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Project Title:	Puente Power Project
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Document Title:	EDC, Sierra Club and CBD Joint Comments RE Applicant's Bio Res Survey Methodologies
Description:	Comments from Environmental Defense Center, Sierra Club Los Padres Chapter, Ventura County Environmental Coalition and the Center for Biological Diversity
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Submitter Role:	Intervenor
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STATE OF CALIFORNIA
State Energy Resources
Conservation and Development Commission

In the Matter of:)	Docket No. 15-AFC-01
)	
APPLICATION FOR CERTIFICATION)	**INTERVENORS' JOINT COMMENTS RE APPLICANT'S PROPOSED BIOLOGICAL RESOURCES SURVEY METHODOLOGY**
OF THE PUENTE POWER PROJECT)	

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Pursuant to the California Energy Commission Committee Orders for Additional Evidence and Briefing Following Evidentiary Hearings, dated March 10, 2017, Intervenors Environmental Defense Center, representing Sierra Club Los Padres Chapter and Ventura County Environmental Coalition, and the Center for Biological Diversity ("Intervenors") jointly submit the following comments on the Applicant's Proposed Biological Resources Survey Methodology, ("Survey Plan") docketed on March 27. Attached to Intervenors' comments is a report prepared by local expert wildlife biologist Lawrence Hunt and his *curriculum vitae*.

I. The Survey Plan's Description of the Project Site Is Inaccurate.

Intervenors object to many of the statements and characterizations in the Survey Plan regarding the Project site's habitat and conclusions regarding the presence of rare and sensitive species. Expert biologist Lawrence Hunt, who has been studying and conducting field studies for rare and sensitive species in the vicinity of the Project site since 1985, observed and provided testimony that the Project site is "physically surrounded by ESHA with no intervening barriers to dispersal" which gives rise to "a constant potential for special status habitat and wildlife to occupy the site."[1] The site's integration with the surrounding dune ecosystem is evident when observing the Project site boundaries near the surrounding sand dune ecosystem viewed from the Google Earth image of the Project site shown in Exhibit 4036, and also attached to these comments.

II. Survey Plan Timing and Duration is too Short and Too Infrequent to Detect Rare Species.

The Applicant's Survey Plan proposes to fast track and short shrift the focused biological surveys for wildlife by proposing to conduct all of the wildlife surveys within a few weeks during the month of April, defying the Committee's Orders to conduct surveys through July. As detailed in Lawrence Hunt's attached report, by definition these species are uncommon or rare, even in pristine habitat, thus, "field surveys should expend considerable effort over a longer duration in attempting to document presence of what are certainly depleted populations of these uncommon or rare species." In order to detect many of these species, Applicant's proposed

[1] Opening Testimony of Lawrence Hunt, Exhibit 4017, p. 12 (January 17, 2017).

surveys must be conducted at more frequent intervals and extended over several months, running from April through June for most species. For some species, like the Burrowing Owl, the most likely time to detect their presence is in the Fall and Winter.[2] The Survey Plan must be revised to conduct the proposed focused surveys during the appropriate season(s) and for a suitable duration.

III. The Proposed Survey Plan Area Is Too Small and Does Not Cover Enough of the Project site for Rare Species Detection.

As detailed in Hunt's report, the Survey Plan area for many species is very small in comparison to the Project site and is not sufficient to detect these rare and reclusive species. For example, the surveys for the California legless lizard will only place coverboards over 160 square feet of the entire Project site, which is over four acres, and only proposes to rake three 15 by 15 foot plots. Many more examples are provided in Hunt's report. Additionally, the Final Survey Plan should include a map detailing the specific survey locations, such as where the coverboards are being laid, and the location of transects.

IV. Survey Plan Methodology for Rare and Sensitive Bird Species and Plants Must be Modified to Ensure Accurate Results.

Intervenors appreciate the Applicant's agreement to also survey the additional rare species requested in Intervenors' Joint Motion to Modify the California Energy Commission Committee Orders for Additional Evidence and Briefing Following Evidentiary Hearings. These include: the Burrowing Owl, White Tailed Kite, Western Snowy Plover, Black Rail, California Least Tern, Least Bell's Vireo, Northern Harrier and Orcutt's pincushion. However, the survey protocols need to modified as follows.

Western snowy plover, Black Rail, and California Least Tern.

[2] Burrowing Owl Consortium. *California Burrowing Owl Survey Protocol and Mitigation Guidelines.* April 1993. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83842&inline)

The proposed survey methodologies should be sufficient to detect these species; however, at least one of the surveys should be conducted at night and the diurnal surveys should be repeated once each month for three consecutive months during appropriate wind conditions.

Burrowing Owl and White-tailed Kite

The proposed survey window will not detect these species because they tend to use the coastal dunes during fall/winter migration/aggregation. For instance, the burrowing owl overwinters in this region but does not nest here. Therefore, surveys for burrowing owl must be conducted in winter. The Burrowing Owl Survey Protocol states: "If no owls are observed using the site during the breeding season, a winter survey is required. A complete burrowing owl survey consists of four site visits. Site visits must be repeated on four separate days. Conduct these visits from two hours before sunset to one hour after or from one hour before to two hours after sunrise. Winter surveys should be conducted between December 1 and January 31, during the period when wintering owls are most likely to be present." [3]

Surveys should occur during the months these species have the greatest likelihood of using the dunes in the area and being present on the Project site. The Ventura County Audubon Society should be contacted to determine when owl and kite surveys would be most productive. Transect surveys should be conducted to detect owl pellets, but transects should be spaced no more than 10 feet apart.

Orcutt's pincushion and other rare plants

The methodology provides for surveys for the Orucutt's Pincushion potentially at a time when it is not flowering and therefore when it is less easily identified. The Survey Plan should require surveys during the bloom period for all special-status plants which are more readily detectable during bloom period surveys.

All rare plant surveys should also include and implement the Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants (USFWS 2000)[4] and CNPS' Botanical Survey Guidelines (2001).[5]

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[3] *Id*.
[4] https://www.fws.gov/ventura/docs/species/protocols/botanicalinventories.pdf
[5] http://www.cnps.org/cnps/rareplants/pdf/cnps_survey_guidelines.pdf

Least Bell's vireo

The proposed survey methodology is not of sufficient duration to detect this species, if present foraging in the project area. USFWS protocol require a minimum of 8 surveys separated by at least 10 days resulting in a survey period of at least 80 days, which exceeds the plan's proposal to survey during only part of April. The methodology also should include consultation with species experts regarding the location and timing of nesting of this species in the vicinity of the project area, as reference. The Survey Plan notes that use of recorded auditory call will not be undertaken, presumably to avoid the need to obtain a permit from USFWS. However, use of calls is an effective way to detect this species. The Plan should propose to use auditory calls to detect least Bell's vireo.

