APPENDIX 3.0

List of Preparers and Agencies/Organizations Consulted

APPENDIX 3.0-A

Firm Resumes of Preparers

David B. Blankenhorn PG

Current Position

Executive Vice President – Natural Resources & Health Sciences

Senior Principal

Discipline Area

- Project Management
- Geology/Hydrogeology
- Hydrology/Geomorphology
- Environmental Compliance/ Permitting
- Environmental Engineering
- Site Assessment/ Remediation
- Water Resources

Years' Experience

>20 Years

Joined Cardno

1994

Education

- MS, Civil Engineering: Stanford University, 1994
- BS, Applied Earth Science: Stanford University, 1993

Professional Registrations

- California Professional Geologist No. 7009
- Engineer-in-Training, 1995

Summary of Experience

Mr. Blankenhorn has over 20 years of professional experience within environmental consulting. His diverse background includes conducting hydrology and geomorphology studies, evaluating groundwater resources and groundwater/surface water interactions, site assessment and remediation, conducting fish passage assessments, designing fish passage and habitat enhancement projects, and preparing various regulatory permits and environmental compliance documents.

Significant Projects

Hydrology And Geomorphology Experience

Geomorphology Task Leader– Big Creek Hydroelectric Relicensing Project Southern California Electric, San Joaquin River Watershed, California

Cardno prepared the Exhibit E for the Big Creek Hydroelectric Relicensing Project in the San Joaquin River watershed in California. Mr. Blankenhorn conducted geomorphic assessments and hydrologic analyses and his responsibilities include classification of project reaches using the Rosgen and Montgomery-Buffington classification systems, identification of sediment sources and storage areas for use in developing a conceptual sediment transport regime, evaluation of bank stability, gravel tracer studies, identification of large woody debris accumulations, function, and recruitment potential, an assessment of riparian vegetation species, age, and density, and preparation of a report summarizing the inventory activities and results.

Non-E Exhibit Task Leader– Big Creek Hydroelectric Relicensing Project, Southern California Electric, San Joaquin River Watershed, California

Cardno prepared the Non-E Exhibits for the Big Creek Hydroelectric Relicensing Project in the San Joaquin River watershed in California. Mr. Blankenhorn was the task leader for preparing these documents and was responsible for identifying data gaps, obtaining and compiling the required information, and preparing the sections.

Santa Felicia Hydroelectric Project Relicensing – United Water Conservation District, Piru Creek, California

Cardno conducted various technical studies and prepared the Exhibit E document for the Santa Felicia Project. Mr. Blankenhorn was the lead hydrologist/geomorphologist and his responsibilities included developing studies to characterize the geomorphology and sediment transport conditions within Piru Creek, conducting various hydrologic analyses including IHA to assess changes in the stream flow regime associated with the project, and evaluating project-affects to the geomorphology and sediment transport conditions within Piru Creek.

Vermillion Valley Hydroelectric Relicensing Project – Southern California Electric, San Joaquin River Watershed, California

Cardno prepared the Exhibit E section for the Vermillion Valley Hydroelectric Relicensing Project in the San Joaquin River watershed in California. Mr. Blankenhorn conducted quantitative geomorphic assessments and hydrologic analyses and his responsibilities included surveying channel cross-sections, characterizing surficial sediment, evaluating various geomorphic indices using Rosgen and SCI protocols, performing a sediment transport analysis, conducting an indicators of hydrologic

alteration (IHA) analysis, and preparation of a report summarizing the assessment activities.

Ventura River Habitat Conservation Plan (HCP) – Casitas Municipal Water District, Ventura River, California

Cardno is preparing a Habitat Conservation Plan (HCP) for local government agencies and utilities operating in the Ventura River Watershed. Mr. Blankenhorn conducted a study to evaluate the relationship of surface water and groundwater within the Ventura River Watershed. His responsibilities include data analysis and interpretation, evaluating potential impacts of groundwater and surface water diversion on sensitive habitats, report preparation, and presentation of the results to oversight agencies including the California Department of Fish and Game, the National Marine Fisheries Service, and the United States Fish and Wildlife Service.

Peer Review of Casitas Water Supply and Use Report, Casitas Municipal Water District, Oakview, California

Cardno conducted a peer review of the Casitas Water Supply and Use Report, which was prepared to assess the Casitas Municipal Water District's water supply given recent and future changes in water supply and demand. The objective of the peer review was to determine whether the report accurately projects future water supply and water demand conditions. Mr. Blankenhorn managed the project and was the technical lead. His responsibilities included evaluating the applicability and appropriateness of the methods utilized to make the water supply and demand projections, data analysis, and preparing a report summarizing the evaluation methods and results.

Development of an Operations Plan for Fox and Alder Creek Diversions – Montecito Water District, Santa Ynez River Watershed, California

Cardno prepared an operations plan for two water diversions to comply with a USFWS issued Biological Opinion pertaining to California red-legged frogs (Rana aurora draytonii). Mr. Blankenhorn was the project manager and prepared an operations plan that allows for District diversions and provides adequate flow to support the physical and biological habitat features essential to the conservation of California red-legged frogs. His responsibilities include coordination with the USFS and USFWS, conducting site reconnaissance surveys, and evaluating the geomorphology, hydrology, and diversion operations. The plan was approved by the USFWS.

Robles Diversion Fish Ladder Biological Assessment – Casitas Municipal Water District, Ventura River, California

Cardno prepared a biological assessment (BA) for the fish ladder at the Robles Diversion Dam. Mr. Blankenhorn conducted a study to assist in the development of bypass flow rates through a fish ladder to enhance steelhead migration on the Ventura River in California. This study involved the evaluation of storm runoff hydrographs for the period of record and the preparation of recommendations for the management of future releases at the Robles Diversion Dam fish ladder for enhancement of fish passage downstream of the dam.

Virgin River Habitat Conservation Plan (HCP) – City of Mesquite, Virgin River, Nevada

Cardno is preparing a Habitat Conservation Plan (HCP) for the City of Mesquite and other local government agencies operating in the Virgin River Watershed. Mr. Blankenhorn is responsible for evaluating the surface water hydrology and the surface water and groundwater relationship within the Virgin River Watershed. His responsibilities include data analysis and interpretation, evaluating potential impacts of groundwater and surface water diversion on sensitive habitats, and report preparation.

Kern 3 Hydroelectric Project – Southern California Edison, Kern River, California

Cardno is conducting compliance monitoring related to sediment management downstream of Democrat Dam on the Kern River. Mr. Blankenhorn assisted in the development of a sediment management plan for the project and coordinating compliance monitoring activities that include surveying channel cross-sections, characterizing surficial sediment, evaluating various geomorphic indices, and conducting a sediment transport analysis.

Sediment Transport Study – East Side Silver Lake Improvement Association, Silver Lake, California

Cardno conducted a study to assess sediment transport and deposition at the confluence of Rush Creek and Silver Lake near June Lake, California. Mr. Blankenhorn was the lead geomorphologist on this project and his responsibilities included designing and implementing the study which included conducting surveys of the stream channel and delta area, characterizing the geomorphology of Rush Creek in the vicinity of the confluence, evaluating the hydrology of Rush Creek, characterizing the sediment transport conditions within Rush Creek, and estimating the rate of sediment delivery to the delta area.

Site Assessment and Remediation Experience

Underground Storage Tank Removal, Site Investigation, Quarterly Groundwater Monitoring, and Site Closure - BFS Retail and Commercial Operations, LLC, Sacramento, California

Cardno removed seven underground storage tanks (USTs), conducted a site investigation including the installation of eight monitor wells to assess the horizontal and vertical extent of petroleum hydrocarbon impacts to soil and groundwater, conducted quarterly groundwater monitoring, and obtained closure of a BFRC site located in downtown Sacramento, California. Mr. Blankenhorn managed the project and his responsibilities included preparing workplans and various reports, coordinating site activities with the SCEMD, preparing monitor well installation and abandonment permits, UST removal permits, and City of Sacramento encroachment permits, coordinating the UST removal activities, monitor well installation, and quarterly groundwater monitoring actvities, and developing a pathway for closure of the site. The site is scheduled for closure by the SCEMD and CVRWQRCB in November 2006 following the abandonment of the monitor wells at the site.

