

APPENDIX 5.2E

Resumes of Biological Resource Staff

MICHAEL CLARY

Ecologist
CH2M HILL Sacramento, California

BACKGROUND

Education/Training: B.S., 1993, Biology and Zoology, California State University, Humboldt

Professional Organizations/Affiliations: Ecological Society of America
California Native Plant Society

Distinguishing Qualifications:

- GIS experience in ecological monitoring and monitoring studies
- Specializes in characterization, monitoring, and mapping biological resources

Experience in Profession: 14 years conducting natural resource studies

Summary

Michael Clary provides natural resource regulatory compliance expertise for the CH2M HILL Bay Area ecosystems group, where he primarily collaborates on projects for the California Department of Transportation.

Mr. Clary has 14 years of professional experience conducting natural resource studies throughout California. As an environmental scientist specializing in the characterization, monitoring and mapping of biological resources, he has extensive professional experience presenting information on diverse ecological communities.

Recent projects have focused on National Environmental Policy Act (NEPA)/California Environmental Quality Act (CEQA) regulatory compliance field studies, biological assessments and Endangered Species Act (ESA) section 7 permitting and compliance, special status species inventories, Clean Water Act (CWA) section 404 wetland delineations, Habitat Conservation Plan (HCP)/National Community Conservation Plan (NCCP) planning, Ecological Risk Assessments (ERA), and Net Environmental Benefit Analysis (NEBA). Mr. Clary has specific project experience using geographic information systems (GIS) in air and water quality monitoring, wildfire and prescribed fire effects monitoring, and additional ecological monitoring studies.

Prior to assuming consulting responsibilities with CH2M HILL, Mr. Clary conducted environmental research for the Long-Term Ecological Research

program, the U.S. Geological Survey Biological Resources Division Channel Islands Field Office, the National Park Service Golden Gate NRA Fire Management Office, and the U.S. Fish and Wildlife Service Salton Sea and San Luis wildlife refuges.

Relevant Project Experience

Community Studies, Habitat Evaluation, Focused Surveys, Caltrans District 04, Napa and Solano Counties, CA, 2006-2007. Responsible for task management, client coordination, field sub-contractor oversight, and document deliverables for the Solano 12, Jameson Canyon, and SR 12/SR 29 Interchange Improvement Projects in Napa and Solano Counties. These deliverables included a Natural Environment Study for a combined NEPA/CEQA Environmental Document and an ESA Section 7 Biological Assessment supported by the following studies: Special-status fish habitat assessment, California Fairy Shrimp Survey and Report, California Red-legged Frog Site Assessment, Rare Plant Survey and Report, and Tree Survey Technical Memo. For this project he provided coordination and oversight for multiple subconsultants and CH2M HILL staff, coordinated access to over 125 privately owned parcels, conducted technical surveys, attended project team meetings, prepared reports, and provided permitting process guidance.

Community Studies, Mitigation Monitoring, Bay Area, CA, 2005-2006. Evaluated special-status species occurrence potential, jurisdictional wetlands, and mitigation success for linear transportation projects in the San Francisco Bay Area. Conducted field investigations and prepared Natural Environment Study (NES) reports in compliance with NEPA/CEQA, Biological Assessments (BA) in compliance with ESA, and mitigation monitoring reports for multiple projects throughout the region.

Experience Prior to CH2M HILL

Community Studies, Habitat Evaluation, Focused Surveys, Mitigation Monitoring, GWF Power, Tracy, CA, 2004. Conducted site assessments and field surveys in support of the GWF Tracy Peaker Project Biological Resources Mitigation Implementation and Monitoring Plan to ensure compliance with NEPA/CEQA regulatory requirements. Conducted pre-construction site assessment and focused field surveys for Burrowing owl (*Athene cunicularia*) and San Joaquin Kit Fox (*Vulpes macrotis mutica*) in agricultural and annual grassland communities in the San Joaquin Valley.

Performed biological monitoring at the project site throughout plant construction.

Community Studies and Focused Surveys, U.S. Army Corps of Engineering, Ford Ord, Seaside, CA. 2001-2005. Conducted vegetation studies to support CERCLA compliance per the Installation-Wide Multi-Species Habitat Management Plan for Former Fort Ord in Monterey County, California. Collected, recorded and reported data on special-status and non-regulated plants in maritime chaparral, oak woodland, and grassland communities.