V. The Survey Plan Must Include Details for Resource Agency Participation and Site Visits.

According to the Committee's Orders, Applicant's proposed Survey Plan must also invite and allow participation by the Coastal Commission and the California Department of Fish and Wildlife in the design and conduct of the surveys; however, the Survey Plan is silent on how and when this will be accomplished, and the truncated timetable certainly diminishes an agency's ability to participate. Intervenors' Joint Motion to Modify proposes a reasonable request that Intervenors' biologists be permitted to at least accompany the public agencies during site visits and request that agency site visits be scheduled and filed as part of the Survey Plan.

The following Table provides a summary of Intervenors' comments on the Proposed Survey Plan and Lawrence Hunt's attached report.

Summary of Comments on Applicant's Proposed Survey Methodology

Species	**Survey Duration/Frequency**	**Survey Timing**	**Survey Method**	
Globose Dune Beetle				
Applicant Proposed Methodology	2 nighttime trap surveys; 1 daytime visual & 1 nighttime visual	April	Passive Pitfall traps; and visual inspection by 2 biologists walking 10-ft	

Species	Survey Duration/Frequency	Survey Timing	Survey Method	
	survey		transects, lifting cover items and looking for furrow marks	
Intervenors' comments	Increase surveys frequency to weekly for 3 months	Extend timing to include April-June	Applicant lacks active field detection methods – raking and sieving should be conducted weekly April through June and involve all potential habitat features e.g., shrubs, wrack and cover objects; biologists must be trained to differentiate *C. ciliatus* from *C. globosus;* All cover objects must be overturned and substrate raked to 4"; ice plants mays must be pulled back litter raked/seived; Surveys must be in the early morning for cool temperatures and include areas within driplines of shrubs	
California Legless Lizard				
Applicant Proposed Methodology	3 weekly coverboard checks	April	Laying 20 two ft by four foot coverboards monitoring once per week/ gentle raking; two surveys of moderate-impact plots; two biologists conduct three time-constrained plots (2	

Species	Survey Duration/Frequency	Survey Timing	Survey Method	
			plots per acre) for 30 minutes each and maximum of 15 by 15-foot grid; use hand tools to remove duff, vegetation and dig to 6”;	
Intervenors’ comments	Extend coverboards through December 2017; Extend raking through June.	Extend survey timing to include April, May June; extend coverboard surveys through December	Coverboards are insufficient for detection, only cover 160 sq. feet of a >3 acre BSA; use at least 100 coverboards located in relation to the species’ habitat & rake under boards to 6”; Conduct substrate raking multiple times in all suitable habitats within the BSA and 20-ft buffer; Rake leaf litter below all shrubs focusing on southern side	
Blaineville’s Horned Lizard				
Applicant Proposed Methodology	2 diurnal visual surveys;	April	Coverboards as above; Visual surveys, meandering transects at 10-ft spacing and harvester ant mound survey	
Intervenors comments	Repeat in April and May and June; Survey coverboards through December 2017	Extend survey timing to include April and May and June; Extend coverboard	Surveys must cover entire BSA plus 20-foot buffer; need at least 100 coverboards in place through December	

Species	Survey Duration/Frequency	Survey Timing	Survey Method	
		surveys through December		
Two Striped Garter Snake				
Applicant Proposed Methodology	2 days of daytime visual surveys, 2 weeks apart on sunny warm days	April	Visual surveys, meandering transects at 15-ft spacing	
Intervenors' comments	Repeat in April and May and June	Extend survey timing to include April and May and June	Surveys must cover entire BSA plus 20-foot buffer	
Western Snowy Plover, Black Rail, California Least Tern				
Applicant Proposed Methodology	Weekly for one month	April	Area search technique; general nesting bird surveys;	
Intervenors' comments	Repeat weekly surveys for three months in April, May, June	April through June	utilize USFWS and CDFW guidance on surveys and reporting window conditions.	
Burrowing Owl & White Tailed Kite				
Applicant Proposed Methodology	Weekly for one month	April	General avian surveys; BO: walk transects at 20 ft spacing through BSA & listed for BO calls	
Intervenors' comments	Repeat weekly surveys throughout	Fall-Winter for WTK;	Follow CDFW protocol for	

Species	**Survey Duration/Frequency**	**Survey Timing**	**Survey Method**	
	appropriate season(s)	winter for BO	***wintering*** burrowing owls; include 20-ft buffer	
Least Bell's Vireo				
Applicant Proposed Methodology	weekly	April	General avian surveys without recorded auditory call; focus on nesting activity	
Intervenors' comments		April-June	Use recorded auditory call; Focus on foraging activity; include 20-foot buffer	
Rare Plants				
Applicant Proposed Methodology	Varies for plant species	April- May	Proposes surveys outside flowering season for *Orcutt Pincushion*	
Intervenors' comments		April-June	All rare plant surveys should be timed for bloom where appropriate; follow Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants (USFWS 2000) and CNPS' Botanical Survey Guidelines (2001).	

Dated: April 7, 2017

Respectfully submitted,

s/ Alicia Roessler

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7 April 2017

Subject: Comments on Proposed Draft Biological Resources Survey Methodology for Puente Power Project, Oxnard, Ventura County, California.

The following comments are based on my review of AECOM's *Draft Biological Resources Survey Methodology* (Methodology), dated 27 March 2017, for conducting field surveys for special-status plants and wildlife at the proposed Puente Power Project.

General Comments:

Field Survey Approach. In general, the preparers of the survey methodology have done an adequate job of literature review to establish survey protocols and the proposed field biologists are qualified to conduct such surveys. However, survey protocols for many wildlife species are not well-defined and rely instead on the experience of the surveyor.

Field Survey Area. The Methodology limits the field surveys strictly to the proposed construction areas. While these areas are of prime importance, there are intervening habitats that occur between the access road and the three acre Project site that should also be surveyed by including a twenty foot buffer area around the Project site. For example, species with low dispersal ability, such as globose dune beetles and California legless lizards, may occur in the dune field between the Puente Power Project survey area and the outfall access road survey area (see Figure 1 in Methodology). The alignment of the access road and the boundaries of the Puente Power Project should be delineated and staked in the field before the field surveys are

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conducted. These boundaries/alignments should not be adjusted without replicating surveys in the new alignments.

Timing and Duration of Surveys. The survey area is not pristine habitat for any of the target species and these species, by definition are uncommon or rare, even in high-quality habitat. Therefore, field surveys should expend considerable effort over a longer duration in attempting to document presence of what are certainly depleted populations of these uncommon or rare species. Specifically, the Methodology's survey window should be extended through June for most of these species (such as the Globuse Dune Beetle, TwoStriped Garter Snake, and Blaineville's Horned Lizard) and into winter for the California Legless Lizard coverboard surveys and the Burrowing Owl non-breeding season surveys.

