.
Transmission System Engineering	No new adverse impact.	The proposed modification does not involve the engineering or design of transmission systems.

**ANALYSIS OF THE IMPACT OF THE MODIFICATION ON THE FACILITY'S ABILITY TO COMPLY WITH APPLICABLE LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)**

The proposed modification would be compliant with all applicable LORS and will therefore not affect the Project's overall ability to comply with LORS.

**DISCUSSION OF THE POTENTIAL AFFECT ON NEARBY PROPERTY OWNERS, THE PUBLIC AND PARTIES IN THE APPLICATION PROCEEDINGS.**

This modification will not have any impact, adverse or otherwise, on the public because the Stringing Area is located on private land that is not currently serving any public function.

This modification will be beneficial to the project owner because the HDD segment of the gas pipeline will have the greatest likelihood of quick and efficient completion.

This modification will have no material affect on nearby property owners because the use of the Stringing Area will be temporary in nature and the land where the Stringing Area is located is within a large parcel and no other parcels are affected.

**PROPERTY OWNERS POTENTIALLY AFFECTED BY THE MODIFICATION**

The only property owner affected by this proposed modification is Gregory Canyon Ltd, which has agreed to the proposed temporary usage of their land. Gregory Canyon Ltd. Has plans to development this land in the future. The proposed temporary usage of the Stringing Area will not adversely affect Gregory Canyon Ltd.'s usage of the land in the future.

**STAFF APPROVED PROJECT MODIFICATION**

Orange Grove Energy requests staff approval of this modification because;

1. The impacts of the proposed modifications have no significant impacts on the environment and are within the guidelines that have been analyzed during the certification process,
2. The modification will not result in a change, deletion, or addition of any Condition of Certification adopted by the commission in the FCD, and
3. The modification does not create any changes that would cause the project not to comply with any applicable LORS.



Signed: \_\_\_\_\_

Mike Jones  
Project Manager  
Orange Grove Energy, L.P.

Exhibits

Exhibit 1: Figure 1 Gas Pipeline Stringing Area

Exhibit 2: Biological Review of the Additional Stringing Area for the HDD under the Riparian Area

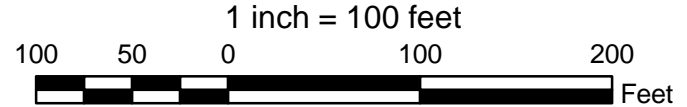
Exhibit 3: Cultural Review of additional stringing area for HDD under riparian area

# **EXHIBIT 1**





- HDD Pit
- Current Approved Disturbance Footprint
- Stringing Area
- 100' Riparian Buffer Intersection
- Gas Line
- Limit of Riparian Habitat



**Stringing Area**  
Figure 1



## **EXHIBIT 2**



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Irvine, CA 92618

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May 19, 2009

Mr. Mike Jones  
J-Power USA Development  
821 Good Hope Drive  
Castle Rock, CO 80108

Subject: Biological Review of the Additional Stringing Area for the HDD under the Riparian Area

Dear Mr. Jones:

This letter summarizes the results of a biological resource evaluation of a small area (Study Area) near the proposed Orange Grove Power Plant gas pipeline in San Diego County, California. The Study Area is located adjacent to the area previously surveyed for biological resources for the project's Application for Certification. Orange Grove Energy requested this evaluation because preparations for construction have shown that construction environmental impacts may be more effectively minimized if this additional area is allowed to be used for the one-time assembly of a pipe segment that is to be pulled through an adjacent horizontal directional drilling under the riparian habitat. Please refer to the attached Figure 1.

TRC Solutions, Inc. (TRC) conducted an intensive pedestrian survey of the Study Area to determine the potential for impacts to significant biological resources (specifically, nesting birds in the Study Area) for the proposed pipe stringing area. This survey was conducted on May 4, 2009 by TRC Biologists Britta Dahlke and Paula Potenza. Ms. Dahlke is the Designated Biologist for the Orange Grove Project. Paula Potenza is a Lead Biologist with over 18 years of experience. The Study Area measures approximately 350 feet wide and 1300 feet in length.

The Study Area is located on land previously used as a dairy (see attached Figure 1), as well as the riparian area adjacent to the old dairy farm. The biological survey focused mainly on the riparian corridor adjacent to the proposed Stringing Area, due to the potential for presence of least Bell's vireo (*Vireo bellii pusillus*), a state and federally endangered species. Least Bell's vireo was detected in a nearby riparian area and they have historically nested in the area along the San Luis Rey River.

The biological surveyors began surveying for biological resources at the northern end of the Study Area, moving southward towards the end of the Study Area, stopping at regular intervals to listen for birds as well as any time a least Bell's vireo, or other sensitive bird species, was heard and/or visually observed.