Community Studies, U.S. Army Corps of Engineers, Ford Ord, Seaside, CA. 2003-2004. Conducted wildlife histology studies to support CERCLA compliance. Trapped, collected, and sampled reptiles and small mammals in support of the Ecological Habitat Investigation and Evaluation of Ecological Cleanup Levels for Former Fort Ord in Monterey County, California. Sampled blood from small mammals on site to determine bioaccumulation of lead in the study area.

Ecorisk Sampling, Ft. Ord, Monterey County, CA. 2004-2005. Conducted ecological studies to support CERCLA compliance. Collected and processed ecological receptor samples including mammals, reptiles, arthropods and vegetation to evaluate ecological risks associated with potential lead, copper and antimony contamination in small arms ranges within the habitat areas of the Multi-Range Area (MRA), Former Fort Ord, Monterey County, California. Evaluated ecological risks from potential exposure to chemicals in soil incorporating a Net Environmental Benefit Analysis (NEBA) to evaluate the potential impacts of various remedial scenarios on ecological resources and habitat.

Habitat Management Plan, Santa Clara Valley, CA. 2002-2003. Evaluated proposed habitat in support of a Habitat Management Plan to compensate for the loss of California Red-legged Frog (*Rana aurora draytonii*) and California Tiger Salamander (*Ambystoma californiense*) habitat. Conducted investigations and community studies of project site and potential compensatory properties. Performed vegetation and wildlife surveys in riparian, live oak woodland, and annual grassland communities. Recorded biological resource information including dominant vegetation types, wildlife habitat conditions, and overall site suitability. Conducted site history analysis and evaluated special status species occurrence potential.

Wetland Delineations, Confidential Client, Novato, CA. 2004. Performed wetland delineations to evaluate the presence of jurisdictional waters in areas adjacent to Petaluma River Saltmarshes in Eastern Marin County. Conducted GPS mapping and preliminary wetland assessments in support of landowner construction projects. Characterized hydrology, vegetation and hydric soils to assess areas potentially under US Army Corps of Engineers jurisdiction.

Community Studies, Wetland Delineation, Habitat Evaluation, Sacramento County Department of Airports, Sacramento, CA. 2002-2003. Conducted environmental assessment and wetland delineations in support of a CWA 404 Individual Permit for fill activities in Sacramento County. Performed vegetation and wildlife surveys in annual grassland and freshwater marsh communities. Conducted community interviews, site history analysis, aerial imagery interpretation, and National Wetland Inventory status research. Evaluated the occurrence potential of special-status plant and wildlife species including Giant Garter Snake (*Thamnophis gigas*) and Swainson's Hawk (*Buteo swainsoni*). Examined onsite habitat and potentially impacted wetlands. Recorded existing biological resource information including dominant vegetation types, wildlife habitat conditions, and overall site disturbance.

Community Studies, Casmalia Steering Committee, Casmalia, CA. 2001-2003. Conducted vegetation and wildlife surveys in support of the Biological Species and Habitat Survey Work Plan for the Casmalia Hazardous Waste Management Facility in Santa Barbara County (RCRA). Collected, recorded and reported data on special-status as well as non-regulated plants and wildlife in ponded wetlands, upland grassland, and disturbed habitats including American peregrine falcon (*Falco peregrinus anatum*), American Badger (*Taxidea taxus*), California red-legged frog (*Rana aurora draytonii*) and Coulter's goldfields (*Lasthenia glabrata coulteri*).

Wetland Delineation, Community Studies, Habitat Evaluation, Union Pacific Railroad, Newark, CA. 2002. Performed wetland delineation and preliminary bioassessment surveys in support of the Union Pacific Railroad Oakland to Albrae Mainline Construction Project in Alameda County. Identified wildlife and vegetation in saltmarsh wetland and ruderal saltgrass communities. Evaluated the occurrence potential of special-status plant and wildlife species including salt marsh harvest mouse (*Reithrodontomys raviventris*) and California clapper rail (*Rallus longirostris obsoletus*). Examined onsite

habitat features and assessed potentially impacted wetland features. Recorded existing biological resource information including dominant vegetation types, wildlife habitat conditions, and overall site disturbance.