Importantly, the Final Survey Report must disclose the level of effort expended on each species, specifically the number of man-hours spent actively searching for each species.

Field Survey Equipment. The surveys for globose dune beetles and California legless lizards should use sieves and 4-tined, long-handled rake, respectively. These two items are the typical field equipment used to sample for these species.

Specific Comments:

Globose dune beetle. The proposed daytime and nighttime survey methodology for this species appears to rely on detecting the tracks of this species in the sand. This will not be sufficient to distinguish between co-occurring species of *Coelus*, e.g., the special-status globose dune beetle (*C. globosus*) and its more common conspecific, *C. ciliatus*. Also, these beetles are strongly associated with leaf litter or other debris, much less so with exposed sandy substrates. All cover objects, such as boards, litter, beach wrack, etc. should be turned over and the substrate raked and/or sieved to a depth of up to about 4 inches bgs. Leaf litter should be raked and sieved in a similar manner. Ice plant mats should be pulled back and the sand and leaf litter raked/sieved. This species occurs in basically the same microsites inhabited by California legless lizards (*Anniella*). Legless lizards prey on dune beetle larvae and might be detected while surveying for dune beetles. Surveys should be conducted early in the morning before the sand surface has heated because dune beetles strongly prefer cooler substrates, especially substrates within the drip line of shrubs.

Active surveys, such as raking and sieving beneath leaf litter, wrack, debris and other suitable microhabitats, rather than the passive surveys proposed in the Methodology must be employed and in order to detect the Globose Dune Beetle. Typically pitfall traps, like those proposed in the Methodology, are left in for weeks or months at a time in order to be effective, not a mere two days as proposed in the survey plan. Pitfall traps are more appropriate to capture surface dwelling species, not fossorial species like the Globose Dune Beetle. It would be more appropriate to forego the pitfall trap method in favor of additional search/seiving surveys conducted weekly over a longer period of time (April-June). Finally, all surveyors must be trained to be able to distinguish *globosus* from *ciliatus*.

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California legless lizard. The Methodology states the coverboard monitoring will be done weekly "through April." Based on my experience conducting surveys for California legless lizards in the area surrounding the Project site, coverboards must be left in place for at least several months in order to effectively attract the target species. I recommend that the cover boards be left in place from April - December and checked weekly. Twenty 2 ft x 4 ft coverboards will sample an area of just 160 s.f., a tiny area relative to the size of the Project site, which is over 3 acres and includes the access roads and outfall areas. The distribution of suitable habitat should dictate the number and spatial configuration of board placement. The Methodology lacks any detail showing where coverboards will be located in relation to suitable habitat. This must be included in a final Survey Plan. Once each board is lifted, the substrate beneath should be raked to a depth of 6 inches. Reposition the substrate under the board after raking.

The methodology on p. 21 regarding the number of time-constrained surveys is confusing. Substrate raking should be conducted in all suitable habitat between sunrise and 1100 hrs and between 1500-sunset if there is no cloud cover. A 15 ft x 15 ft area (225 s.f.) (or three 15 ft by 15 ft areas) is much too small to have a chance of detecting this species, if present. The more areas raked, the higher the detectability, so <u>all</u> suitable habitat should be raked multiple times at intervals of once/month (April, May, June). Leaf litter beneath shrubs from the stem outward to the edge of the dripline should be raked to a depth of several inches, and raking should focus on the southern hemisphere of the shrub (receives the most insolation). Ice plant mats should be pulled back and the substrate, including litter, beneath thoroughly raked. All substrates and cover vegetation should be re-positioned following raking to approximate pre-raking conditions as closely as possible.

Blainville's horned lizard and two-striped garter snake. The proposed survey methodologies should be sufficient to detect these species, if present. However, the surveys should be repeated as proposed for the months of April, May and June, during appropriate temperature and wind conditions. The surveys should cover the entire project area as well as a twenty foot buffer area adjacent to the project site, not just the survey areas mapped on Figure 1 of the Methodology because of the dispersal ability of these species.

Sincerely,

Lawrence E. Hunt

/s/ Lawrence E. Hunt

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LAWRENCE E. HUNT
Curriculum Vitae

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Title: Consulting Biologist

Expertise:
Herpetology, Mammalogy, and Terrestrial Ecology
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Habitat Restoration Design and Implementation
Impact Assessment and Mitigation Planning
Compliance Monitoring
Spatial Statistics and Biostatistics
Lecturer in Conservation Biology and Endangered Species Management, University of California
Affiliate Curator in Herpetology, Cheadle Center for Biodiversity & Ecological Restoration, UC-Santa Barbara

Statement of Qualifications. Lawrence Hunt is a consulting biologist with over 35 years of experience with rare, threatened and endangered plant and wildlife species and their habitats in the western United States, Mexico, and Chile, focusing on rare, threatened, and endangered plants, crustaceans, fish, amphibians, reptiles, birds, and mammals of central and southern California. Hunt & Associates, headed by Lawrence Hunt, brings together qualified specialists with extensive experience in design and management of biological resource surveys and analyses, including special-status species survey design and implementation, biological assessments and evaluations, EIR/EISs, habitat restoration plans, habitat conservation plans (HCPs), statistical data analysis, local, state, and federal resource agency consultation, mitigation analyses, habitat restoration design and implementation, and permit compliance monitoring. Clients include planning departments for city and county governments and planning agencies, state and federal resource management agencies, non-governmental conservation organizations, and private corporations and individuals. Since 1985, Hunt & Associates has been involved in hundreds of projects throughout central and southern California and southern Nevada, as well as several international consulting projects in Mexico, Chile, and Portugal.

CEQA/NEPA Projects. Hunt & Associates is a certified Small Business Entity (SBE) with extensive experience in all aspects of the preparation and implementation of CEQA/NEPA permitting documents, including: biological assessments, environmental assessments, Biological Resources chapters for EIR/EISs, biological resource (plant and wildlife) surveys, natural area characterizations, biological constraints analyses, impact assessment and mitigation recommendations, and environmental compliance monitoring. The following examples represent some of the largest of these types of projects that Hunt & Associates has been involved in to date:

Electrical Transmission Corridor Projects:

- *1984-1993: Mobil Oil, Unocal, and Exxon Electrical Transmission Line Projects, Monterey, Madera, Kern, Tulare, Fresno, Los Angeles, Riverside, and San Bernardino counties, California.* Project biologist on five regional projects installed to deliver electricity from new cogeneration facilities. Responsibilities included resource agency coordination/consultation, designing field survey protocols, organizing and conducting field surveys and vegetation mapping, preparing biological documents, project permitting, and supervising construction monitoring teams during project implementation.
- *1993-1994: SCE 65Kv Transmission Line Project, Santa Barbara County, California.* Project biologist to County of Santa Barbara Planning & Development Department. Conducted pre-construction surveys, constraints analyses, impact assessments; prepared biological assessment and supervised construction monitoring.
- *1997-1998: ARCO Line 90 Electrical Transmission Project, Kern and Riverside counties, California.* Project biologist to ENSR Consulting, Inc. to conduct special-status species surveys and prepare biological assessment of project.
- *2001-2002: Enron-Pastoria Creek Power Plant Project Project, Tejon Ranch, Kern County, California.* Project biologist to URS Corporation to conduct field surveys for special-status plants and wildlife in the Pastoria Creek, Tunis Creek, Tejon Creek, and Grapevine Creek watersheds on the western side of the Tehachapi Mountains; prepared biological constraints analyses of various proposed transmission line routes; prepared biological assessment of project impacts and mitigation.
- *2012-2014: Path 15 Transmission Line Project, Fresno and Madera counties, California.* Senior wildlife biologist to Aspen Environmental Group, Inc. and the U.S. Department of Energy (Western Area Power Administration to design and conduct special-status plant and wildlife surveys of existing transmission tower sites slated for repair/maintenance;

prepared biological assessment and developed mitigation measures to avoid impacts to listed reptiles, birds, and mammals; conducted protocol-level pre-construction surveys for listed or fully-protected reptiles, birds, and mammals along transmission line route.

- *2012-2015: San Luis Transmission Line Project, Fresno and Madera counties, California.* Senior wildlife biologist to Aspen Environmental Group, Inc. and the U.S. Department of Energy (Western Area Power Administration to design and conduct special-status plant and wildlife surveys of preferred and alternative transmission line routes and substation locations; prepared biological constraints analysis and biological assessment of project; conducted protocol surveys for listed or fully-protected reptiles and mammals along preferred route.

Fiber Optic Transmission Corridor Projects:

- *1988-1992: Sprint Fiber Optic Line Installation Project, Kern, Los Angeles, and San Bernardino counties, California and Clark County, Nevada.* Senior project biologist to Dames & Moore, Inc. to conduct special-status species surveys, prepare biological assessments and supervise construction monitoring during installation across Mojave Desert to Nevada.
- *2001-2003: Level (3) Communications Fiber Optic Line Installation Project, Santa Barbara County, California.* Senior project biologist/resource specialist and environmental compliance coordinator to the County of Santa Barbara Planning and Development Department; conducted pre-construction special-status species surveys and monitoring, prepared biological assessments and supervised construction monitoring during line installation.
- *2002-2004: Evolved Expendable Launch Vehicle (EELV), Delta IV Launch System Program, Vandenberg Air Force Base, Santa Barbara County, California.* Project biologist to ENSR, Inc. and the U.S. Air Force on fiber-optic line installations portion of the project on Vandenberg AFB. Conducted pre-construction surveys for special-status species, prepared biological assessments, supervised construction monitoring, and prepared non-native plant eradication and native habitat restoration plan for project.

Oil and Gas Transmission Line Projects:

- *1993-1997: Kern River Gas Pipeline Transmission Project, Utah, Nevada, and Kern County, California.* Project biologist to Dames & Moore, Inc. on the 1,200-mile long pipeline installation project. Conducted field surveys, prepared biological constraints analyses and impact assessment/mitigation analyses, and supervised construction monitoring.
- *1994-1998: Pacific Pipeline Crude Oil Pipeline, Kern and Los Angeles counties, California.* Senior project biologist to Pacific Pipeline Company, LLC to install and operate 175-mile long crude oil pipeline, including 60 miles through Angeles National Forest. Conducted biological constraints analyses for preferred and alternate pipeline routes, biological assessments, habitat evaluation, vegetation mapping, pre-construction surveys for special-status plant and animal species, consultation with Tejon Ranch attorneys and other land managers and landowners; supervised compliance monitoring of mitigation measures during pipeline construction and initial phase of operations.
- *1996-1998: Proyecto Gasoducto Transandino (Trans-Andean Natural Gas Pipeline Project), Argentina and Chile.* Senior Environmental Scientist to the Dames & Moore, Inc. and the Interior Ministry of Chile on proposed 1,500-mile long natural gas pipeline. Prepared biological evaluations and constraints analyses of preferred and alternative pipeline routes from Argentina, across the Andes Mountains, to receiving station/gas plants on the Pacific Ocean west of Santiago, Chile; identified project-related impacts; developed mitigation recommendations and permit compliance plans.
- *1999-2000: Thermo Eco-Tek Natural Gas Pipeline and Cogeneration Facility Project, San Bernardino and Orange counties, California.* Project biologist to ENSR Corporation to conduct pre-construction surveys for special-status reptiles, birds, and small mammals and prepare biological assessment of project.
- *2002-2008: ExxonMobil Corporation Oil Pipeline Maintenance Program, Kern and Tulare counties, California.* On-call biologist to ENSR Corporation for repair/maintenance projects; prepared biological assessments and conducted protocol-level pre-construction surveys and construction monitoring for listed or fully-protected reptiles and mammals.
- *2003-2006: Sempra Energy Company Programmatic Biological Assessment for Pipeline Operations and Maintenance Activities, Madera, Fresno, Tulare, Kern, San Luis Obispo, Santa Barbara, Ventura, Los Angeles, Orange, Riverside, and San Bernardino counties, California.* Project biologist to ENSR Corporation and Southern California Gas Company (Sempra Energy Company) to develop Programmatic Biological Assessment; analyzed biological resources along numerous existing pipeline routes, assessed maintenance and operation impacts, and proposed mitigation measures to reduce or avoid potential impacts to resources to allow operations and maintenance activities to comply with California Department of Fish and Wildlife permit conditions, U.S. Fish and Wildlife Service Biological Opinions, and California Public Utilities Commission permit conditions.
- *2004-2009: Woodside Liquefied Natural Gas (LNG) Re-Gasification Terminal and Pipeline Distribution Project, Los Angeles and Orange counties, California.* Project biologist to ENSR Corporation and Woodside Petroleum, Australia to prepare biological assessment of proposed offshore unloading and re-gasification terminal to be located in the Southern

California Bight 20 miles off Los Angeles; prepared biological constraints analysis of preferred and alternate gas pipeline upgrade routes from proposed onshore receiving stations in coastal Los Angeles and Orange counties.

- *2007-2008: M-70 Crude Oil Pipeline Extension Project, Los Angeles County, California.* Project biologist to ENSR, Inc. and ExxonMobil Corporation to prepare biological assessment and impact and mitigation analysis; conduct pre-construction surveys for special-status plants and wildlife, particularly listed fish species, and supervise construction compliance monitoring.
- *2011-2014: Exploratory Seismic Testing Project, Newhall Ranch, Los Angeles County, California.* Project biologist to Occidental Petroleum Company on proposed exploratory drilling project for natural gas and crude oil reserves. Prepared biological assessment of proposed seismic testing program and conducted biological constraints analysis to determine routes of least impact to special-status habitats and plant and wildlife species during seismic testing.