Mr. Jones  
May 19, 2009  
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The proposed Stringing Area is very disturbed habitat, consisting of dirt, non-native plants, trash including glass, metal pieces, paper, and several gravel piles. Throughout the entire central section of the proposed Stringing Area there were stacked pipes, stacked telephone poles, steel plates, large cargo containers; there were also several concrete pads that held farm equipment and assorted metal pieces. Toward the eastern edge of the Study Area, there was an abandoned barn. Several small mammal burrows were observed in the disturbed section of the Study Area, most likely belonging to California ground squirrels (*Spermophilus beecheyi*) and/or common pocket gophers (*Thomomys* sp.).

Within the riparian corridor, the biological survey resulted in two least Bell's vireo observations, as well as three yellow-breasted chat (*Icteria virens*) observations. Yellow-breasted chat is a Species of Special Concern (California Department of Fish and Game). Non-sensitive status bird species observed during the survey consisted of Anna's hummingbird (*Calypte anna*), hairy woodpecker (*Picoides villosus*), Northern rough-winged swallow (*Stelgidopteryx serripennis*), red-shouldered hawk (*Buteo lineatus*), red-tailed hawk (*Buteo jamaicensis*) and Western kingbird (*Tyrannus verticalis*). Per California Energy Commission Condition of Certification BIO-7 for the Orange Grove Project, biological monitoring will occur during all construction activities occurring within 300 feet of riparian habitat from March 1 through September 15; this Condition of Certification also states that if an active nest of a least Bell's vireo, southwestern willow flycatcher (*Empidonax traillii extimus*) or other sensitive riparian bird species, is located within 300 feet of a construction area, a temporary visual screen and sound curtain (TRC 2008) shall be used during construction.

In the event that Orange Grove Energy elects to pursue CEC staff approval to use the proposed Stringing Area during construction, considerations for potentially nesting least Bell's vireo, as well as any other potentially sensitive species in the area, should be made. If the same requirements approved for the Orange Grove Project are applied to the Study Area, then no impacts to resources would be anticipated due to this minor change in the project footprint within the dairy farm area.

Sincerely,



Elisha Back  
Principal, Natural Sciences and Permitting

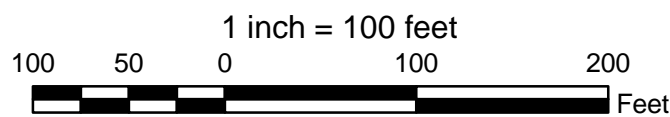
Attachments:

Figure 1: Study Area – Survey Area and Biological Resources





- Bore Pit
- Pipe Stringing Area
- Urban/Developed & Disturbed
- Riparian Forest
- Least Bell's Vireo
- Yellow-Breasted Chat



**Figure 1**  
Survey Area & Biological Resources



## **EXHIBIT 3**



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May 15, 2009

Mr. Mike Jones  
J-Power USA Development  
821 Good Hope Drive  
Castle Rock, CO 80108

Subject: Cultural Review of additional stringing area for HDD under riparian area

Dear Mr. Jones:

This letter summarizes the results of a cultural resource evaluation of a small area (Study Area) near the proposed Orange Grove Power Plant gas pipeline in San Diego County, California. The Study Area is located adjacent to the area previously surveyed for cultural resources for the project's Application for Certification. Orange Grove Energy requested this evaluation because preparations for construction have shown that construction environmental impacts may be more effectively minimized if this additional area is allowed to be used for the one-time assembly of a pipe segment that is to be pulled through an adjacent horizontal directional drilling under the riparian habitat. Please refer to the attached Figure 1.

TRC Solutions, Inc. (TRC) conducted an intensive pedestrian survey of the Study Area to determine the potential for impacts to significant cultural resources for the proposed pipe stringing area. This survey was conducted on May 5, 2009 by TRC archaeologist Susan Underbrink M.A., RPA. Ms. Underbrink meets the qualifications the U.S. Secretary of the Interior's professional standards for Archaeology, and is a Registered Professional Archaeologist (#15434) with over 12 years of experience. The Study Area measures 150 feet wide and 1500 feet in length.

The record search that was conducted at the California Historical Resources Information System (CHRIS), South Coastal Information Center (SCIC) at San Diego State University on March 20, 2007, was reviewed to determine if there were any previously recorded archaeological sites within the area to be surveyed. The records search consists of all previously recorded archaeological and historic sites and cultural resource reports within a one-mile radius of the entire Orange Grove Project. There were no previously recorded sites in or near this survey area.