Community Studies, Habitat Evaluation, Union Pacific Railroad, Santa Ana, CA. 2002. Performed field reconnaissance survey in support of the Union Pacific Railroad Santa Ana River Bridge Emergency Restoration Project in San Bernardino County. Identified wildlife and vegetation in intermittent riverbed, riverbank and adjacent grassland communities. Evaluated the occurrence potential of special-status plant and wildlife species including Santa Ana River Woolly Star (*Eriastrum densifolium* ssp. *sanctorum*) and San Bernardino Kangaroo Rat (*Dipodomys merriami parvus*). Examined on-site habitat features, and assessed potentially impacted wetland features. Recorded existing biological resource information including dominant vegetation types, wildlife habitat conditions, and overall site disturbance.

Community Studies, Habitat Evaluation, Bruce David Bradsby and Associates, St. Helena, CA. 2003. Performed biological assessment and preliminary environmental evaluation for the proposed Joseph Phelps River Ranch Farmworker Housing Center in Napa County. Examined the project area for special status plant and wildlife habitat including Clara Hunt's milkvetch (*Astragalus clarianus*) and California red-legged frog.

Community Studies, Habitat Evaluation, Beale, AFB, Marysville, CA. 2003. Conducted studies in support of NEPA compliance. Established monitoring sites within created, restored and preserved vernal pool habitat in compliance with the Habitat Conservation and Management Plan for Beale Air Force Base. Conducted baseline hydrological, vertebrate, invertebrate and vegetation monitoring on 1,238 acres of seasonal wetlands for a variety of species including Vernal Pool Fairy Shrimp (*Branchinecta lynchi*), Vernal Pool Tadpole Shrimp (*Lepidurus packardii*), and Green's leggenere (*Legenere limosa*).

Community and Population Studies, USGS-BRD, Ventura, CA. 1999. Baseline vegetation inventory and habitat mapping to establish restoration and protection efforts during post-grazing habitat recovery on Santa Rosa and San Miguel Islands. Assisted in establishing resource management priorities by conducting extensive aerial and ground vegetation surveys of critical habitats in collaboration with the Santa Barbara Museum of Natural History

(SBMNH) and USFWS. Identified and mapped vegetation and community types using GPS and GIS. Located several previously unrecorded plant populations including Santa Rosa Island dudleya (*Dudleya blochmaniae* ssp. *insularis*) and the federally endangered northern Channel Islands phacelia (*Phacelia insularis* spp. *insularis*).

Population Studies, Channel Islands National Park, USGS, Ventura, CA. 1998-1999. Identified and performed GIS mapping of invasive exotic vegetation representing a priority threat to island ecosystems. Collected qualitative spatial data on noxious invasive species such as Australian Fireweed (*Erechtites glomerata*) and Fennel (*Foeniculum vulgare*) for the development and monitoring of effective eradication and control strategies. Responsible for conducting ground searches for individual plants coupled with GPS/GIS to delineate the distribution of multiple populations on Anacapa, Santa Cruz, Santa Rosa, San Miguel, and Santa Barbara Islands. Developed a dispersal model to identify the potential distribution ranges of individual species.

Community Studies, Restoration Monitoring, National Park Service, Sausalito, CA. 1997-1998. The NPS Fire Effects Monitoring Program provides data for monitoring and improving prescribed burning operations on NPS managed lands. Monitored plant communities in Redwood National Park, Lassen National Park, Point Reyes National Seashore, Golden Gate National Recreation Area, Pinnacles National Monument, Santa Monica Mountains National Recreation Area, Channel Islands National Park, Walnut Canyon National Monument, and Lake Mead National Recreation Area. Used standard vegetation monitoring techniques to survey grassland, chaparral, and woodland communities. Recorded fire weather and fire behavior observations and conducted post-fire residue surveys to establish burn severity in established vegetation plots. Managed and compiled data for inclusion in annual monitoring reports and resource management plans.

Species and Community Studies, USFWS/BOR, Calipatria, CA. 1995. Conducted quantitative study of selected biotic use in agricultural drains in Imperial Valley, California. Collaborated with BOR, USFWS, and the Imperial Irrigation District (IID) to complete a comprehensive biological survey of Imperial Valley agricultural drains as part of the Alamo River National Irrigation Water Quality Project (NIWQP). Designed sampling protocols for major taxonomic groups including plants, invertebrates, reptiles, amphibians, fish, and birds. Developed and implemented a quarterly monitoring

program using standard inventory methods including habitat characterization, point-count bird surveys, coverboard and pit trap surveys, and EPA rapid bioassessment protocol II for benthic macroinvertebrates.