Site Assessment and Site Closure - BFS Retail and Commercial Operations, LLC, Sacramento, California

Cardno conducted a site assessment at a former tire service facility located in Sacramento, CA to assess the horizontal and vertical impacts associated with a former leaking underground storage tank. Mr. Blankenhorn managed the project and his responsibilities included overseeing the site assessment, conducting a fate and transport analysis using VLEACH, and preparing a report summarizing the site assessment acitivities and requesting site closure. Cardno was successful in achieving closure of the site through the Sacramento County Environmental Management Department and the Central Valley Regional Water Quality Control Board.

Groundwater Monitoring, Remediation, and Site Closure – BFS Retail and Commercial Operations, LLC, Buena Park, California

Cardno managed and achieved closure of a leaking underground storage tank (LUST) site in Buena Park, California. The project involved conducting quarterly groundwater sampling and the excavation of over 1,400 tons of petroleum hydrocarbon impacted soil and the application of approximately 900 pounds of Oxygen Releasing Compound. Mr.

Blankenhorn managed the project and his responsibilities include workplan preparation, developing a pathway for closure of the site, agency coordination, the preparation of quarterly groundwater monitoring and soil remediation reports and request for site closure. The soil excavation activities were used to reduce the mass of petroleum hydrocarbons in soil and reduce the dissolved-phase petroleum hydrocarbon concentrations in groundwater to below acceptable risk levels. Cardno obtained closure of the site through the Orange County Health Care Agency and the Santa Ana Regional Water Quality Control Board.

Groundwater Monitoring, Remediation, and Site Closure – BFS Retail and Commercial Operations, LLC, Orange, California

Cardno managed and achieved closure of a leaking underground storage tank (LUST) site in Orange, California. The project involved the use of high-vacuum extraction technology to remediate gasoline-range petroleum hydrocarbons in soil and groundwater. Mr. Blankenhorn was the project manager and his responsibilities included workplan development and implementation, agency coordination, data evaluation, and the preparation of a quarterly groundwater monitoring and soil remediation reports. The remediation activities were used to reduce the concentrations of petroleum hydrocarbons in soil and groundwater below acceptable risk levels and Cardno obtained closure of the site through the Orange County Health Care Agency and the Santa Ana Regional Water Quality Control Board.

Soil Remediation – PG&E – Fresno Service Center, Fresno, California

Mr. Blankenhorn was involved in the preparation of the remedial action plan and the remediation activities at the PG&E Fresno Service Center. His responsibilities included evaluating the fate and transport of contaminants at the site using VLEACH, developing cleanup goals for soil, preparing the SWPPP for the project, and coordination of the site remediation activities.

Remedial Investigation – Sherwin-Williams, Inc., Emeryville, California

Cardno conducted a remedial investigation to assess the nature and extent of impacts associated with the operations of the Sherwin-Williams facility located in Emeryville, CA. Mr. Blankenhorn managed the field investigation and conducted a study to assess the fate and transport of contaminated groundwater. His responsibilities included the installation of soil borings, monitor wells, piezometers, and CPT borings, the collection of soil and groundwater samples, the evaluation of surface water-groundwater interactions along Temescal Creek and San Francisco Bay, the evaluation of preferential avenues of contaminant transport, data analysis and interpretation, and the preparation of a remedial investigation (RI) report. The RI was prepared for the San Francisco Regional Water Quality Control Board, with the participation of the Department of Toxic Substances Control and other stakeholders through a Consultative Work Group. This approach to stakeholder involvement led to reduced comments on the draft RI, and ready acceptance of the results.

Fate and Transport Analysis/Surface Water-Groundwater Study – Unocal Corporation, Avila Beach, California

Cardno conducted a study to assess the fate and transport of petroleum hydrocarbon contaminated groundwater in Avila Beach, California. The study included analyzing tidal effects on the groundwater basin, surface water-groundwater interactions, biodegradation processes, and dilution due to subsurface mixing. Mr. Blankenhorn's responsibilities included managing the field aspects of the study, installing piezometers and stilling pipes, programming remote water level equipment, data acquisition,

analyzing the collecting data, and preparing a report summarizing the study methods and findings.

Selected Regulatory Permitting Experience

Newhall Ranch RMDP/SCP EIR/EIS – Newhall Land and Farming Company, Santa Clarita, CA

Cardno assisted in the preparation of the Newhall Ranch RMDP/SCP EIR/EIS. Mr. Blankenhorn was involved in conducting hydrologic studies associated with seeps along the Santa Clara River and in preparing the Surface Water Hydrology/Flood Control and Geomorphology/Riparian Resources sections of the document.

Tennessee Valley Authority EIS Project – Tennessee Valley Authority, Tennessee Valley, Tennessee

Cardno assisted in the preparation of an EIS for the revised operations and management of the Tennessee Valley Watershed. Mr. Blankenhorn conducted a study to evaluate the relationship between surface water and groundwater and to assess potential impacts on groundwater supply for various project alternatives. His responsibilities included characterizing surface water and groundwater resources, determining the impacts on groundwater levels related to changes in surface water levels for various alternatives, and the preparation of a technical report and EIS section outlining the methods and results of the analysis.

Daguerre Point Dam EIR Project – California Department of Water Resources, Yuba City, California

Cardno prepared an EIR which evaluated various alternatives to enhance fish passage across Daguerre Point Dam on the Yuba River. Mr. Blankenhorn prepared the groundwater section of this report and his responsibilities included characterizing the groundwater resources in the vicnity of the dam, determining the regulatory framework governing groundwater management, evaluating potential impacts to groundwater with respect to the various alternatives, and developing measures to mitigate potential impacts to groundwater resources.

Produced Water Reclamation Facility - Plains Exploration and Production, Arroyo Grande Oil Field, California

Cardno is assisting Plains Exploration and Production Company with project permitting and environmental compliance for a proposed water reclamation facility at the Arroyo Grande Oil Field. The project proposes to treat and discharge produced water to enhance oil production at the field. Mr. Blankenhorn assisted with evaluating various discharge alternatives for the produced water including land application, water reuse as irrigation water, discharge through the local wastewater treatment facility outfall, and discharge to Pismo Creek. He is currently coordinating the permitting for the project which include an NPDES permit from the Central Coast Regional Water Quality Control Board, a CDFG Streambed Alteration Agreement, and a U.S. Army Corps of Engineers 404 Permit.

Cabrillo Port LNG Facility – BHP Billiton, Oxnard, California

Cardno prepared the Proponent's Environmental Assessment and applications to California State Lands Commission and the United States Coast Guard for a liquefied natural gas (LNG) receiving terminal offshore of Oxnard, California. Mr. Blankenhorn assisted in the preparation of the extensive environmental documentation that was prepared to support agency and stakeholder interactions, and to provide the basis for

the CEQA/NEPA review. In addition, Mr. Blankenhorn coordinated the NPDES permit and the U.S. Army Corps of Engineers 404 permit.

Design and Permitting of Bioremediation Cells – Stocker Resources, Inglewood Oil Field, California

Cardno prepared the project design, construction documents, and associated permits for two 2-acre bioremediation cells at the Stocker Resources Inglewood Oil Field for the remediation of petroleum contaminated soil. Mr. Blankenhorn prepared the WDR and NPDES permits for the project through the Los Angeles Regional Water Quality Control Board, designed the water delivery/irrigation system, developed construction documents, parts and materials list, and an engineers estimate for the construction of the cells.