The Study Area is located on land previously used as a dairy (see attached aerial map Figure 1). The archaeological survey utilized 5-meter meandering transects and began in the northwest corner of the Study Area. This location in the Study Area had the poorest ground visibility at approximately 25% due to vegetation. To the south and east, ground visibility improved dramatically to approximately 75% visibility. The ground had been

Mr. Mike Jones  
May 15, 2009  
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previously disturbed by mowing. There was modern trash including glass, metal pieces, paper, and several gravel piles. The soil was tan and very sandy, with few rocks. Throughout the entire central section of the survey area there were stacked pipes, stacked telephone poles, steel plates, large cargo containers, there were also several concrete pads that held farm equipment and assorted metal pieces. Toward the eastern edge of the Study Area, there was an abandoned barn. The visibility to the east of the barn again became obscured due to vegetation with about 50% visibility. All rodent/gopher burrows and ant mounds were checked for possible artifacts. The entire survey area appears highly disturbed. No cultural materials were located.

The records search, literature review, and Sacred Lands File search did not identify any previously recorded prehistoric or historic cultural resources within the surveyed area. The pedestrian survey did not result in the identification of any new unrecorded cultural resources, therefore no additional work is recommended. Per California Energy Commission Condition of Certification CUL-6 for the Orange Grove Project, archaeological sampling and monitoring will occur along the natural gas pipeline construction areas. In the event that Orange Grove Energy elects to pursue CEC staff approval to use the Study Area during construction, there would be no change in the expected impacts to cultural resources compared to the environmental evaluations that the project's CEC Decision is based on. No impacts to cultural resources would be anticipated due to this minor change in the project footprint within the dairy farm area.

Sincerely,



Elisha Back  
Principal, Natural Sciences and Permitting




**Attachments:**

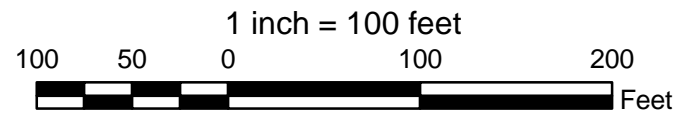
Figure 1: Location of Study Area  
Resume for Ms. Susan Underbrink







-  Gas Line
-  HDD Pit
-  Pipe Stringing Area



**ATTACHMENT A**  
**RESUME FOR SUSAN UNDERBRINK**

## **Susan M. Underbrink, M.A., RPA**

### **EDUCATION**

M.A., Anthropology, California State University, Fullerton, 2002

B.A., Anthropology, minor Geology, University of Illinois, Urbana

### **PROFESSIONAL REGISTRATIONS/CERTIFICATIONS**

Registered Professional Archaeologist (#15434), 2002

Certified Archaeologist-County of Orange, 2005

County of San Diego Consultant List, December 2007

Riverside County Professional Seminar (#229), December 2007

City of San Luis Obispo Consultant List, March 2008

Principal Investigator on BLM list for Nevada and California

### **AREAS OF EXPERTISE**

Ms. Susan M. Underbrink, M.A., RPA has program management and technical experience in the following general areas:

- Prehistoric Archaeology
- Historic Archaeology
- CEQA
- Section 106/NEPA
- Native American Graves Protection and Repatriations Act (NAGPRA)
- Native American Consultation
- Archaeological, paleontological compliance monitoring

### **REPRESENTATIVE EXPERIENCE**

Ms. Underbrink has over 12 years of experience and progressive responsibility in cultural resource consulting. Her qualifications include extensive hands-on experience as a crew chief, laboratory technician, field technician, and project manager. Her archaeological experience includes conducting and supervising surveys, test excavations, and monitoring projects. She has conducted fieldwork in California, New Mexico, Nevada, Illinois, Texas, Mexico, and Peru. Her technical skills include survey, mapping, site recordation, testing, laboratory analysis, curation, construction monitoring, and report preparation. She has done numerous ceramic and groundstone analysis. Ms. Underbrink's background includes extensive service with public and private-sector clientele including California Department of Transportation (Caltrans), California BLM, SDG &E, San Juan Capistrano Mission, City of Mission Viejo, City of San Juan Capistrano, BP Alternative Energy, BNSF, and the US Department of the Navy Southwest Division. She currently serves in the capacity of Project Manager for the Natural Resources Services Division. Ms. Underbrink meets the professional standards of the Secretary of the Interior for this work (Standards and Guidelines for Archaeology and Historic Preservation, National Park Service 1983 Code of Federal Regulations, 36 CFR Part 61).

**City of Mission Viejo; Oso Creek Trail Comprehensive Signage Project – Mission Viejo, CA (Project Archaeologist: 2008)**

Ms. Underbrink served as Project Archaeologist for the cultural resources documentary research and pedestrian survey conducted as part of the CEQA process. She authored the Phase I Archaeological Resource Management Report. Ms. Underbrink also coordinated with the City of Mission Viejo.

**RGP Planning & Development Services; Greater Tehachapi Specific Plan—Kern County, CA (Senior Archaeologist: 2008)**

The project was to identify existing conditions within the specific plan area, and to establish a set of planning assumptions. Ms. Underbrink conducted the literature review for the 275 square miles, compiled the data for the cultural resources investigation as part of the initial environmental constraints study for the Greater Tehachapi Specific Plan, and authored the Existing Conditions report.