Species and Population Studies, USFWS, Coachella Valley, CA. 1995. Conducted small mammal monitoring within the Coachella Valley Unit of the Salton Sea National Wildlife Refuge Complex. Placed, monitored, and recovered live traps. Performed mark-recapture surveys for small mammals including Merriam's kangaroo rat (*Dipodomys merriami*) and desert woodrat (*Neotoma lepida*).

Habitat Evaluation and Focused Surveys, Channel Islands National Park, USGS, Ventura, CA. 1998-1999. Collected morphologic and distribution data related to threatened and endangered plant populations on the California Channel Islands. Collected quantitative spatial data of state and federally listed species on Anacapa, Santa Cruz, Santa Rosa, San Miguel, Santa Barbara, and San Nicholas Islands such as Hoffman's Slender Flowered Gilia (*Gillia tenuiflora hoffmanii*) and Santa Rosa Island Manzanita (*Arctostaphylos confertiflora*). Used GPS to collect and manage morphologic and spatial data for individual protected plants. Recognized for locating a previously unknown population of the federally endangered Island Phacelia (*Phacelia insularis insularis*) on San Miguel Island.

Focused Surveys, Pacific Lumber Company, Eureka, CA. 1994. Monitored threatened and endangered birds in Headwaters Grove, Humboldt County, California. Conducted reconnaissance and protocol level surveys of sites containing potential habitat of endangered Marbled murrelet (*Brachyramphus marmoratus marmoratus*) and Northern spotted owl (*Strix occidentalis caurina*) pursuant to USFWS requirements. Recorded visual and audible observations in suspected habitats to monitor use and locate nest sites. Performed forest floor eggshell fragment searches to confirm nesting locations, locating one of seven Marbled murrelet nest sites recognized by California Department of Fish and Game.

Focused Surveys, Channel Islands National Park, Ventura, CA. 1999. Monitored Island Fox (*Urocyon littoralis*) populations on the northern California Channel Islands. Placed, monitored, and recovered live traps on Santa Rosa and San Miguel Islands. Handled, examined, and sampled blood from captured individuals to determine age, gender, and overall condition. Correlated quantified observations

with baseline data to confirm a population decline and to establish an age and gender structure of extant populations.

Restoration Implementation, Redwood National Park, Orick, CA. 1997. Performed maintenance and restoration of Coastal Prairie systems. Directed and assisted AmeriCorps crews in the manual removal of invasive exotic French Broom (*Genista monspessulana*) and native second growth Douglas Fir (*Pseudotsuga menziesii*) to maintain the intermediate stage of an aesthetic prairie.

Community Studies, National Science Foundation, Long-Term Ecological Research, Tempe, AZ. 2000-2001. Conducted baseline interdisciplinary monitoring of ecological activity throughout central Arizona. Quantified basic ecological characteristics and monitored long-term ecological trends at 204 sites within the study area to evaluate change in slowly cycling ecological variables. Directed a team in establishing study sites and sampling procedures. Implemented sampling protocols that measured microclimate, land cover and use, soil texture and chemistry, mycorrhizal presence, bacterial diversity, decomposition rates, vegetative cover and species frequency, arthropod diversity, bird diversity, and human activity.

Community Studies, National Science Foundation, Long-Term Ecological Research, Tempe, AZ. 2000-2001. Investigated the role of atmospheric deposition in urban biogeochemical cycling and nutrient transport. Collected atmospheric samples at National Dry Deposition Network sites throughout central and southern Arizona. Prepared and analyzed nutrient composition using atomic absorption and flow injection spectrophotometers. Established spatial patterns for atmospheric chloride, nitrate, ammonium, phosphate, and organic carbon deposition, demonstrating a role of human effects on nutrient transport.

Community Studies, National Science Foundation, Long-Term Ecological Research, Tempe, AZ. 2001. Performed stream water collection and analysis to compare nutrient uptake and transport in stream reaches near the Phoenix metropolitan area. Collected depth integrated and surface water samples from sites in the Salt, Verde, and Gila Rivers of central Arizona. Prepared and analyzed nutrient composition of samples using atomic absorption and flow injection spectrophotometers.

Community Studies, Arizona State University Plant Biology Department, Sierra Vista, AZ. 2000-2001.