Environmental Compliance Services - - Chevron Pipe Line Company, Estero Marine Terminal, California

Cardno has provided environmental compliance services to Chevron Pipe Line Company at the Estero Marine Terminal near Morro Bay, CA for over 10 years. These services include site assessment and remediation and preparing environmental compliance documents and acquiring permits from various state and local agencies including the Central Coast Regional Water Quality Control Board and the San Luis Obispo County Planning Department. Mr. Blankenhorn has been involved in developing and analyzing remedial options, providing technical review of various documents, and overseeing site assessment and remediation activities.

Selected Legal Experience

MTBE Litigation – Confidential Client, Sacramento, California

Cardno prepared a report evaluating the MTBE detections associated with a former leaking underground storage tank site in Sacramento, CA. The client was identified as responsible party in a litigation filed by a local water district in response to MTBE impacts to a district groundwater supply well. Mr. Blankenhorn's responsibilities included evaluating the history of MTBE use in California, reviewing site hydrogeologic and analytical data, and preparing a memorandum to support a motion for summary judgment.

Soil and Groundwater Contaminant Impact Litigation – Confidential Client, Nampa, Idaho

Cardno assisted a confidential client in a litigation involving potential petroleum hydrocarbon impacts to a property situated adjacent to the client's former leaking underground storage tank. Mr. Blankenhorn's responsibilities included evaluating site hydrogeologic and analytical data, collecting soil and groundwater samples for forensic analysis, and preparing a memorandum to support a motion for summary judgement.

Soil and Groundwater Contaminant Impact Litigation – Confidential Client, Gresham, Oregon

Cardno assisted a confidential client in a litigation involving potential chlorinated petroleum hydrocarbon impacts to a property situated adjacent to the client's former facility. Mr. Blankenhorn's responsibilities included evaluating site hydrogeologic and analytical data, collecting soil and groundwater samples, and preparing a report to support a motion for summary judgement.

Athletic Field Construction Litigation – Confidential Client, Lynwood, California

Cardno assisted a confidential client in a lawsuit regarding the construction of a high school athletic field in Lynwood, California. Mr. Blankenhorn served as an expert witness and performed an assessment of the field, evaluated the field in relation to the construction specifications, and prepared an expert report which included a cost estimate to restore the field to meet the construction specifications.

Landfill Litigation Project – Confidential Client, Pitsburg, California

Cardno assisted a confidential client in a litigation involving potential groundwater impacts to a landfill in Pittsburg, California. Mr. Blankenhorn conducted geochemical, hydrogeological, and remediation analysis for discharges from the GBF landfill.

Litigation Support at Vallejo MGP – Confidential Client, Vallejo, California

Cardno assisted a confidential client in a litigation involving potential soil and groundwater impacts to a property owned by the City of Vallejo. Mr. Blankenhorn conducted remediation cost analysis for potential effects of the MGP site in Vallejo.

Litigation Support at Petroleum Products Terminal—Rocklin, California

Cardno assisted a confidential client in a litigation involving potential soil and groundwater impacts to a property Rocklin, California. Mr. Blankenhorn conducted geochemical, hydrogeological, and remediation analysis for discharges from the Rocklin Terminal.

Selected Fish Passage/Restoration Experience

California Coastal State Route Fish Passage Inventory and Assessment, Various State Highways in California – HDR, Inc.,

Cardno is a subcontractor to HDR, Inc. on the California Coastal State Route Fish Passage Inventory and Assessment Project for Caltrans. The project involved conducting a fish passage inventory and assessment of road crossings along various state highways including State Highways 1, 23, 33, 101, 118, 150, and 126 in Ventura County. The scope of work involved prioritizing watersheds for assessment, conducting field surveys to characterize the road crossings using the protocols developed by the California Department of Fish and Game, and, if applicable, evaluating fish passage at road crossings using the FishXing hydraulic model. Mr. Blankenhorn was the Project Manager and technical lead for the project and was responsible for ensuring compliance with Caltrans contract requirements, project scheduling and coordination, assisting with the development of assessment protocols, and leading field surveys.

Hilton Creek Fish Passage Enhancement Project – Cachuma Operations and Maintenance Board, Santa Ynez River Watershed, California

Cardno designed and managed the construction of a fish passage enhancement project to improve passage over a bedrock cascade and through a bedrock chute in Hilton Creek in the Santa Ynez River Watershed. The scope of work for this project included conducting topographic surveys, evaluating channel hydraulics using HEC-RAS and FishXing models, preparing the project design, and providing permitting support to assist with obtaining project approvals through NOAA Fisheries and the U.S. Army Corps of Engineers. In addition, Cardno managed and supervised the construction of the project which involved complying with various submittal requirements and completion of the project within a relatively short timeframe to meet with the Bureau's budget allocation constraints.

Salsipuedes Creek Fish Passage Enhancement Projects - Cachuma Operations and Maintenance Board, Santa Ynez River Watershed, California

Cardno designed and managed the construction of two fish passage enhancement projects to improve passage across grade control structures located at the Highway 1 and Jalama Road crossings on Salsipuedes Creek near Lompoc, California. The scope of work for this project included conducting topographic surveys, evaluating the hydraulics through the passage structures, preparing the project designs, and providing permitting support to assist with obtaining project approvals through NOAA Fisheries, the California Department of Fish and Game, the Central Valley Regional Water Quality Control Board, and the U.S. Army Corps of Engineers. In addition, Cardno managed and supervised the construction of these projects, which included maintaining compliance with CDFG 1601, and USACOE 404 permit conditions.

El Jaro Creek Demonstration Projects - Cachuma Operations and Maintenance Board, Santa Ynez River Watershed, California

Cardno designed and managed the construction of three demonstration projects designed to reduce sediment input into El Jaro Creek near Lompoc, California and demonstrate to local landowners the importance of land stewardship and best management practices for the conservation of wildland and range resources. The projects consisted of: 1) the removal and replacement of an undersized culvert and stabilization of the stream channel and adjacent streambanks within a small ephemeral drainage; 2) stabilization of an exposed side-draw located approximately 100 feet downstream of the existing culvert; and, 3) stabilization of an eroding streambank along El Jaro Creek. The scope of work involved conducting topographic surveys, preparing the project designs, leading two public workshops (one prior to construction and one following construction) to present the project to local landowners, and providing permitting support to assist with obtaining project approvals through NOAA Fisheries, the California Department of Fish and Game, the Central Valley Regional Water Quality Control Board, and the U.S. Army Corps of Engineers. In addition, Cardno managed and supervised the construction of these projects which included maintaining compliance with CDFG 1601 and USACOE 404 permit conditions.

Stream Restoration – Colville Confederate Tribes, Omak Creek, Washington

Cardno designed and managed the construction of a project to restore approximately 2,000 feet of Omak Creek that was previously channelized. Mr. Blankenhorn assisted with supervision of the construction activities and his responsibilities included surveying, preparation of channel design drawings, grade checking, staking of design layout, and supervising construction contractor during project implementation.

Camm Churchill Swift, Ph.D.
Senior Project Biologist

Current Position
Senior Project Scientist

Discipline Areas
> Ichthyology
> Fishery Biology
> Estuarine Biology

Years' Experience
30 years

Joined Cardno
2003 (ENTRIX)

Education
> Ph.D., Department of Biology, Florida State University, Tallahassee, 1970
> M.A., Department of Zoology, University of Michigan, Ann Arbor, 1965
> A.B., Department of Zoology, University of California, Berkeley, 1963

Summary of Experience

Dr. Swift is one of the leading authorities on the biology, management, and conservation of the fresh and brackish water fishes of coastal southern California. With over 30 years of experience working in the field, Dr. Swift is one of the most knowledgeable persons in the state on the status and distribution of freshwater fishes of coastal southern California. Dr. Swift is a recognized expert in the biology, conservation, and paleontology of local fishes, including the federally endangered brackish water species, the tidewater goby, *Eucyclogobius newberryi*, the migratory (anadromous) and federally listed steelhead (*Oncorhynchus mykiss*), and the federally threatened Santa Ana sucker (*Catostomus santaanae*). Of approximately eight species of freshwater fishes native to the Los Angeles Basin, the Santa Ana sucker, Santa Ana speckled dace (*Rhinichthys csculus* ssp.), and arroyo chub (*Gila orcutti*) are endemic in this region and have been highly impacted by man. The severe alteration of freshwater and estuarine habitat in much of California has led to most of the freshwater and brackish water species having special conservation status.