**City of San Juan Capistrano; Emergency Sewer Repair for the Blas Aquilar Adobe-- Orange County, CA (Project Manager/Senior Archaeologist 2008)**

Ms. Underbrink monitored the hand excavated repairs within the Blas Aquilar Adobe. Artifacts were collected with the approval of the Native American monitor, catalogued, analyzed and returned to the Blas Aquilar Adobe. She co-authored the report.

**Habitat for Humanity; Calle Rolando—San Juan Capistrano, Orange County, CA (Project Manager/Senior Archaeologist: 2008)**

Ms. Underbrink conducted the literature review and was the archaeological monitor during construction. She was also the author of the final report.

**British Petroleum Alternative Energy (BPAE); Edom Hills Wind Repower Project --Riverside County, CA (Project Manager: 2007-2008)**

Ms. Underbrink served as the Project Manager for this multi-year contract. She was responsible for the coordination of the monitoring efforts, liaison with the Bureau of Land Management, and the report preparation. She coordinated the cultural monitoring efforts, and authored the report that was conducted in compliance with NEPA and with Section 106 of the National Historic Preservation Act (NHPA).

**Irvine Campus Housing; Irvine Campus Housing Planning Area 9-2, and 9-3--Irvine, Orange County, CA (Project Manager: 2007-2008)**

Ms. Underbrink was the project manager for this 2 phased project-managed the paleontological and archaeological monitoring of the 76 acres. Authored the final archaeological report, prepared the site record forms for the isolated finds, and ensured that the artifacts found were curated.

**Aspen; Sunrise Powerlink Transmission Project--San Diego and Imperial Counties (Senior Archaeologist: 2007-2008)**

Ms. Underbrink served as a senior crew chief for one of the survey crews, and prepared over 100 archaeological site records for the project.

**Oto Development; Springhill Suites--Corona, Riverside County, CA (Senior Archaeologist: 2008)**

Ms. Underbrink authored the Phase I Archaeological Resource Management Report for the 2.86 acre parcel.

**United States Navy; On call services—Orange, Riverside and San Diego Counties, CA (Field Director: 2007-2008)**

Ms. Underbrink served as field director for the Archaeological evaluation and National Register Eligibility Investigation of site CA-SDI-14,663 on the Marine Corps Base, Camp Pendleton. Ms. Underbrink addressed several comments from the Draft work plan and was co author of the evaluation report. Ms. Underbrink worked as senior archaeologist on several other projects. She was one of the authors of the Integrated Cultural Resources Management Plan (ICRMP) for the Naval Weapons Station Seal Beach and the Naval Weapons Station in Corona.

**Laguna Canyon Foundation; Nix Nature Center-Loop Trail—Laguna Canyon, Orange County, CA (Senior Archaeologist: 2007)**

Ms. Underbrink authored the Phase III Archaeological Resource Management Report for the loop trail.

**Porter Ranch Development; Tract 50507 and 50510 within Porter Ranch--Chatsworth, Los Angeles County, CA (Senior Archaeologist: 2007)**

Ms. Underbrink authored the Phase III final Archaeological Resource Management Report for the 189 acre tracts.

**City of Huntington Beach; Goodell Property Bolsa Chica Mesa--Orange County, CA (Senior Archaeologist: 2007)**

Ms. Underbrink conducted the records search for the 6.2 acre parcel, surveyed the area, and relocated the existing site CA-ORA-83 on the property, made recommendations for site evaluation, and authored the Phase I Archaeological Resource Management Report.

**Curtiss Development; Santiago Vista Estates--Orange County, CA (Senior Archaeologist: 2007)**

Ms. Underbrink conducted the records search for the 28 acre parcel, surveyed the area, and relocated the existing site CA-ORA-723 on the property, updated the DPR523 form, made recommendations for site evaluation, monitored geotechnical trenching, and authored the Phase I Archaeological Resource Management Report.

**John Laing Homes; Summerly Project Phases 2 and 3--Lake Elsinore, Riverside County, CA (Project Archaeologist: 2007)**

Ms. Underbrink coordinated the curation of all artifacts and authored the Phase I, and Phase III Archaeological Resource Management Reports.

**Oto Development; Springhill Suites--Corona, Riverside County, CA (Senior Archaeologist: 2007)**

Ms. Underbrink authored the Phase I Archaeological Resource Management Report for the 2.86 acre parcel.

**Parsons; Union Pacific Railroad Widening, Thermal to Yuma Segment--Riverside, Imperial Counties (Field Director: 2006)**

Ms Underbrink was responsible for coordinating with several BLM districts. After an original survey of the existing railroad line was responsible for revisiting and plotting all known archaeological sites along the route, rerecording with any pertinent information missing and surveying any areas necessary.