Performed comparison of riparian systems and stream morphologies in the San Pedro watershed, southeastern Arizona. Monitored channel disturbance and exotics establishment related to discharge rates in Ramsey Creek in the Ramsey Canyon Nature Preserve and Walnut Creek in Fort Huachuca Army Base. Collected riparian systems data including community characterizations and measurements of discharge, turbidity, bank full width, reach length, channel depth, and canopy cover. Assisted in collecting, germinating, and identifying riparian seed bank samples.

DAN WILLIAMS

Wildlife Biologist CH2M HILL Sacramento, California

BACKGROUND

Education/Training: B.S. in Geography, minor in Environmental Studies, University of Wisconsin - La Crosse, December 2004

Distinguishing Qualifications:

- Field biologist and bird tour leader with extensive knowledge of North American avifauna, ecology and natural history
- Skilled in developing and implementing field methodology including point count, nest search, spot and territory mapping with GPS technology and vegetation survey protocol
- Species of special expertise include: western burrowing owl, Swainson's hawk, Delhi sands flower-loving fly, and engelmann oak among others

Relevant Project Experience

Burrowing Owl Survey Crew Leader – Western Riverside County Multiple Species Habitat Conservation Plan (March 2006 – January 2008), full-time (40 hrs/wk). Responsible for organizing and supervising a burrowing owl survey crew (15) and a colony census crew (3). Conducted riparian avian point counts, coastal sage avian transects and burrowing owl colony census in accordance with regulatory agency protocols. Also conducted Delhi Sands Flower-loving Fly surveys, baiting of small mammal traps for Stephens' Kangaroo-Rat grids and vegetation surveys associated with all avian protocols. Completed data entry of survey and census results in Access and Excel formats.

Avian Biologist – North Carolina Wildlife Resources Commission (January - September 2005), full-time (40 hrs/wk). Conducted state-wide winter bird transect surveys, vegetation surveys, Bald Eagle nest monitoring, avian point counts, and songbird nest searches. Established frog and bobwhite call routes.

Avian Field Technician – Iowa State University (Summer 2002), full-time (40 hrs/wk). In support of a graduate research investigation, performed avian point counts and nest search protocol and assisted with mist netting and territory mapping of Bobolinks for a student in northern Iowa and southern Minnesota. Also conducted vegetation surveys and completed data entry of survey results.

Park Naturalist – New Jersey Audubon (Spring 2002), full-time (40 hrs/wk). At Sandy Hook Bird Observatory, New Jersey served as park naturalist and conducted a spring migration census.

Avian Field Technician – University of Wisconsin (Summer 2001), full-time (40 hrs/wk). Performed avian point count and nest search protocol, assisted with mist netting Grasshopper Sparrows and conducted vegetation surveys and data entry duties as part of a graduate research investigation conducted at Fort McCoy Military Reservation in western Wisconsin.

Biological Field Technician – Iowa State University (Summer 2000), full-time (40 hrs/wk). Conducted avian point count protocol and butterfly surveys as part of a graduate research investigation conducted in the Grand Teton/Yellowstone Park region.

Guide Experience

Avian Field Guide – Gadabout Tours (2000 and 2001), Occasional (part-time). Guided avian field trips in northern California. Lead two out-of-state tours: southern Florida, and a coastal history and shorebird workshop on the Oregon and Washington coast.

Avian Field Guide – Mira Loma High School (1998-2001), Occasional (part-time). In a volunteer capacity, served as a primary field biologist for four spring seasons and led high school students in conducting urban creek surveys, including developing point count protocol and assisting in bird identification. Taught a unit in shorebird ecology for the same group of students at Bodega Marine Laboratory.

VIRGINIA DAINS
Biological Resource Consulting

3371 AYRES HOLMES ROAD, AUBURN CA 95603
530-888-9180 / 888-9022 fax / geobot@jps.net

- ◆ Vegetation mapping
- ◆ Interpretation of soils and geologic mapping and aerial photography
- ◆ Botanical surveys
- ◆ Ecological research
- ◆ Wetland delineation

EDUCATION

M.S. Biology (Plant Ecology), 1992, California State University, Sacramento, Thesis Topic: "The Water Relations of *Alnus rhombifolia*"

B.S. Biology (Field Biology), 1978, California Polytechnic State University, San Luis Obispo

EXPERIENCE Biological Consulting contracts since 1979 include:

Special-status plant surveys in California and western Nevada. Projects were conducted for state, federal, or private concerns and include GPS field mapping, mitigation measures, and conservation guidelines.