In addition to having expert knowledge of the biology of local species, Dr. Swift has a strong understanding requirements for recovery, and habitat restoration needs to improve the conservation status of the fishes of southern California. He has worked with a wide variety of public and private agencies to conserve these species and advised on habitat restoration for their benefit. He served on the Recovery Teams for the unarmored threespine stickleback (*Gasterosteus aculeatus williamsoni*) and tidewater goby (*Eucyclogobius newberryi*), both federally endangered species, and was an author for the recovery plans for both fish. He also served on the Technical Recovery Teams for southern steelhead (National Marine Fisheries Service).

He also has major expeditionary experience in the fresh and estuarine waters of the southeastern United States, marine shore fishes of Pacific coastal Mexico and Costa Rica (including Cocos Island), the Indus River Delta, Pakistan, and Amazonian Peru. He has done extensive fieldwork, led field crews, conducted literature searches, and written several comprehensive reports and peer reviewed publications. He serves as an expert witness in fishery conservation issues. He has considerable experience in identification and analysis of archaeological and fossil fish bones from the southeastern United States, southern California, and coastal Pakistan.

Significant Projects

Sensitive Fish Species – Ventura County

Swift has led monitoring and mitigation efforts on a variety of streams in Ventura County including Arroyo Simi, Santa Clara River, Ventura River, Hueneme Drain, and Rincon Creek for over 20 years. Preconstruction surveys, mitigation plans, sensitive species capture and translocation, and guiding post-project habitat restoration have been accomplished on a variety of sites and for several sensitive species, including arroyo chub (California Species of Special Concern), Santa Ana sucker (federally threatened), unarmored threespine stickleback (federally endangered), tidewater goby (federally endangered), southern steelhead (federally endangered), and Pacific lamprey. In addition these activities have involved protections for related riparian reptiles and amphibians including California red-legged frog (federally threatened), arroyo toad (federally

endangered), southwestern pond turtle and two striped garter snake (both California Species of Special Concern). Five sites in the Arroyo Simi drainage have been surveyed and monitored during construction projects in the cities of Simi Valley and Moorpark.

Newhall Land and Farming – Special Status Aquatic Species EIR Assessment, Los Angeles County, California

Performed habitat surveys in the upper Santa Clara River for sensitive aquatic species with an emphasis on the federally listed endangered unarmoured threespine stickleback. Surveyed tributary habitat potential, mapped refugia areas and analyzed instream flow velocity model alternatives for project impacts on stickleback habitat.

Environmental Compliance and Monitoring/Terrestrial Biology – The Old Road Outlet Project - Valencia, California

Provided environmental compliance assistance to Newhall Land and Farming Company and the City of Santa Clarita, specifically via a Verification Request Letter submittal to ACOE and CDFG. Other services included a biological assessment of the project area, impact assessment and pre-construction surveys, and environmental monitoring for sensitive species, particularly the federally listed endangered unarmored threespine stickleback.

City of Santa Clarita – Special Status Species Survey and Unarmored Threespine Stickleback Relocation, City of Santa Clarita, California

Conducted sensitive aquatic species surveys for the Old Road Outlet Project. Performed capture and relocation of federally endangered unarmored threespine stickleback during river diversion activities. Provided consulting for design, construction and implementation of a temporary river diversion channel.

Study of Santa Ana Sucker Biology on the Middle Santa Ana River – Riverside, California

As part of the Santa Ana Sucker Conservation program on the Santa Ana River, Dr. Swift participated in a long-term study to assess the population size and distribution of Santa Ana Suckers in the Santa Ana River near the city of Riverside, California. The program was administered by the multi-agency Santa Ana Water Projects Authority (SAWPA) in Riverside. Survey protocols included annual summer surveys employing electrofishing using three pass depletion transects at locations in the mainstem Santa Ana River near the city of Riverside. Santa Ana suckers were measured, weighed, and tagged with PIT tags if over about 80 mm standard length. Dr. Swift held federal permits for capture, handling and PIT tagging of the suckers. In addition to the mainstem river sites, electrofishing efforts were conducted at sites in the mainstem and tributaries of the river to detect tagged suckers. Dr. Swift participated in the program from 1999-2003, which formed the beginning of a long term annual survey of population size, movements and distribution of the Santa Ana sucker in the river.

U.S. Geological Survey, National Water-Quality Assessment Program – Santa Ana River, California

Dr. Swift participated in the USGS NAWQA program, a nationwide river monitoring and quality assessment designed to assess the status and trends in the quality of freshwater streams and aquifers, and to provide a sound understanding of the natural and human factors that affect the quality of these resources. The program included a three year survey of Santa Ana suckers on the Santa Ana River. Survey protocols required electrofishing of a total of one kilometer of river in 100-meter increments at two localities on the Santa Ana River. The goal of this assessment was to characterize, in a nationally consistent manner, the broad-scale geographic and seasonal variations of water-quality related to major contaminant sources and background conditions.

California Department of Fish and Game Native Fish Surveys – San Gabriel River, California

The California Department of Fish and Game periodically assesses the status of wild trout, Santa Ana sucker, arroyo chubs, and speckled dace in the San Gabriel River system. Dr. Swift participated in four of these sampling efforts in the early 1990s. Survey protocols included electrofishing with three pass depletion of 100 meter transects in the West Fork of the San Gabriel River and its tributary Bear Creek. Fish were identified, measured and released back to the stream.

Wastewater Impacts on Native and Sensitive Fish Species

Provided assessment of impacts of changes in water flow from San Bernardino Infiltration and Extraction Wastewater Treatment Facility (RIX) on populations of Santa Ana sucker, City of San Bernardino.

Evaluation of Native Freshwater Fishes of Southern California for the California Department of Fish and Game

Evaluated the status of the native freshwater fishes of southern California, including the status of the estuarine tidewater goby, with recommendations for preserves to maintain their existence. California Department of Fish and Game Contract FG-7455, one year. Compiled data bases on fish records collaborating with Peter Moyle, U. C. Davis, to incorporate data into the California Department of Fish and Game's Natural Heritage Data Base, at Natural History Museum of Los Angeles County.

Estuarine Fishes of Ballona Marsh – Los Angeles County, California

Dr. Swift is coauthor of "Estuarine Fish Communities of Ballona Marsh [Los Angeles County]", In: Ralph Schrieber, Ed., Biota of the Ballona Region, Los Angeles County. Suppl. No. 1, Marina del Rey/Ballona Local Coastal Plan, Los Angeles Co. Dept. Regional Planning. This one-year study sampled fishes monthly at 13 stations in the marsh and provided the most comprehensive study of the fish communities of the marsh to date. It continues to be followed to monitor changes to the fish community. Currently Dr. Swift serves on the Scientific Advisory Committee for the Ballona Marsh Restoration.

Restoration of the Santa Maria River Estuary – Santa Barbara County, California

Dr. Swift prepared a historical analysis of coastal estuaries, habitat change, and restoration options for the estuary at the mouth of the Santa Maria River, Santa Barbara County, California for California Department of Fish and Game Oil Response Team, for its contribution to the Trustees of Guadalupe Site, through Hagler-Bailly Inc., Boulder, Co. In addition, Swift collaborated with ENTRIX biologists in surveying the estuary for tidewater gobies and preparing a report on their current status at the site.

Native Cyprinoid Habitat Suitability – Santa Ana River, California

Served on an expert panel, and created habitat suitability criteria and curves for three native cyprinoid fishes (state species of special concern) of the Santa Ana River, southern Calif., EA Engineering and Technology (Lafayette, CA) for Southern California Edison Company.