Renewable Energy Transmission Projects:

- *2006-2009: Tehachapi/Antelope Valley PdV Wind Energy Project, Antelope-Pardee Wind Energy Project, and Tehachapi Renewable Transmission Project (TRTP) Project, Kern and Los Angeles counties, California.* Project biologist to Aspen Environmental Group, Inc. and California Public Utilities Commission (CPUC) on the permitting phases of these three projects to upgrade transmission lines to receive wind-generated energy from turbine fields in the Tehachapi Mountains and Antelope Valley; prepared biological assessments and DEIR/EIS biology sections for DEIR/EISs; provided peer review to CPUC of other consultants' work products.
- *2010-2011: Topaz Solar Facility, Carrizo Plain, San Luis Obispo County, California.* Project biologist to Althouse & Meade Consultants, Inc. to conduct field surveys for special-status amphibians, reptiles, and mammals for biological assessment and EIR documents during permitting phase of project.
- *2010-2011: NextEra North Sky River Wind Energy Project, Piute Mountains, Kern County, California.* Project biologist to CH2MHill, Inc. and North Sky River Energy, LLC to conduct field surveys and habitat evaluations for special-status reptiles and amphibians, focusing on listed salamanders (Tehachapi slender salamander and yellow-blotched salamander); prepared biological assessment, impact analysis, and mitigation recommendations in locating access/service roads and wind turbine sites in order to avoid impacts to listed and other special-status species.
- *2013-2015: City of Vernon Wind Energy Project, Piute Mountains, Kern County, California.* Project biologist to CH2MHill, Inc. and the U.S. Fish and Wildlife Service to conduct field surveys and habitat evaluations for special-status reptiles and amphibians, focusing on listed salamanders (Tehachapi slender salamander and yellow-blotched salamander); prepared biological assessment, impact analysis, and mitigation recommendations regarding location of access/service roads and wind turbine sites in order to avoid impacts to listed and other special-status species.

Federal and State Highway and Bridge Projects:

- *1989-1995: California Department of Transportation Highway Construction and Widening Projects, Madera, Fresno, and Kern counties, California.* Senior project biologist to Dames & Moore, Inc. and CalTrans on one highway construction and two highway widening projects. Conducted focused surveys for listed or special-status amphibians and reptiles, including sampling and evaluating habitat quality of over 250 vernal pools and vernal pool complexes for special-status plants, crustaceans (fairy shrimp), and amphibians (California tiger salamander, California red-legged frog, and western spadefoot); conducted impact analysis and developed mitigation recommendations for CEQA and NEPA documents.
- *1997-2003: Bacara Resort and Hotel Bridge Construction Project, Santa Barbara County, California*. Senior project biologist and project manager to County of Santa Barbara Planning & Development Department during construction of resort hotel project that included construction of two new bridges over Bell Canyon and Tecolote creeks; conducted pre-construction surveys for monarch butterfly, southern steelhead, tidewater goby, and California red-legged frog and implemented the Environmental Quality Assurance (EQAP) Program for permit compliance to avoid impacts to monarch butterfly roost and listed aquatic species in creek corridors.
- *2002-2009: Federal Highway Works Administration Bridge Replacement Projects, San Luis Obispo County, California.* Project biologist to Garcia & Associates, Inc. and County of San Luis Obispo Planning Department on three bridge replacement projects (Highway 1, Santa Rosa Creek Road, and Pozo Road); conducted surveys for listed or special-status species of fish, amphibians, reptiles, and birds for CEQA/NEPA permitting documents.
- *2010-2012: Creek Road Bridge Replacement Project, Ventura County, California.* Project biologist to Galvin Preservation Associates and County of Ventura Public Works Agency to conduct field surveys for listed fish, amphibians, and birds in San Antonio Creek; implemented permit compliance and BMP monitoring during bridge construction and habitat restoration phases of project.

Water Conveyance Projects:

- *2000-2004: Morris Reservoir and San Gabriel Reservoir Sediment Removal Pilot Program, Los Angeles County, California.* Project biologist to Los Angeles Department of Water and Power (LADWP) to design and implement before and after assessments of impacts of in-stream sedimentation on aquatic invertebrate communities and special-status amphibian and reptile species within the San Gabriel River Canyon following release of sediment from Morris and Cogswell dams; prepared biological assessment of effects of sediment sluicing on aquatic and riparian resources to the California Department of Fish and Game.
- *2003-2005: Mojave Check Valve 66 Replacement Project, Mojave River, San Bernardino County, California.* Project biologist to California Department of Water Resources, U.S. Fish and Wildlife Service, and Aspen Environmental Group, Inc. to conduct special-status fish, amphibian, bird, and mammals surveys in advance of proposed water pipeline valve replacement project; designed and implemented focused surveys and impact assessment for the endangered arroyo toad (*Bufo californicus*) in Little Horsethief Creek and Mojave River.
- *2004-2006: Tehachapi Embayment Project, Kern and Los Angeles counties, California.* Project biologist to Aspen Environmental Group, Inc. and California Department of Water Resources to conduct field surveys for special-status reptiles, birds, and mammals for proposed improvement of South Portal Embayment of California Aqueduct along south slopes of the Tehachapi Mountains and adjacent Antelope Valley on Tejon Ranch; prepared impact assessment and mitigation recommendations for various project designs.
- *2005-2007: Seawater Pipeline Replacement Project, University of California, Santa Barbara County, California.* Project biologist to UCSB Facilities Management Department; prepared biological assessment of proposed project to replace and upgrade seawater intake pipelines for Marine Science Institute at Campus Point; conducted and/or supervised onshore and nearshore field surveys of proposed pipeline route; implemented construction monitoring and permit compliance program during pipeline installation.
- *2007-present: Matilija Dam Removal and Ecosystem Restoration Project, Ventura County, California*. Senior project biologist to Ventura County Watershed Protection District to supervise field implementation of non-native plant eradication effort on 16-mile reach of upper Ventura River and main stem Matilija Creek floodplain in advance of future Bureau of Reclamation and U.S. Army Corps of Engineers project to remove Matilija Dam. Supervised implementation of Giant Reed Removal Element of project, involving removal of giant reed (*Arundo donax*) and six other target species of non-native plants in floodplain; conducted pre-construction surveys and monitoring of listed and special-status plants, fish, amphibians, reptiles, birds, and mammals during initial non-native vegetation treatment and annual re-treatment efforts; assembled and supervised team of biologists and monitors to monitor compliance of work crews during vegetation treatment and removal with California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, and Regional Water Quality Control Board permit conditions; developed and implemented program to document and analyze natural recolonization of project area by native vegetation.
- *2012: Five Oaks Dam Sediment Release Project, Santa Ana River, Riverside County, California.* Project biologist to U.S. Army Corps of Engineers to conduct before and after surveys at various locations for listed and special-status fish, amphibians, and reptiles during sediment releases from Five Oaks Dam; supervised team of three biologists; prepared summary reports to USACE of results of surveys and evaluations of riparian and aquatic habitats before and after sediment release.
- *2015-present: Ventura River V-11 Invasive Plant Removal and Ecosystem Restoration Project, Ventura County, California.* Senior project biologist to Ventura County Watershed Protection District to supervise field implementation of non-native plant eradication effort on 5-mile reach of middle main stem of Ventura River on two preserves managed by the Ojai Valley Land Conservancy and one preserve managed by the Ventura Hillsides Conservancy. Supervised implementation of removal of giant reed (*Arundo donax*) and five other target species of non-native plants in floodplain and riparian habitats along main stem of river; conducted pre-construction surveys and monitoring of listed and special-status plants, fish, amphibians, reptiles, birds, and mammals during initial non-native vegetation treatment and subsequent re-treatment efforts; assembled and supervised team of biologists and monitors to monitor compliance of work crews during vegetation treatment and removal with California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, and Regional Water Quality Control Board permit conditions; developed and implemented program to document and analyze natural recolonization of project area by native vegetation.