**State of California; Emergency Repair of Water Intake Structures, Mill Creek and Asbury Creek Glen Ellen Developmental Center-- Sonoma County, CA (Assistant Project Manager/Senior Archaeologist 2006)**

Ms. Underbrink conducted cultural resources surveys and historical evaluations of concrete structures and fruit orchards. She interfaced with the United States Army Corp of Engineers (USACE), and Native Americans, she authored the reports, and updated all site records.

**CALTRANS; Red Hill Avenue Grade Separation—Tustin, Orange County, CA (Senior Archaeologist 2006)**

Ms. Underbrink conducted a literature review, a cultural resources survey, defined the APE maps, coordinated with CALTRANS, and authored the Historic Property Survey Report and the Archaeological Survey Report for the Preliminary Environmental Study.

**California Water Services Company; Toro Park Pipeline Cultural Resources Monitoring--Salinas, Monterey County, CA (Assistant Project Manager/ Senior Archaeologist: 2006)**

Ms. Underbrink served as Assistant Project Manager and Senior Archaeologist for the cultural resources monitoring of a water pipeline installation. The project consisted of a literature review conducted at the Northwest Information Center and monitoring of the trenching for the water pipeline installation. Ms. Underbrink monitored the installation and wrote the technical report.

**IDS Real Estate Group; Perris Indian School--Perris, Riverside County, CA (Project Manager/ Senior Archaeologist: 2005-2006)**

Ms. Underbrink served as project manager and senior archaeologist in the various techniques utilized in the location and possible excavation of a child

burial associated with the Perris Indian School from 1899, as well as any trash deposits associated with the former school. This also included interfacing with the curator of the Sherman Institute, and coordination with the Native Americans. Ms. Underbrink was in charge of the excavation of a historic trash pit found while monitoring, wrote an interim report and the final report as well as helped with identification and curation of the historic artifacts. Ms. Underbrink also did onsite educational training for all construction workers in historic and prehistoric artifact identification.

**Santa Barbara County Parks; Goleta Beach County Park—Santa Barbara County, CA (Project Archaeologist/Field Director: 2006)**

Ms. Underbrink conducted the cultural resources investigation as part of the initial environmental constraints study for proposed Goleta Beach park improvements. Ms. Underbrink conducted a record search and Native American Consultation; the record search indicated that there was an archaeological site within the proposed project area. A research design was written and approved to evaluate the site. Ms. Underbrink was the field director for the site excavation and responsible for all record forms being updated and coauthored the final evaluation report.

**RGP Planning & Development Services; 2<sup>nd</sup> Street Improvements—Norco, Riverside County, CA (Senior Archaeologist: 2006)**

Ms. Underbrink conducted the cultural resources investigation as part of the initial environmental constraints study for proposed street improvements. Ms. Underbrink conducted a record search and Native American Consultation, and authored the Phase I Archaeological Resource Management Report.

**Mission San Juan Capistrano; Basilica Retablo Installation—Orange County, CA (Senior Archaeologist: 2006)**

Ms. Underbrink conducted a literature review and was a monitor during drilling for the footings for the basilica's new Retablo and coordinated with the Native Americans.

**Mission San Juan Capistrano; Mission Gift Shop—Orange County, CA (Senior Archaeologist: 2006)**

Geotechnical trenching took place to establish the cause of the damage to the gift shop wall. Ms. Underbrink monitored all trenching which was done by hand. Coordinated with the Native American monitor and authored the report.

**Los Angeles County Department of Public Works (LACDPW); Fitch Avenue Bridge Replacement –Los Angeles County, CA (Senior Archaeologist: 2006)**

Ms. Underbrink was responsible for the literature search to determine if the bridge had been determined to be historically significant.

**Badelt LLC; Badelt Parcel--Escondido, San Diego County, CA (Project Manager/Senior Archaeologist: 2006)**

Ms. Underbrink conducted the record search, survey and relocation of CA-SDI-12525/H for a 6.6 acre parcel in Escondido. Authored the Phase I report with recommendations for a Phase II test of the archaeological site. Prepared a budget for the Phase II, served as field director for the excavation, catalogued and identified all artifacts, authored the final excavation report and updated the site record.

**Sierra Engineering; 3 Parcels in the City of Riverside--Riverside County, CA (Senior Archaeologist: 2006)**

Ms. Underbrink conducted the literature review and Phase I survey of the 6.2 acres. An archaeological site was located and documented on DPR 523 forms (33-14951), and authored the final report.

**Makar Homes; Pacific City Village--Orange County, CA (Senior Archaeologist 2005-2006)**

Native American Cemetery Testing and Data Recovery for (CA-ORA-149); Conducted testing and data recovery. Controlled excavations were conducted; soil profiles prepared, the project involved the recovery and analysis of a Native American cemetery and outlying human interments and onsite consultation with the Most Likely Descendants assigned by the Native American Heritage Commission. Ms. Underbrink was in charge of recordation of the remains and laboratory techniques.