Riparian vegetation mapping, quantitative sampling, and interpretation in relation to streamflow reductions in the Sierra Nevada for Pacific Gas & Electric and Southern California Edison, including research on physiological responses of key riparian shrubs and trees. Research report on riparian vegetation response to reduced streamflow on Putah Creek, Yolo County. **Expert witness** on riparian vegetation along the lower American River, Sacramento County before the State Water Resources Control Board staff; **Impact assessment** for Calabasas Creek Flood Control Project, Santa Clara County; **Riparian Revegetation** planting and monitoring guidelines for Placer County.

Wetland Management Plans for County of Sacramento, Environmental Planning. **Wetland delineations** in riparian, seasonal wetland, vernal pools, alkaline, mountain meadow, seeps and discharge wetland habitats in California and Nevada. **Wetland delineation training** assistant for U.S. Army Corps of Engineers training classes, **Wetland Plant Identification Instructor** for EPA and US Fish and Wildlife Service. **Wetland mitigation** design and implementation including construction monitoring, and construction of experimental vernal pools. **ARCView GIS** mapping and interpretation.

Other Experience: Forage Inventory for BLM and Nevada Cattleman's Association, Workshop leader on Vernal Pools, Backcountry Naturalist for The Nature Conservancy wilderness tours; Mt. St. Helens vegetation recovery researcher.

Project Details

- 1980. Vegetation mapping of Desolation and Mokelumne Wilderness Areas. El Dorado National Forest project for WESCO, San Rafael, CA.
- 1983. Evaluation of Riparian Vegetation at Existing and Proposed Diversion in the Western Sierra Nevada, transect sampling to assess effects of water diversion for small hydroelectric projects. Nevada County to Fresno County western Sierra Nevada streams. P.G. & E. project for Jones and Stokes Associates, Inc., Sacramento, CA.
- 1983, Field Reconnaissance of Delta Meadows River Park with Frederica Bowcutt for “A Floristic and Vegetation Study of Delta Meadows River Park” December 1993,
- 1984. Riparian vegetation transect sampling to assess effects of water diversion for small hydroelectric projects, Mono and Inyo counties, eastern Sierra Nevada streams. Southern California Edison project for Jones and Stokes Associates, Inc., Sacramento, CA.
- 1985. Vegetation mapping and impact assessment of the Calabasas Creek Flood Control Project, Santa Clara County, CA Riparian Systems, Inc. Mill Valley, CA
- 1986-1990. Rare Plant Surveys, Habitat mapping, and impact analysis of several alternative Department of Water Resources channel improvement projects in the Sacramento-San Joaquin Delta. for Ecos, Inc., Sacramento, CA.
- 1989. Revegetation of Elk Grove Creek, Designing for flood tolerance, water requirements. Chuck Watson and Associates, Sacramento, CA
- 1989. Field assistant and botanical consultant for wetland delineation training class. Sacramento, CA. Wetland Training Institute, MS
- 1989-1995. Vernal pool mitigation design, construction and monitoring, Rocklin, CA. Huffman and Associates, Inc., Larkspur, CA
- 1991 Delta Wetlands Project. Rare Plant Surveys on and around four delta islands for a water resource development project. Jones and Stokes Associates Inc., Sacramento, CA.
- 1991. Field assistant for ACOE Wetland Delineation Classes, Sacramento Valley. U.S. Army Corps of Engineers, Waterways Experiment Station, VA.
- 1990-1991. Wetland mapping, vernal pool mitigation monitoring, rare plant surveys for development lands in Chico, CA, Huffman and Associates, Inc.
- 1990-1993. Vernal pool mapping, mitigation monitoring, and rare plant surveys, Foothill Park, Chico, CA. Gibson and Skordal, Inc. Sacramento, CA.
- 1990. Review of vernal pool wetlands mitigation and monitoring plan for Shaliko Golf and Country Club, Sacramento County, CA., County of Sacramento, CA.
- 1990 Delineation of Wetland Areas, Russell Ranch, Sacramento County California, Balance Hydrologics Berkeley, CA.
- 1993. Wetlands delineation and sensitive plant surveys for three military installations: McClellan Air Force Base, Lincoln Antenna Facility, and Davis Antenna Facility, U.S. D. O. D. for California Nature Conservancy, San Francisco, CA.
- 1993-1994 Vernal pool mitigation monitoring Perry Ranch, Sacramento, CA, Gibson and Skordal, Inc., Sacramento, CA.