Species Recovery Plans, Habitat Conservation Plans, and Species/Habitat Management Plans:

- *1987-1988: Chancellor's Advisory Committee, University of California Natural Reserve System.* Evaluated candidate sites in Santa Barbara County in terms of habitat quality and rare species occurrence for inclusion in the UC Natural Reserve System.
- *1993-2000: Kern County Valley Floor Habitat Conservation Plan, Kern County, California.* Assisted Dames & Moore, Inc. biologists and County of Kern Planning and Development Department planners with determining conservation targets,

evaluating conservation areas, developing mitigation credits, and assessing project-related impacts and mitigation recommendations for Federal and State special-status plants and wildlife.

- *1998-2000: Black Legless Lizard (Anniella pulchra nigra) Status Review, Monterey County, California*. Client: U.S. Fish and Wildlife Service, Sacramento Regional Office, California. Reviewed available literature and research studies and conducted field research to evaluate distribution of this taxon in City of Marina and on Fort Ord to determine taxonomic status and conservation lands for possible listing.
- *2000-2002: Lake Los Carneros County Park Habitat Management Plan, Santa Barbara County, California.* Client: County of Santa Barbara Parks and Recreation Department. Evaluated existing habitat and wildlife resources and current visitor uses and impacts to create a long-term management plan for the 300-acre park that maximized habitat values.
- *1998-2001: California Red-legged Frog (Rana aurora draytonii) Recovery Plan:* Member, Scientific Committee for U.S. Fish and Wildlife Service, Ventura Field Office, California.
- *2001*-2002: *Tidewater Goby (Eucyclogobius newberryi) Recovery Plan:* Provided peer review of draft plan to U.S. Fish and Wildlife Service, Ventura Field Office, California.
- *2002-2014: California Tiger Salamander (Ambystoma californiense) Recovery Plan:* Member, Scientific Committee that developed draft and final recovery plan for the Santa Barbara County Distinct Population Segment of the California Tiger Salamander (*Ambystoma californiense*) for the U.S. Fish and Wildlife Service, Ventura Field Office, California.
- *2005-2007*: *California Tiger Salamander (Ambystoma californiense) occurrence in the 'gap region' of San Luis Obispo County, California.* Client: U.S. Fish and Wildlife Service, Ventura Field Office. Evaluated status of specimens in museum collections and anecdotal reports of tiger salamanders in southern San Luis Obispo County, including specimen found in Brizziolari Creek on campus of Cal-Poly SLO; sampled all water bodies in Brizziolari Creek watershed for salamanders, and checked museum records and specimens of tiger salamanders from San Luis Obispo County to verify that 80-mile gap in distribution of tiger salamanders from southern Monterey County to northern Santa Barbara County is, in fact, real.
- *2006-2008: California Tiger Salamander (Ambystoma californiense) Habitat Conservation Strategy:* Client: County of Santa Barbara Planning and Development Department, U.S. Fish and Wildlife Service, and Wildlife Conservation Board, Washington, D.C. Wrote and obtained grant from USFWS and Wildlife Conservation Board to create county-level conservation strategy between regulatory agencies and landowners to deal with CTS on private property.
- *2008-2009: Southern Steelhead (Oncorhynchus mykiss) Recovery Plan:* Senior Scientist contracted to National Marine Fisheries Service to prepare the *Threats Analysis* and *Recovery Actions* sections for the recovery plans for the South-Central California watershed (Monterey to Santa Barbara County) Recovery Plan and the Southern California watershed (Santa Barbara County to Mexican border) Recovery Plan for the southern steelhead. Collaborated with The Nature Conservancy to adapt their Conservation Action Planning (CAP) Workbook method (spreadsheet) to rank habitat conditions for steelhead in watersheds from Monterey County to the Mexican border in terms of anthropogenic impacts and potential for recovery.
- *2009: Newhall Ranch Habitat Conservation Plan, Newhall Ranch, Los Angeles County, California.* Client: Aspen Environmental Group, Inc. and California Department of Fish and Game. Reviewed and commented on Draft 6,500-acre HCP for proposed Newhall Ranch residential/commercial development project, including site visits to verify habitat conditions and species presence.
- *2007-present: Matilija Dam Removal and Ecosystem Restoration Project and Ventura River Invasive Plant Removal and Ecosystem Restoration Project, Ventura County, California.* Senior biologist to Ventura County Watershed Protection District to design, implement, and report on permit compliance monitoring of non-native plant removal and special-status species protection during watershed-wide habitat improvement project (see further information under "Water Conveyance Projects"). Obtained additional funds from VCWPD to measure and analyze patterns of natural colonization of areas cleared of non-native vegetation (2009-2010 and 2014-2015).
- *2010-2012: Status and Evaluation of Non-Native Tiger Salamander (Ambystoma mavortium) Introductions in Santa Barbara County, California.* Client: U.S. Fish and Wildlife Service, Ventura Field Office. Summarized existing information on location, land ownership, condition, and genetic status and extent of hybridization between native and non-native tiger salamander populations in Santa Barbara County Distinct Population Segment of the California tiger salamander (*Ambystoma californiense*).
- *2014-present*: *Geographic extent of introgression between native and introduced tiger salamanders (genus Ambystoma) in Santa Barbara County, California.* Section 6 grant from U.S. Fish and Wildlife Service and California Department of Fish and Wildlife, administered through Cachuma Resource Conservation District. Collaboration of several biologists to sample known and potential California tiger salamander (*Ambystoma californiense*) breeding sites and collect tissues for genetic analysis to determine if threat of hybridization with introduced non-native tiger salamanders (*Ambystoma mavortium*) is spreading.
- *2014-2016: San Pedro Creek Watershed Biological Resource Evaluation, Santa Barbara County, California.* Project biologist to L&P Consultants, Slippery Rock Ranch, LLP, and Land Trust for Santa Barbara County to conduct assessment of quality of riparian and upland habitats for special-status plants and wildlife resources on 800 acres of San Pedro Creek

watershed on Slippery Rock Ranch. Prepared summary report of biological value of watershed for possible future Land Trust management.