**Kinley Horn; Eastbound Auxiliary Lane on SR91--Orange and Riverside Counties, CA (Senior Archaeologist 2005-2006)**

This project involved CEQA/NEPA documentation. Ms Underbrink conducted the record searches, initiated Native American consultation, survey, defined the APE map, and authored the Historic Property Survey Report and Archaeological Survey Report, interfaced with CALTRANS.

**ChemOil; Tank Farm Expansion Project--Carson, Los Angeles County, CA (Senior Archaeologist: 2005-2006)**

Ms. Underbrink served as senior archaeologist for the mitigated negative declaration in which she conducted the cultural resources record search, coordinated with the Native American Heritage Commission, consulted with the Native Americans, conducted the cultural resources survey and prepared the CEQA Cultural Resources Report.

**WilTel Communications; Interstate 80 Fiber Optic Installation--Eureka County, NV (Principal Investigator 2004-2006)**

Ms. Underbrink was field director for the data recovery at CRNV-12-11510. She also was responsible for maintaining the BLM permit and was the BLM liaison, she also prepared the final budgets and ensured that the artifacts were recorded



and curated. Authored the report, Results of Data Recovery Excavations at Sites CRNV-12-11510 and 11511 along the WiTel Communications Fiber Optic Line Corridor (BLM1-2357).

**Friess Construction; JF Shea Therapeutic Riding Center—San Juan Capistrano, Orange County, CA (Project Manager/Senior Archaeologist: 2005-2006)**

Ms. Underbrink was the project manager and senior archaeologist for this project—managed the paleontological and archaeological monitoring of the 5.4 acres. Authored the final archaeological report, prepared the site record form for the isolated find, and ensured that the artifacts found were curated.

**Los Angeles County Department of Public Works (LACDPW); Mount Wilson Borrow/Fill Sites –Los Angeles, CA (Senior Archaeologist: 2005-2006)**

Ms. Underbrink was responsible for obtaining the Angeles National Forest permit, conducting the records search, field survey and authored the final NEPA report. She recorded an historic Nike Missile Site with proper DPR forms for both the appropriate information center and the forest service.

**County of Orange: Prima Deshecha Landfill—San Juan Capistrano, Orange, CA (Senior Archaeologist/Staff Paleontologist: (2000-2005 intermittent)**

Ms. Underbrink was responsible for monitoring both archaeological and paleontological construction activities associated with the expansion of the landfill. Participated in the salvaging of two fossil whales.

**Sempra (ENSR); Granite Fox Power Plant Stream Gage Survey--Washoe and Lassen Counties, NV (Principal Investigator: 2005-2006)**

Ms. Underbrink was responsible for the executive summary and inventory results of the more than 1,000 acre survey. She was also a responsible for field survey, and site recordation of more than 500 sites. Ms. Underbrink edited hundreds of site records, and evaluated the potential for adverse effects from installation of stream gages along the Smoke Creek drainage.

**Nevada Hydro; Lake Elsinore Advanced Pumped Storage Project (LEAPS) and Talega-Escondido/Valley-Serrano 500kV Interconnect Project—Orange, Riverside, and San Diego Counties, CA (Staff Archaeologist: 2005)**

Ms. Underbrink was responsible for the updated and expanded literature searches, Native American outreach, and authored sections of the final Historic Properties Management Plan. This was done on an accelerated schedule to meet the FERC requirements for providing stewardship over cultural resources.

**William Lyon Homes; Moorpark Highlands—Moorpark, Ventura County, CA (Staff Paleontologist: 2004-2005)**

Ms. Underbrink participated in a fossil salvage of a Pleistocene large mammal (mastodon), this included mapping of the individual bones recovered.

**CALTRANS; I-10 Yucaipa Improvements—San Bernardino County, CA  
(Project Archaeologist: 2005)**

Ms. Underbrink was responsible for construction monitoring and authored the final report. The project was conducted under CEQA.

**Parsons; 500 meter sound wall Northbound I-5 (Caltrans)—San Clemente, Orange County, CA (Project Archaeologist: 2005)**

Ms. Underbrink was responsible for the Phase I assessment, including the literature search, survey, and negative Caltrans report.

**Sun-Cal Companies; Radar Site—Fullerton, Orange County, CA (Staff Paleontologist: 2005)**

This mitigation work included paleontological and archaeological construction monitoring, and coordinating with the Native Americans. Several fossils were salvaged and these items were prepared and curated.

**Planning Consortium; El Toro Road Wireless Vault--Orange County, CA  
(Project Archaeologist: 2005)**

Ms. Underbrink was responsible for the updated records search, construction monitoring, updating the site record form and authored the final report. The project was conducted under the CEQA.