Big Tujunga Mitigation and Restoration – Sunland, California

On behalf of the Los Angeles County Department of Public works, Dr. Camm Swift, with Dan Holland, designed and implemented the exotic species removal program at Big Tujunga Wash from 2000 to 2004. Work included extensive trapping for crayfish, gill netting and snorkeling for bass, removal of bullfrog egg masses, and monitoring of the three native fish species in Haines Creek. Dr. Swift was instrumental in making recommendations with respect to the refinement of methods, equipment needs and

sampling design and strategy. Effectiveness monitoring of the eradication efforts included periodic surveys of the native fishes in the streams at randomly selected transects along the stream within the mitigation area.

Expert Witness Testimony Big Tujunga Wash –California

In support of the California Department of Fish and Game's Community Arbitration with Foothill Golf and Development in California State Superior Court, Los Angeles, Dr. Swift provided extensive and detailed information on the biology of Southern California coastal minnows and sucker to support the Department's position of the extreme importance of the wash habitat for the continued existence of the native fishes and other native species in this surviving remnant fish community consisting of the Santa Ana sucker, and Santa Ana speckled dace and arroyo chub (both California species of special concern).

Various Native Fishes Surveys & Monitoring – Santa Ana River, California

Surveyed for native and introduced freshwater fishes in the middle Santa Ana River in the Prado Dam vicinity with special reference to Santa Ana sucker and arroyo chub; for U. S. Army Corps of Engineers, Los Angeles CA. Surveyed, trapped, and studied food habit of Santa Ana suckers in the Santa Ana River to document movements into diversions and impact of exotic species on suckers; for Phase II for Santa Ana Water Project Authority, Riverside, CA. Surveyed for populations of native fishes in the vicinity of the Interstate 210 crossing; for Cal Trans. Additional survey for populations of sensitive native freshwater fishes near Colton and Loma Linda. Monitored for Santa Ana suckers and assess effects of bridge maintenance, sand mining, and alternative bridge design on this fish; for Riverside County Transportation Department. Reviewed and assessed mitigation features for Seven Oaks Dam on the Santa Ana River in relation to populations of Santa Ana sucker downstream; for the U. S. Army Corps of Engineers. Monitored, rescued, and transferred Santa Ana suckers from diversion of Santa Ana River, Orange County; for U. S. Army Corps of Engineers.

Exotic Predators on Tidewater Gobies on Marine Corps Base Camp Pendleton

Dr. Swift, working with Mr. Holland, used their extensive experience on the Base to prepare a management plan for exotic fishes and other species on Marine Corps Base Camp Pendleton. Many of these prey on tidewater gobies and this plan included methods for removal of exotics and for prevention or minimizing their impact on native aquatic species. Since 1998, Dr. Swift has led teams of biologists to implement the exotic species removal plan at San Mateo Lagoon on the Base.

San Juan Creek Native Fish Survey – La Novia Bridge – San Juan Capistrano, California

Dr. Swift provided biological support and pre-construction monitoring for a project involving widening of the La Novia Street Bridge over San Juan Creek. The project included field surveys and monitoring, developing best management practices for fish avoidance and developing mitigation measures for post-construction planning. Species of concern included migrating southern steelhead, unarmored three-spine stickleback, and arroyo chub.

Santa Clara River Estuary Tidewater Goby Surveys and Expert Witness Testimony, Ventura, California

For over five years Dr. Swift conducted biannual sampling of the tidewater goby population in the Santa Clara River Estuary as an element of the compliance monitoring program for the City of San Buenaventura's National Pollutant Discharge Elimination System (NPDES) Permit. He participated in permit renewal workshops and provided expert witness testimony on the impacts of the City's discharge and estuarine

hydrodynamics on tidewater goby and steelhead populations at Regional Water Quality Control Board hearings for the permit renewal.

Tidewater Gobies on Vandenberg Air Force Base

Cooperative Agreement between National Biological Service (now part of USGS) and Loyola Marymount University for study of the biology of the federally endangered tidewater goby on Vandenberg Air Force Base, Santa Barbara County. This contract extended for two years and comprehensively studied the biology and distribution of the tidewater gobies at five sites on Vandenberg Air Force Base. A comprehensive report detailed many aspects of needs for restoration of habitats on the Base.

Tidewater Goby and Red-legged Frog Mitigation and Rescue – Vandenberg Air Force Base, Santa Barbara, California

Dr. Swift provided preconstruction surveys, monitoring and rescue for steelhead, tidewater gobies, unarmored threespine stickleback and California red-legged frogs associated with two projects on Vandenberg Air Force Base: the El Rancho Road Bridge replacement over San Antonio Creek and the emergency bridge repair/reinforcement of the 13th Street Bridge over the Santa Ynez River. Exotic bullfrogs found in the project site also were removed from the stream.

Tidewater Gobies on Marine Corps Base Camp Pendleton

Dr. Swift, working with Mr. Dan Holland, did multiple surveys from 1991 to 2000 for the tidewater gobies and other members of the estuarine fish community at seven estuaries and lagoons on Marine Corps Base Camp Pendleton, coastal southern California. They provided the first descriptions of the estuarine fish communities for several of these sites and provided recommendations for maintenance and improvement of habitat for the species on the Base. With Dan Holland, Camp Pendleton Amphibian and Reptile Survey, Fallbrook, California for Marine Corps Base Camp Pendleton.

Bixby Ranch Steelhead, Tidewater Goby and California Red-Legged Frog Baseline Habitat Assessment – Santa Barbara, California

Dr. Swift conducted a baseline biological assessment of the Bixby Ranch in Santa Barbara, California. The focus of this assessment was to assess aquatic habitat conditions as it pertains to steelhead, tidewater goby, California red-legged frog, and southwestern pond turtle. Terrestrial habitat was also assessed but was limited by access constraints. New populations of tidewater gobies were discovered during this assessment.

Tidewater Goby Protection for Lower Mission Creek Flood Control Project – Santa Barbara, California

Review and assess mitigation plans and Biological Assessments for tidewater goby and steelhead in relation to Lower Mission Flood Control Project of U. S. Army Corps of Engineers. For City of Santa Barbara, CA.

Tidewater Goby Population Monitoring – San Luis Obispo, California

Monitored population of tidewater goby in San Luis Obispo Creek Lagoon in relation to Avila Beach cleanup site; for Unocal through Essex Environmental.

Study of Native Fishes of Southern California for California Department of Fish and Game & Natural History Museum of Los Angeles

Supervised crews of three to six graduate students surveying the estuarine and freshwaters of southern California for fishes for four months and prepared report for the California Department of Fish and Game on the status and distribution of these fishes, at Natural History Museum of Los Angeles County.

Study of Native Fishes of the Los Angeles River for California Department of Fish and Game & Natural History Museum of Los Angeles

Surveyed for freshwater fishes of the Los Angeles River. Field work and report writing, as part of contract from the California Department of Fish and Game to the Natural History Museum of Los Angeles County, to assess the fauna and flora of the river.

California Red-legged Frog Surveys – Caltrans – Ventura County, California

Mr. Mulder performed surveys for California red-legged frog (*Rana aurora draytonii*), within Santa Paula Creek in the vicinity of State Route 150 Bridge No. 52-105. The surveys were performed in support of Caltrans' Santa Paula Creek Fish Ladder Project, which will construct a rock weir and concreted rock slope protection with the capacity to facilitate fish passage upstream of Bridge No. 52-0105. The surveys strictly followed the U.S Fish and Wildlife Service Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog.

Certifications

Formally held permits for:

> California Department of Fish and Game-Resident Scientific Collecting Permit No. 801056-01 with Memoranda of Understanding covering federally listed tidewater goby, Santa Ana sucker, unarmored threespine stickleback, southern steelhead & incidental take of California red-legged frog, and Species of special concern arroyo chub and speckled dace.