- *2015-present: Monarch butterfly Habitat Restoration and Management Plan, Santa Barbara County, California. Client: City of Santa, California Department of Fish and Wildlife, and Xerces Society.* Developed and implemented plan to monitor and improve habitat conditions for largest overwintering roost of monarch butterfly (*Danaus plexippus*) in City of Santa Barbara.

Academic Background

Ph.D. Candidate in Evolutionary Ecology. Dissertation: *Predictability of Geographic Distribution of Legless Lizards, Genus Anniella, at Multiple Spatial Scales.* Dept. Ecology, Evolution, and Marine Biology, University of California-Santa Barbara

M.S., with honors, 1982: Ecology and Systematics (Herpetology). Thesis: *Geographic Patterns of Morphological Variation in the Lizard Genus, Anniella Gray 1852.* University of Kansas Dept. of Ecology and Systematics and Museum of Natural History

B.S., with honors, 1976: Vertebrate Zoology (Herpetology), University of California-Berkeley

Citizenship: United States

International Consulting/Research Experience: Mexico, Chile, England, Portugal

Professional Affiliations

American Society of Ichthyologists and Herpetologists
Society for the Study of Amphibians and Reptiles
American Society of Zoologists
Sigma Xi Honorary Scientific Society

Peer-Reviewed Publications:

1980. Hunt, L.E. and J. Ottley. Geographic Distribution: *Crotalus viridis helleri*. *Herpetological Review*, 12(2): 65.

1982. Hunt, L.E. Reproduction and feeding in *Eridiphas slevini* (Serpentes: Colubridae). *Herpetological Review*, 13(1): 8-9.

1983. Hunt, L.E. Annotated bibliography of the desert tortoise, *Gopherus agassizi* (Book Review) *Herpetological Review*, 14(1): 25.

1983. Hunt, L.E. A nomenclatural rearrangement of the genus *Anniella* (Sauria: Anniellidae). *Copeia* 1983(1): 79-89.

1984. Hunt, L.E. et al., (co-editors). Contributions to Vertebrate Zoology and Systematics: A Tribute to Henry S. Fitch. *Special Publications of the Museum Natural History, University of Kansas. No. 10.* 278 pp.

1984. Hunt, L.E. Geographic patterns of morphological variation in the lizard genus *Anniella*. Masters Thesis. Univ. of Kansas, Lawrence. 302 pp.

1985. Schultze, H.P., L.E. Hunt and J. Chorn. Type and figured specimens of fossil vertebrates in the collections of the University of Kansas, Museum of Natural History, Part II: Fossil Amphibians and Reptiles. *Miscellaneous Publications of the Museum of Natural History, University of Kansas No. 77*. 66 pp.

1985. Fleischer, R., M. Murphy and L.E. Hunt. Clutch size increase and intraspecific brood parasitism in the yellow-billed cuckoo (*Coccyzus americanus*). *Wilson Bulletin* 97(1): 125-127.

1993. Hunt, L.E. Origin, maintenance and land use of aeolian sand dunes in the Santa Maria Basin, California. Prep. for The Nature Conservancy and U.S. Air Force, Vandenberg AFB. 72 pp.

1994. Hunt, L.E. Capture, relocation and monitoring of a southwestern pond turtle (*Clemmys marmorata pallida*) population on the upper Santa Ynez River, Santa Barbara County, California; Gibraltar Dam Strengthening Project. Prepared for the City of Santa Barbara, U.S. Forest Service and Woodward-Clyde Consultants. 135 pp.

1997. Hunt, L.E. Geostatistical modeling of species distributions: Implications for biogeographical and ecological studies, pp. 427-438, *In:* Soares, A. et al., (eds.). Geostatistics for Environmental Applications. Kluwer Academic Publishers, London. 556 pp.

2009. Hunt, L.E. Species accounts for: *Anniella, Anniella pulchra, Anniella geronimensis*. Catalogue of American Amphibians and Reptiles, Society for the Study of Amphibians and Reptiles. Lawrence, KS. 39 pp.

In prep. Hunt, L.E. Geographic breaks in the regional distribution of California tiger salamanders in San Luis Obispo County, California: Real or artifact? *Herpetological Review*.

In prep. Hunt, L.E. Geographic Distribution: *Coleonyx variegates abbotti. Herpetological Review*.

In prep. Hunt, L.E. Additions to the pulmonate snail fauna of Ventura County. *The Veliger*.

In prep. Hunt, L.E. and B. Roth. A new species of land snail (Pulmonata: Helminthoglyptidae) from Ventura County, California. *The Veliger*.

In prep. Hunt, L.E. and H.B. Shaffer. Early-stage hybridization of native and non-native tiger salamanders in the Santa Barbara County Distinct Population Segment (DPS) of the California Tiger Salamander. *Herpetological Review*.

Grants and Awards:

1976. National Science Foundation, Student Originated Studies Grant
1980. Phi Sigma Biology Honor Society, Univ. Kansas
1982. Regents Scholarship, University of California-Santa Barbara
1984. Masters Thesis, with honors, University of Kansas
1985. National Audubon Society, Research Grant
1988. Storrer Award, American Society of Ichthyologists and Herpetologists
1988. Academic Instructional Grant, University of California-Santa Barbara
1989. Graduate Dissertation Fellowship, University of California-Santa Barbara
1989. 1st World Congress in Herpetology, Canterbury, England, Invited Speaker
1990. Research Grant, The Nature Conservancy
1994-2003. Academic Development Grant, Patagonia, Inc. and University of California-Santa Barbara
1996. Excellence in Reclamation Award, California Mining Association
1996. 1st European Conference on Geostatistics, Lisbon, Portugal, Invited Speaker
1997. Society for Ecological Restoration-Dune Guild, San Luis Obispo, CA, Invited Speaker
1998. 2nd European Conference on Geostatistics, Valencia, Spain, Invited Speaker
2001. Santa Ynez Natural History Association, Santa Ynez, CA, Invited Speaker
2002. Research Grant, Oil Spill Prevention and Remediation Program, California Department of Fish and Game
2003. University of California-Santa Barbara Habitat Restoration Group, Invited Speaker
2003. Threatened and Endangered Amphibians and Reptiles of Southern California, The Wildlife Society and Bureau of Land Management, Riverside, CA, Invited Speaker
2005. Wildlife Conservation Board and U.S. Fish and Wildlife Service, California Tiger Salamander Regional Conservation Strategy Grant, Washington, D.C.
2010-present. U.S. Fish and Wildlife Service, Endangered Species Research Grants, Ventura Field Office, California
2010-2013. Seminar on Ecological Restoration and Conservation (EEMB 188), University of California-Santa Barbara, Guest Lecturer