**William Lyon Homes; Chapman Heights—Yucaipa, San Bernardino County, CA (Staff Archaeologist/Paleontologist/Air Quality: 2005)**

This mitigation work included air quality, paleontological and archaeological construction monitoring. Ms. Underbrink was cross trained in air quality in order to save costs for the construction monitoring. She was also responsible for any data recovery.

**Verizon; Westview High School Wireless Cell Tower--San Diego County, CA  
(Project Archaeologist: 2005)**

Ms. Underbrink was responsible for the records search, field survey and authored the final report. The project was conducted under the CEQA.

**Verizon; Julio Right-of-Way Wireless Cell Tower--Orange County, CA  
(Project Archaeologist: 2005)**

Ms. Underbrink was responsible for the records search, field survey and authored the final report. The project was conducted under CEQA.

**Bartlett LLC; Ocean Place Seal Beach--Orange County, CA (Project Manager/Senior Archaeologist: 2005)**

Ms. Underbrink was responsible for the records search, 10 acre field survey and authored the final report. The project was conducted under CEQA.

**City of Signal Hill; Cherry Avenue Widening Project--Orange County, CA (Senior Archaeologist: 2005)**

The project involved preparation of a Preliminary Environmental Investigation for this Caltrans project. Ms. Underbrink was responsible for the technical reports that included an Historic Resources Evaluation Report, an Historic Properties Survey Report as well as an Archaeological Survey Report.

**Burlington Northern Santa Fe (BNSF); Soundwall along the Southern Right-of-Way Imperial Highway to Weir Canyon--Orange County, CA (Staff Paleontologist and Archaeologist: 2004-2005)**

Ms. Underbrink was responsible for daily reports of the paleontological and archaeological monitoring of construction activities, as well as monthly progress reports, and all data recovery.

**Shea Homes; Walden Estates--Orange County, CA (Senior Archaeologist/Staff Paleontologist: 2004-2005)**

Ms. Underbrink conducted archaeological and paleontological resource mitigation work during grading associated with the 50-acre parcel. This work included construction monitoring, fossil salvage, laboratory preparation of salvage specimens, curation of prepared specimens and storage of curated specimens.

**University of California Irvine; Radial Drive and California Avenue Improvements--Orange County, CA (Senior Archaeologist/Staff Paleontologist: 2004-2005)**

Ms. Underbrink was responsible for monitoring construction for archaeological and paleontological resources, and any data recovery. She collected fossils, wrote the fossil localities, and mapped all finds.

**Distinguished Homes; Gomez Property—Norco, Riverside County, CA (Staff Archaeologist: 2004)**

Ms. Underbrink was responsible for property records search, field survey, direction of the test excavations and authored the report for the 10-acre parcel.

**Bluefin Construction; J. Serra High School--Orange County, CA (Senior Archaeologist: 2004)**

Ms. Underbrink was responsible for the archaeological construction monitoring, and any data recovery during the capping of the archaeological site. She also coordinated with the Native Americans.

**County of Orange; San Juan Capistrano Desalination Facility--Orange County, CA (Senior Archaeologist: 2004)**

The project involved cultural resource monitoring of approximately 2.5 miles of trenching. Ms. Underbrink was responsible for the data recovery from a historic site.

**County of Orange; Ocean Desalination Facility--Orange County, CA (Senior Archaeologist: 2003)**

The project involved detailed information for a CEQA/NEPA document for an ocean desalination facility. Ms. Underbrink was responsible for the archaeological record search and the technical report.

**Distinguished Homes; 9 acre parcel Victorville—San Bernardino County, CA (Staff Archaeologist/Staff Paleontologist: 2003)**

Ms. Underbrink was responsible for construction monitoring for archaeological and paleontological resources.

**Vulcan Materials Company Western Division; Big Rock Creek Project--Los Angeles County, CA (Staff Archaeologist: 2003)**

A cultural resource baseline study consisting of a literature review and a Phase I survey of 545 acres was completed. Ms. Underbrink was a crew member of the survey team.

**Cotton/Bridges and Associates; Ortega Ranch Business Center—San Juan Capistrano, Orange County, CA (Staff Archaeologist: 2003)**

Responsible for the record search, field survey, archaeological monitor during remote sensing, and was one of the authors of the Phase I report.

**Irvine Ranch Water District; Duck Club Road Improvements-San Joaquin Marsh Area—Orange County, CA (Staff Archaeologist: 2002)**

Responsible for archaeological construction monitoring on and around two archaeological sites: CA-ORA-196/H and CA-ORA-121. She was also responsible for the excavation and documentation of two new archaeological features from CA-ORA-196/H.

**JMA; San Juan Hills Development—San Juan Capistrano, Orange County, CA (Field Archaeologist: 2002)**

This project included the cultural resources test excavation and data recovery program for CA-ORA-1628. Ms. Underbrink was responsible for excavation, surface collection, excavation, mapping, site documentation and cataloguing artifacts.