> USFWS U. S. Fish and Wildlife Service Scientific Collecting Permit (10A) No. TE793644-5 for tidewater goby, Santa Ana sucker, California red-legged frog, Owens pupfish, Owens tui chub, and unarmored threespine stickleback

> NOAA Fisheries project specific southern steelhead handling permit

Appointments

Dr. Swift has held various elected and appointive positions in the California-Nevada Chapter of the American Fisheries Society, Southern California Academy of Sciences, and American Society of Ichthyologists and Herpetologists. Secretary, Vice-president, and President of the Academy; elected President-elect, and proceeded to President, and past President of California Nevada Chapter, 1997-1999. Served on host committees for Los Angeles meetings of the American Society of Ichthyologists and Herpetologists (twice), Society of Vertebrate Paleontology, California-Nevada Chapter of the AFS, and the Southern California Academy of Sciences (three times).

Dr. Swift served as a member of the Technical Recovery Teams for unarmored threespine stickleback and tidewater goby, both for U.S. Fish and Wildlife Service. He also served as a member of the Southern Steelhead Technical Recovery Team for the National Marine Fisheries Service.

Dr. Swift was elected Fellow of the Southern California Academy of Sciences in 1991 and named Emeritus Associate Curator of Fishes, Natural History Museum of Los Angeles County in 1993. He received the Award of Excellence from California Nevada Chapter of the American Fisheries Society in 1997.

Dr. Swift is an active member in numerous professional associations including: American Fisheries Society, including California Nevada Chapter, Estuarine Research Foundation,

American Society of Ichthyologists and Herpetologists, Desert Fishes Council, Southeastern Fishes Council, Society of Vertebrate Paleontology, Sigma Xi (Loyola Marymount University Chapter), American Association for the Advancement of Science, Southern California Academy of Sciences, Society for Conservation Biology, Society of Systematic Biology, Biological Society of Washington, Japanese Ichthyological Society, Western Field Ornithologists, and California Native Plant Society.

Publications & Presentations

1989-Present

Peer Reviewed, Book Chapters, and Selected Reports

> Swift, T. H. Haglund, M. Ruiz, and R. Fisher, 1993. Status and distribution of the freshwater fishes of southern California. *Bulletin Southern California Academy of Science*, 92(3):101-168.

> Swift, C.C., 1996, Chapter 30, Distribution and migration, Pp. 595-630, (excluding literature cited in single collection at end of book). In: Carl Bond, *Biology of Fishes*, (textbook) Second Edition, Harcort, Brace, and Co., Philadelphia.

> Lafferty, K., R. Swenson, and C. C. Swift, 1996, Tidewater Goby; Endangered Species Profile, *Environmental Biology of Fishes*, 46:254.

> Swift, C.C., 1998. The fish fauna of Ballona Marsh, an urban estuary on the western Los Angeles Basin, p. 1427 (Abst), In: Orville T. Magoon, et al. Eds, *California and the World Ocean '97*, 2 vols. American Society Civil Engineers, Reston, VA

> K. Lafferty, C. C. Swift and R. Ambrose. 1999. Postflood persistence and recolonization of endangered tidewater goby populations, *North American Journal of Fisheries Management*, 19(2):618-622.

> K. Lafferty, C. C. Swift and R. Ambrose, 1999, Extirpation and recolonization in a metapopulation of an endangered fish, the tidewater goby, *Conservation Biology*, 13(6):1447-1453.

> Holland, D. C. and C. C. Swift. 2000. Exotic aquatic species on MCB Camp Pendleton, California: Control and Management. Report for AC/S Environmental Security, Wildlife Management Branch, MCB Camp Pendleton, CA, by Camp Pendleton Amphibian and Reptile Survey, Fallbrook, CA, Contract # M 00681-97-P-1687, vii + 59 pp., 3 Appendices.

> Swift, C. C. 2001. The Santa Ana sucker in the Santa Ana River: distribution, relative abundance, spawning areas, and impact of exotic predators. Final Report submitted to SAWPA on behalf of the Santa Ana River Conservation Trust Fund, submitted by Larry Muncey International, vii + 94 pp.

> Swift, K. Hieb, and R. Swenson, 2002, Family Gobiidae, pp. 7-9. IN: William S. Leet, Christopher M. Dewees, Richard Klingbeil, and Eric J. Larson (editors), *California's Living Marine Resources: A status report*. The Errata. California Department of Fish and Game, Sacramento, California (December, 2001) (www.dfg.ca.gov/mrd) [The larger work appeared in hard copy in earliest 2002 minus this Gobies article later added to an electronic Errata on the web site for inclusion in the Section on Bay and Estuarine Finfish Resources]

> M. N. Dawson, K. D. Louie, M. Barlow, D. K. Jacobs, and C. C. Swift, 2002, Comparative phylogeography of sympatric sister species, *Clevelandia ios* And *Eucyclogobius newberryi* (Teleostei, Gobiidae), across the California Transition Zone, *Molecular Ecology*, 11, 1065-1075.

> Swift and D. C. Holland, 2002, "Exotic Fish Species and Their Impacts On Small Costal Lagoons In Southern California," (Abst.) *Bulletin Southern California Academy of Science*, 101(2), Supplement, p. 32

- Swift, C.C., 2002. Interaction between native fish, habitat, and exotic fish species in the middle Santa Ana River, Southern California, (Abst.) *Bulletin Southern California Academy of Science*, 101(2), Supplement, p. 32.
- Swift, C.C., 2006, Chapter 29. Distribution, Pp. 601-638. IN: Michael Barton, *Bond's Biology of Fishes*, 3rd Edition, Thompson Brooks/Cole, Belmont, California.
- Feeney, R. and C. C. Swift. 2008. Description and ecology of larvae and juveniles of three native cypriniforms of coastal southern California. *Ichthyological Research*, 55(1):65-77.
- Buth, D. G., J. Sim, and C. C. Swift. 2008. 64. Genetic confirmation of hybridization between *Catostomus fumeiventris* and *Catosotmus santaanae* (*Cypriniformes: Catostomidae*) in the Santa Clara drainage. *Bulletin of the Southern California Academy of Sciences*, 107(2):121-122. (Abstract)
- Swift, C. C., S. L. Drill, and L. McAdams. 2008. Section 1. Study overview, native species, and value of non-native fishes in the Los Angeles River. pp. 2-22. IN: Shelly Backlar, Lewis McAdams, Ramona Marks, Alicia Katano, and Jonathan Brooks (Editors). State of the River 2 The Fish Study. Friends of the Los Angeles River (FOLAR), Los Angeles, CA
- Earl, D. A., K. D. Louie, C. Bardeleben, C. C. Swift, and D. K. Jacobs. 2009. Rangewide microsatellite survey and phylogeography of the endangered Tidewater Goby, *Eucyclogobius newberryi* (*Teleostei: Gobiidae*), a genetically subdivided coastal fish with limited marine dispersal. *Conservation Genetics*, (DOI 10.1007/s10592-009-0008-9) (On line)
- Chabot, C., D. Buth, C. Swift, J. Sim, T. Dowling, and L. Allen. 2009. Introgression of mitochondrial DNA between Catostomus fumeiventris and Catostomus santaanae (*Cypriniformes: Catostomidae*) in the Santa Clara drainage. Bulletin of the Southern California Academy of Sciences, 108(2):105 (Abstract)
- C. C. Swift and S. Howard. 2010. Status of Pacific lamprey, Entosphenus tridentata, south of Pt. Conception. Pp. 269-278. IN: Larry R. Brown, Shawn D. Chase, Matthew G. Mesa, Richard J. Beamish, and Peter B. Moyle (Editors) Symposium Volume. Lampreys of the Pacific Coast of North America. American Fisheries Society, Bethesda, MD
- Thompson, A. R., J. N. Baskin, C. C. Swift, T. R. Haglund, and R. J. Nagel. 2010. Influence of Habitat Dynamics on the Distribution and Abundance of the Federally Threatened Santa Ana Sucker, *Catostomus santaanae*, in the Santa Ana River. *Environmental Biology of Fishes*, 87(4):321-332. DOI 10.1007/s10641-010-9604-2 (On line)
- Swift, C. C., S. Howard, J. Mulder, D.. J. Pondella II, and T. P. Keegan. 2015. Expansion of the non-native Mississippi Silverside, Menidia audens (*Pisces, Atherinopsidae*), into fresh and marine wasters of coastal southern California. Bulletin of the Southern California Academy of Sciences, 113(3):153-164.