1993. Wetlands delineation and sensitive plant surveys for three military installations: McClellan Air Force Base, Lincoln Antenna Facility and Davis Antenna Facility, California Nature Conservancy, San Francisco, CA
1993. Wetland mitigation design and monitoring program, development lands, Placer County, CA. Spannegal and Associates, Inc.
1993. Wetland Plant Identification class field instructor, Sacramento Valley, CA. U.S. Fish and Wildlife Service, Sacramento, Ca.
1994. Wetland delineation and wetland plant identification, Petaluma, CA. Environmental and GIS consulting, Inc, Bentonville, AR.
1994. Wetland Plant Identification class instructor, EPA, San Francisco. Huffman and Associates, Inc. Larkspur, CA
1995. Wetland Delineation and rare plant surveys on forest land exchange parcels, Plumas County, CA PAR Environmental Associates, Inc., Sacramento, CA.
- 1995 -1996. Wetland delineation, vegetation mapping, and rare plant surveys on 11,000 acres of Plumas National Forest and private land exchange parcels, Plumas County, CA, Soper-Wheeler Company Project for PAR Environmental Associates, Inc., Sacramento, CA.
1996. Wetland mapping and rare plant surveys in vernal pools, Chico, CA. Planning Concepts, Inc. Nevada City, CA
1997. Wetland mapping and special status plant surveys for non-emergency road work in the northern Sierra Nevada on Feather River Highway, Yuba Pass, Mohawk Valley, Lake Almanor, Grass Valley, Donner Summit and bridge repair along the Sacramento River and Dry Creek in Butte County, CA. Cal Trans project for PAR Environmental Associates, Inc., Sacramento, CA.
1997. Wetland mapping and special status plant surveys for non-emergency road work on Feather River Highway, Yuba Pass, Mohawk Valley, Lake Almanor, Grass Valley, Donner Summit and bridge repair along the Sacramento River and Dry Creek in Butte County, CA. PAR Environmental Associates, Inc., Sacramento, CA.
- 1997 Special Status plant surveys Orchard Creek vernal pool mitigation bank, Placer County CA. Wildlands, Inc. Roseville, CA
1998. Special status plant surveys, vegetation mapping, and wetland delineation technical reports for Wentworth Springs Road, ElDorado County and El Dorado National Forest, F. H. W. A. project for Dean Ryan Consultants and Designers, Inc., Sacramento, CA.
1998. Wetland Delineation Report for California Forest Highway 105 improvement project, Yuba County, CA. Dean Ryan Consultants and Designers, Inc., Sacramento, CA.
- 1998-2000. Botanical and wetlands sections for numerous Natural Environment Studies for Caltrans road repair and improvements in Alameda, Marin, San Joaquin, San Mateo, Santa Clara, and Sonoma Counties, PAR Environmental Associates, Inc., Sacramento, Ca.
2000. *Illustrated Field Key to Sierra Nevada Epilobium*. Field surveys in Yuba, Nevada, and Inyo Counties for Epilobium and technical document. USDA Forest Service, Tahoe National Forest for Garcia and Associates, Nevada City, CA.