**Sun Cal; Aero Oilfield--Los Angeles and Orange Counties, CA (Staff Archaeologist: 2002)**

A cultural resource baseline study consisting of a literature review and a Phase I survey of 2000 acres was completed. Ms. Underbrink was responsible for the record search and was a crew member of the survey team.

**Capistrano School District; Head Start Program—San Juan Capistrano, Orange County, CA (Field Archaeologist: 2001)**

Project consisted of construction of a 1,500 square foot pad. Ms. Underbrink was a responsible for the records search, archaeological construction monitoring, and author of the final report.

**Meritage; E. A. Chase Property: Highgrove-- Riverside County, CA (Field Archaeologist: 2001)**

This was a Phase III salvage and data recovery project. Ms. Underbrink was responsible for archival and historical research on E.A Chase and the property, and the area known as Highgrove, also assisted with data recovery after the destruction of several historic buildings.

**R. V. Storage; Baker Ranch Evaluation—Orange County, CA (Field Archaeologist: 2001)**

Phase II assessment for CA-ORA-1004. Ms. Underbrink was responsible for STP's, excavation, surface collection, site documentation and cataloguing artifacts.

**University of California Santa Barbara; Jiskairumoko Project—Peru (near Lake Titicaca): 2001**

Ms. Underbrink received a grant to do paleobotanical research under the direction of Dr. Phyllisa Eisentraut. Responsible for washing material, identifying any archaeological artifacts, separating paleobotanical remains, identifying specific plant material utilizing a microscope, and labeling specimens.

**Capistrano School District; San Juan Stone Field Upgrade—San Juan Capistrano, Orange County, CA (Field Archaeologist: 2000)**

A portion of the original zanja from the San Juan Capistrano Mission was discovered during construction. Ms. Underbrink was a field archaeologist for the historic site excavation on portions of the zanja, responsible for recovery of the adobe bricks, sidewall profiles, sketching the original positions of all adobe bricks, site documentation, and cataloguing artifacts.

**California State University Fullerton; Andrews Community—Grants, NM (Field Archaeologist: 2000)**

This was an archaeological research project under the direction of Dr. Ruth Van Dyke. Surveyed BLM land recorded and documented all sites.

**Levi Strauss; Pumice mine expansion—Coso, Inyo County, CA (Field Archaeologist: 2000)**

Phase II assessment for CA-INY-5682. Ms. Underbrink was responsible for relocation and evaluation of the prehistoric sites, surface collections, and site documentation.

**Los Angeles County; Palmdale Landfill Expansion—Los Angeles County, CA (Field Archaeologist: 1999)**

Cultural Resource Test Excavation and Recovery for CA-LAN-876. Ms. Underbrink was responsible for prehistoric site excavation, wet screen processing, site documentation, soil samples, sidewall profiles, and cataloguing artifacts.

**Winchester Homes; French Valley—Riverside County, CA (Field Archaeologist: 1999)**

Cultural Resource Combined site evaluation and data Recovery for CA-RIV-3843. Ms. Underbrink was responsible for prehistoric site excavation, cupule boulder recordation, site documentation, updating DPR 523 forms.

**Petersen Trust; Petersen 25 acre Parcel—Sage, Riverside County, CA (Field Archaeologist: 1998)**

Cultural Resource survey, and Test Excavation and Recovery for CA-RIV-3015. Ms. Underbrink was a member of the survey crew to relocate the archaeological site, also responsible for prehistoric site excavation, surface collection, recordation of milling features, site documentation, soil samples, sidewall profiles, and cataloguing artifacts.

**Toll Brothers Homes; Canyon Gate Development—Palm Springs, Riverside County, CA (Field Archaeologist: 1998-99)**

Ms. Underbrink was responsible for archaeological construction monitoring for the 65 acre housing development, and mapping all isolated finds, met with the Bureau of Indian Affairs (BIA) and the local Native Americans.

**Sverdrup/Transportation Corridor Agencies; San Joaquin Hills Transportation Corridor--Orange County, CA (Staff Archaeologist/Staff Paleontologist: 1994-1996)**

Ms. Underbrink was an archaeological and/or paleontological monitor during construction, and was responsible for any data recovery of materials. Worked in the laboratory on fossil preparation, and identification, and worked on fossil localities.

**SPECIALIZED TRAINING**

- Project Manager Training, 2007
- Section 106 Compliance: "An Introduction", November 2007

**PROFESSIONAL AFFILIATIONS**

- Society of California Archaeology
- Society for American Archaeology
- Pacific Coast Archaeological Society

**SELECTED PUBLICATIONS AND PRESENTATIONS**

Underbrink, Susan and Henry Koerper, "A Taxonomic Tour of Cogged Stone Types." Proceedings of the Society for California Archaeology, Vol 19: 111-119.