Presentations & Meetings

- El Nino effects on the native and exotic fish populations of the Santa Margarita River southern California. (with Robert N. Fisher [presenter] and Manna Warburton). Society for Conservation Biology Annual Meeting, Hilo Hawaii, 29 July-Aug. 1, 2001.
- El Nino effects on estuarine fish populations associated with the southernmost populations of tidewater goby, 1990-2001 (with Dan Holland), and The federally threatened Santa Ana sucker in the Santa Ana River-Distribution, habitat, and exotic predators. Ann. Meeting, California Nevada Chapter American Fisheries Society, Tahoe City, California April 19-20, 2002

- Exotic fish species and their impacts on small coastal lagoons in southern California (with Dan Holland, presenter), and Interaction between native fish, habitat, and exotic fish species in the middle Santa Ana River, southern California. Annual. Meeting, Southern California Academy of Sciences, Claremont, California June 7-8, 2002.
- Fish populations of small coastal lagoons in southern California. California Estuarine Research Society, Inaugural Meeting, Hubbs Sea World Research Institute, San Diego, California, April 14, 2003
- Status of and prognosis for the freshwater fishes of coastal southern California. Swift [presenter], Jonathan N. Baskin, Robert Fisher, and Thomas Haglund; Status, Habitat, and restoration of southern Steelhead in Topanga Creek and State Park, just south of Malibu Creek. Rosi Dagit [presenter] and Swift; Visual Display of stream habitat survey profiles using GIS: An example from Topanga Creek, coastal Southern California. Kevin Reagan [presenter], Rosi Dagit, and Swift; and a Poster: Genetic structure in the staghorn sculpin from Alaska to southern California. Kristina D. Louie [presenter], K. P. Kloepfli, D. K. Jacobs, and Swift. Western Division/Cal-Neva Chapter of American Fisheries Society, Joint Annual Meeting, San Diego, April 14-17, 2003. In addition Swift organized two days of symposia on the freshwater fish, amphibian, and aquatic reptile fauna of coastal southern California.
- Organized one day Symposium on Tidewater Gobies for California Nevada Chapter of the American Fisheries Society Meeting, San Luis Obispo, March 30, 2006. Chaired session and presented “Annual and seasonal variations in fish populations of San Mateo Lagoon, San Diego County, California” with Dan Holland, Melissa Booker, Brian Lohstroh, and Eric Bailey.
- Status and distribution of freshwater fishes of coastal southern California. In symposium on Aquatic Vertebrates of Southern California. Southern California Academy of Sciences Meeting, Pepperdine University, Malibu, 13, 14 May 2006.
- Expanding distributions of invasive fishes in coastal southern California estuaries and freshwaters. Presentation at the California Nevada Chapter of the American Fisheries Society Meeting, Lake Tahoe, Nevada, April 2008.
- Chabot, C., D. Buth, C. Swift, J. Sim, T. Dowling, and L. Allen. 2009. Introgression of mitochondrial DNA between *Catostomus fumeiventris* and *Catostomus santaanae* (Cypriniformes: Catostomidae) in the Santa Clara drainage. Poster 41, Southern California Academy of Sciences Meetings, Marymount College, Rancho Palos Verdes, CA, May 29, 2009.
- Drill, S. L. and C. C. Swift. 2009. Fishes and fishing in the Los Angeles River. Presentation by Drill, Southern California Academy of Sciences Meetings, Marymount College, Rancho Palos Verdes, CA, May 30, 2009.
- Swift, C. C. 2009. Biological results for Trabuco Fishway at Metrolink RR Crossing. Headwaters to Ocean Conference, H_2O, Long Beach California, 28 October 2009
- Jacobs, D., E. Dent, D. Greer, T. Longcore, E. Stein, and C. C. Swift. 2009. Formation, Closure, and classification of southern California estuaries. Presentation by Jacobs, Headwaters to Ocean Conference, H_2O, Long Beach California, 28 October 2009
- Swift, C. C., D. Holland, M. Booker, R. Woodfield, A. Gutierrez, B. Lohstroh, E. Bailey, S. Howard, and J. Mulder. 2009. Long Term qualitative changes in fish communities in San Mateo Creek lagoon and nearby coastal lagoons in southern California. Presentation in symposium: Arid and Seasonally Arid Estuaries, Coastal and Estuarine Research Federation, 20th Biennial Conference, Portland, OR, November 5, 2009.

Joel James Mulder

Current Position
Senior Project Scientist

Discipline Areas
> Aquatic Ecology & Bioassessment
> Fisheries & Amphibian Biology
> Endangered Species Act
> Permitting

Years' Experience
15

Joined Cardno
2006

Education
> B.S., Environmental, Population & Organismic Biology, University of Colorado at Boulder, 2001

Summary of Experience

From his interdisciplinary background in the environmental sciences, Mr. Mulder has a range of experience in ecological studies, focusing primarily on freshwater ecology, with extensive experience in aquatic habitats and endemic fishes and amphibians of California. Mr. Mulder holds a current Federal 10(A1(a) recovery permit for California red-legged frog, tidewater goby, unarmored threespine stickleback, and Santa Ana sucker. His experience also includes sampling for wide variety of other special status aquatic, terrestrial, and avian species. His experience also includes benthic macroinvertebrate bioassessment, rangeland ecology and monitoring, and nesting bird surveys. As a project manager and task leader, Mr. Mulder is proficient in project planning and implementation, field data collection and analysis, report writing, and superior client communication.

Mr. Mulder has conducted environmental studies for a wide variety of projects throughout California, including urban development, golf courses, wastewater treatment plants/pipelines and discharges, reservoir enlargement and dam repair (strengthening), power plants, urban lake restoration and management, debris and water diversion basins, flood control maintenance in streams and sloughs, aquatic habitat restoration, bridge replacement or repair, stream bank repair or stabilization, gravel mining, and water quality monitoring. These studies have included surveys for and analysis of impacts to species listed as threatened or endangered under the federal Endangered Species Act and the California Endangered Species Act.

Significant Projects in the Santa Clara River Watershed

Task Leader – Newhall Land, Landmark Village Geomorphology Study, Los Angeles County, California, 2013

Conducted geomorphological monitoring and management for Newhall Land in compliance with a Waste Discharge Requirement to establish baseline conditions for ongoing monitoring of effects associated with the Newhall Ranch Plan.

Task Leader – Metropolitan Water District Foothill Feeder Valve Maintenance Sensitive Species Surveys, Los Angeles County, California, 2011-2013

Mr. Mulder has performed pre-release surveys for sensitive species, including nesting birds, arroyo toad, and unarmored threespine stickleback, in advance of quarterly valve maintenance activities and pipeline draining for Metropolitan Water District since 2011. Surveys occurred in the Santa Clara River, San Francisquito Canyon, Charlie Canyon, and Placerita Creek.

Project Manager - Los Angeles Department of Water and Power Castaic Power Plant Southwestern Pond Turtle Management Plan, Los Angeles County, California, 2010

Mr. Mulder managed the survey and relocation of southwestern pond turtles for LADWP's Castaic Power Plant sediment basin management activities and developed a pond turtle management plan in coordination with LADWP, CDFW, and USFS for future management activities.