Certifications: California Department of Transportation, Horizontal Directional Drilling Inspector (2001)

Permits: U.S. Fish and Wildlife Service 10(a)1(a) Recovery (handling) Permits for the California tiger salamander, California red-legged frog; and several species of fairy shrimp
California Department of Fish and Game – Scientific Collecting Permit

County Approved Qualified Biologist Lists: Kern, Monterey, San Luis Obispo, Santa Barbara, Ventura, Los Angeles

LEH: jan2017

STATE OF CALIFORNIA
State Energy Resources
Conservation and Development Commission

In the Matter of:	)	Docket No. 15-AFC-01
	)	
APPLICATION FOR CERTIFICATION OF THE PUENTE POWER PROJECT	)	**DEMONSTRATIVE EXHIBIT NO. 4036 ON BEHALF OF INTERVENORS SIERRA CLUB LOS PADRES CHAPTER, ENVIRONMENTAL COALITION OF VENTURA COUNTY AND ENVIRONMENTAL DEFENSE CENTER**

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Intervenors Sierra Club Los Padres Chapter, Environmental Coalition of Ventura County, and the Environmental Defense Center (Intervenors) hereby notify the Commission and all parties of their intent to use the attached Exhibit No. 4036 for demonstrative purposes only (i.e., not as substantive evidence) during the direct testimony of Lawrence E. Hunt on February 9, 2017. In particular, Intervenors request to have the enclosed image displayed in a manner that is visible to the Commissioners and the parties during Mr. Hunt's testimony.

The enclosed image was downloaded from Google Earth on February 8, 2017. The image is of coordinates 34 degrees, 12 minutes and 29.42 seconds North, 119 degrees, fifteen minutes and 6.16 seconds West. The image was recorded by Google Earth on February 8, 2016 at an altitude of 416 feet. To the best of Intervenors' knowledge and belief, and based on the coordinates given, it is an image of the proposed site for the Puente Power Project.

Date: February 8, 2017

Respectfully submitted,

s/ Matthew A. Smith

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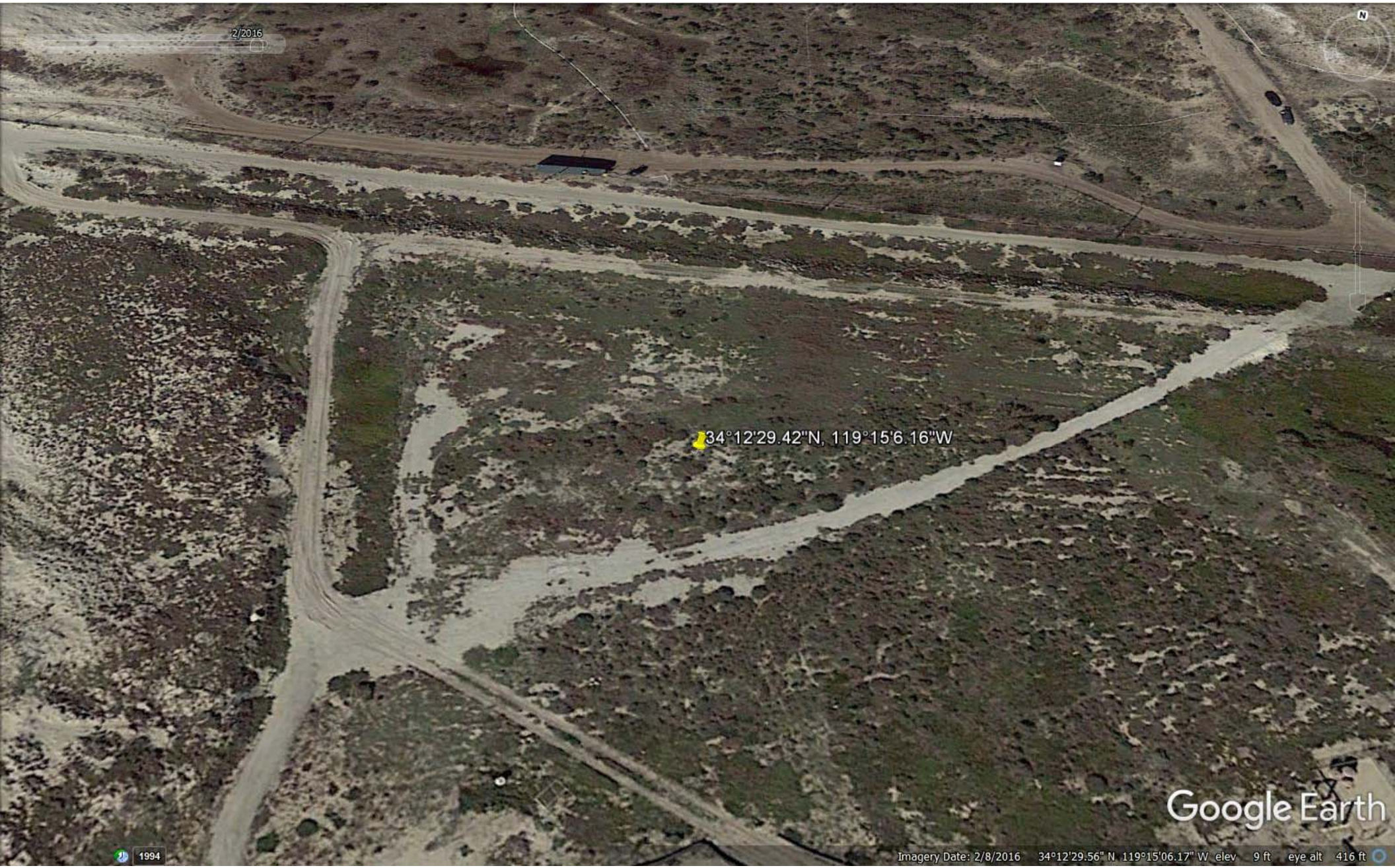
Attorneys for Intervenors

STATE OF CALIFORNIA
State Energy Resources
Conservation and Development Commission

In the Matter of:	)	Docket No. 15-AFC-01
	)	
APPLICATION FOR CERTIFICATION	**)**	
OF THE PUENTE POWER PROJECT	)	

Exhibit No. 4036


2/2016
34°12'29.42"N, 119°15'6.16"W
Google Earth
1994
Imagery Date: 2/8/2016 34°12'29.56" N 119°15'06.17" W elev 9 ft eye alt 416 ft