2000. Special Status Plant and Noxious Weed Surveys, General Vegetation and Riparian Vegetation mapping, P.G. & E. and Tri-Dam Stanislaus River project, Tuolumne County, CA. Garcia and Associates, Nevada City, CA.
2000. Special Status Plant and Noxious Weed Surveys, General Vegetation and Riparian Vegetation mapping, Pit River 3, 4, 5 hydroelectric projects, Shasta County, CA., P.G. & E project for Garcia and Associates, Nevada City, CA.
- 2000 Riparian vegetation classification, mapping, and analysis of riparian vegetation changes from historical photography, Pit and Feather Rivers, Garcia and Associates, San Anselmo, CA
- 2000 Wetland technical reports for Federal Highway projects in Butte and Trinity counties, Dean Ryan and Associates, San Diego, CA
- August 2000, Biota Biological, Sacramento, CA Rare Plant surveys of river and slough crossings for Stream Energy and Calpine 3D geophone investigations of the north delta including Delta Meadows and Snodgrass Slough.
2001. Special status plant survey, vegetation mapping, and wetland delineation technical reports for Blue Lakes Road, Alpine County, F. H. W. A. project for Dean Ryan Consultants and Designers, Inc., Sacramento, CA.
- 2000-2002. Special status plant survey, vegetation mapping, wetland delineation technical reports, and Valley Elderberry Beetle habitat surveys for Oro-Quincy Highway, Butte County, CA., F. H. W. A. project for Dean Ryan Consultants and Designers, Inc. Sacramento, CA.
2001. Alderpoint road wetland delineation and habitat mapping. Trinity County. Dean Ryan Consultants and Designers, Inc.
- 2001 Vernal pool vegetation expert for delineation of vernal pool wetlands at proposed UC Merced Campus. EIP Associates, Sacramento, CA
2002. Expert witness on riparian vegetation and montane wetlands for legal challenge to the June 2000 Merced Wild And Scenic River Comprehensive Management Plan and Final Environmental Impact Statement, for Friends of Yosemite Valley and Mariposans for Environmentally Responsible Growth, Mariposa, CA.
- 2002 Wetland Delineation and special status plant survey, Road 416 Tulare and Fresno Counties. PAR Environmental, Sacramento, CA.
- 2002 Wetland Delineation for City of Antioch. PAR Environmental, Sacramento, CA.
2003. Observations On The Vegetation And Habitats For Special Status Plants At Lake City Meadow, Derbec Meadow And Diggins Pond Areas Within Malakoff Diggins State Historic Park, Nevada County, Ca., special status plant and montane meadow assessments for fire management plan, California State Parks Department project for Safe Solutions Group, Berkeley, CA.
2003. Wetland delineation and special status plant survey along SR161, Paradise. Butte County, CA. for PAR Environmental, Sacramento, CA.
2003. Special Status plant survey for Faria Ranch, San Ramon, Alameda County, CA. for Huffman and Associates, Inc., Larkspur, CA.
2003. Special Status plant survey for Walker Ranch, Lake Almanor, Plumas County, CA. for Huffman and Associates, Inc. Larkspur, CA.
2003. Wetland Delineation for the U.S. Army Corps of Engineers Merced Streams project, Burns Reservoir and Bear Creek Reservoir, and bypass canal project

- areas. Field delineation, GPS mapping, and photo-interpretation of potential wetlands for Dean Ryan Consultants and Designers, Inc. Sacramento, CA.
2004. Special Status plant survey for Sky Ranch, Pittsburg, Contra Costa County, CA. for Huffman and Associates, Inc., Larkspur, CA.
2004. Special Status plant survey for Raintree Ranch, Foresthill, Placer County, CA. for Huffman and Associates, Inc., Larkspur, CA.
2004. Special Status plant survey for Clear Creek project site, Clear Creek, Lassen County, CA. for Huffman and Associates, Inc., Larkspur, CA.
2004. Special Status plant survey for Pittsburg Power Plant, Contra Costa Power Plant, Montezuma Enhancement Site, Mirant Electric, Contra Costa and Solano Counties, CA. for Huffman and Associates, Inc., Larkspur, CA.
2004. Special Status plant survey for Hoover Ranch, Bethal Island, Contra Costa County, CA. for Huffman and Associates, Inc., Larkspur, CA.
2004. Preliminary constraints analysis for wetland and rare plants on Home Depot site, Elk Grove, Sacramento County CA. for PAR Environmental, Sacramento, CA.
2004. Natural Environment Study for wetlands and rare plants on four Cal Trans interchange projects, Modesto, Stanislaus County CA. for PAR Environmental, Sacramento, CA.
2004. Natural Environment Study for wetlands and rare plants and significant trees along Auburn Blvd. Citrus Heights, Sacramento County, CA for PAR Environmental, Sacramento, CA.
2004. Purple Amole Monitoring Program, establish baseline transects and plots, study design, natural history and taxonomic review. Camp Roberts, Monterey County CA, for California Air National Guard, Sacramento, CA.
2005. Vegetation mapping along powerline right of ways and access roads for Western Power. Burleson Consulting, Folsom, CA.
2005. Special status plant habitat assessment and preliminary wetland delineation for initial study and alternatives analysis for EBMUD Comanche Reservoir sewer treatment plant. Ecobridges, Nevada City, CA.
2005. Wetland delineation and rare plant survey, Folsom Blvd. widening project, Sacramento, CA. PAR Environmental, Sacramento, CA.
2005. Special status plant survey. Sacramento Country Day School, Sacramento, CA.
2005. Special status plant survey, Rockville development site, for Huffman and Associates, Inc. Larkspur, CA.
2005. Nevada County habitat management plan, Rollins Lake properties, for Ecobridges, Nevada City, CA.