Task Leader -City of Santa Clarita – Special Status Species Survey and Unarmored Threespine Stickleback Relocation, Los Angeles County, California, 2009

Conducted weekly pre-construction surveys for nesting special status and migratory birds. Conducted weekly surveys for sensitive upland reptile and mammal species. Conducted

sensitive aquatic species surveys. Performed capture and relocation of federally listed as endangered unarmored threespine stickleback during river diversion activities. Provided consulting for design, construction, and implementation of a temporary river diversion channel. Performed data analysis and authored final report.

Project Manager – Sensitive Aquatic Species Survey, San Francisquito Creek Powerhouse 2 Tailings Removal Project, Los Angeles Department of Water and Power, Los Angeles County, California, 2009

Performed surveys for sensitive aquatic species, including nesting southwestern pond turtles, at a road crossing on San Francisquito Creek in advance of tailings removal by LADWP from the PP2 powerhouse. Cleared and isolated road crossing to prevent aquatic species impacts from the tailings removal and transport.

Task Leader - The Old Road Outlet Project for the City of Santa Clarita, Valencia, California, 2007-2008

Mr. Mulder assisted with a biological assessment of the project area, impact assessment, pre-construction surveys for sensitive aquatic and terrestrial species and construction worker awareness training and construction monitoring. Mr. Mulder also worked with CDFW to create a diversion and aquatic species relocation plan, and successfully implemented this plan resulting in the recovery and relocation of thousands of California Fully Protected unarmored threespine stickleback.

Task Leader - Hopkins Tibbitts Development Project Unarmored Threespine Stickleback Survey and Protection Plan, Los Angeles County, California. 2008

Conducted presence absence survey for aquatic species, including federally endangered unarmored threespine stickleback, in the Santa Clara River adjacent to the project site. Developed threespine stickleback protection plan for project groundwater pumping.

Task Leader – Newhall Land Focused Special Status Fish Species Habitat Assessment and Impact Analysis, Los Angeles County, California, 2007

A focused assessment of fish presence, aquatic habitat quality and quantity and of potential project effects on threatened or endangered fish species inhabiting the Newhall Ranch reach of the Santa Clara River as well as tributary drainages to the Santa Clara River. This assessment covered the mainstem Santa Clara River from Salt Creek Canyon upstream to the Middle Canyon confluence and included the Salt Creek and Potrero Creek tributaries. Specifically, the assessment focused on potential impacts to the State and Federally-listed unarmored threespine stickleback and other fish species, including arroyo chub and Santa Ana sucker. A quantitative habitat inventory was also conducted to identify existing habitat composition including important habitat features utilized by unarmored threespine stickleback and other locally important species.

Project Manager - California Red-legged Frog Surveys for Caltrans Santa Paula Creek Fish Ladder Project, Ventura County, California, 2010

Mr. Mulder performed surveys for California red-legged frog within Santa Paula Creek in the vicinity of State Route 150 Bridge No. 52-105. The surveys were performed in support of Caltrans' Santa Paula Creek Fish Ladder Project which will construct a rock weir and concreted rock slope protection with the capacity to facilitate fish passage upstream of Bridge No. 52-0105. The surveys strictly followed the USFWS Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog.

Field Crew - Santa Paula Creek Maintenance Project Biological Evaluation, Ventura County, California

A biological evaluation, including field surveys, was performed for the Ventura County Watershed Protection District on lower Santa Paula Creek. This included a fish survey. Mr.

Mulder assisted in the survey which included capture of Santa Ana suckers, Owen's suckers, and their hybrids.

Other Projects:

Fish

Project Manager – City of Los Angeles Echo Park Lake Restoration Project Environmental Lead, City of Los Angeles, California 2011-2013

Mr. Mulder served as the lead biologist for the Echo Park Lake Restoration Project. The Project has involved biological surveys, removal and relocation of all fish from the 9-acre lake, removal and relocation of turtles, removal and relocation of domesticated waterfowl, public outreach, and on-call environmental consulting.

Task Leader - San Clemente Dam Drawdown Project, Monterey County, California, 2007-2013

Since 2007, Mr. Mulder has served annually as a lead fisheries biologist and task leader for steelhead trout trapping and relocation for CalAm's San Clemente Dam Drawdown Project located on the Carmel River. Mr. Mulder assisted in all field aspects of the project including trap and live-car installation and removal, daily fish rescue operations, fish relocation, and water quality monitoring. Additionally, Mr. Mulder performed all fish data analysis and authored the fisheries section of the annual reports to NOAA.

Project Manager - Ventura County Watershed Protection District Maintenance Projects, Ventura County, California, 2007-2012

Mr. Mulder has served as lead biologist and Project Manager to Ventura County Watershed Protection District for numerous projects involving the repair, maintenance, and construction of District flood protection facilities. The projects have included pre-construction biological surveys, on-site biological monitoring during construction, fish rescue, and surface water quality monitoring. Examples of such projects include: Doris Drain Repair Project Aquatic Species Surveys and Rescue, Hueneme Drain Tidewater Goby Project, Santa Paula Creek Emergency Streambed Protection Project, Parkview Drain Access Road and Bridge Project, Santa Paula Creek 2007 Debris Removal Project, Arroyo Simi at Erringer Road Stabilizer Repair Project, Gabbert Debris Basin Bleeder Tower Repair Project, and Ponderosa Drain Repair Project.

Task Leader – City of Los Angeles, Bureau of Engineering, Machado Lake and Wilmington Drain Ecosystem Rehabilitation Project, California, 2009 - 2013

As part of the CDM engineering team, Cardno ENTRIX is providing support to the City of Los Angeles for biological surveys, CEQA technical support, and Endangered Species Act consultation for a planned constructed treatment wetlands project at Machado Lake. Mr. Mulder produced a Wildlife Management and Relocation Plan that outlines avoidance, mitigation, and management guidelines for the design and construction phases of the project. Mr. Mulder was also task leader responsible for aquatic surveys and drafting the wildlife removal and relocation plan for the Project, as well as coordination with the multifaceted CDM team, public outreach, and biological support to the City of Los Angeles.

Task Leader - Big Tujunga Wash Ponds, Exotic Removal and Santa Ana Sucker Survey Project, Los Angeles County, California, 2008

Mr. Mulder assisted Cardno ENTRIX senior staff in the management and conduct of snorkel surveys for Santa Ana suckers in the outlet flow from Big Tijunga Wash Ponds and in an exotic species eradication effort in the Ponds for Los Angeles County Parks. Species

targeted included non-native fishes, crustaceans, and bullfrogs. Methods utilized included spearfishing, night gigging, trapping, and snorkel surveys.

Task Leader - River Road Bridge Replacement Project, Riverside County, California, 2008-2010

Mr. Mulder assisted in 7 separate federally threatened Santa Ana sucker rescue and relocation efforts in 2009 and 2010 on the Santa Ana River for the removal and replacement of River Road Bridge. Mr. Mulder managed the project, organized the field crew, assisted in reporting, and helped move over 485 suckers.

Crew Leader - Caltrans Fish Passage Survey, Ventura, Santa Barbara, Los Angeles and San Luis Obispo Counties, California, 2007

Conducted habitat and fish passage assessments throughout Ventura, Santa Barbara, Los Angeles, and San Luis Obispo county highway systems. Conducted field surveys and analysis of potential fish passage barriers, and inventoried culvert and bridge locations.

Project Manager - Federally Endangered Tidewater Goby Protocol Surveys. 2006-2011

Mr. Mulder has conducted numerous protocol level surveys for tidewater gobies in lagoons and estuaries throughout southern and central California, as well as performing rescue and relocation for several projects to avoid impacts to gobies. Examples of some of these surveys include: City of Santa Barbara Laguna Tide Gate Maintenance Project, City of Santa Barbara Cabrillo Bridge Replacement Project, City of Santa Barbara Andree Clark Refuge Vegetation Maintenance Project, PXP Reverse Osmosis Outfall Project, City of Malibu Presence/Absence Survey Las Flores Canyon, City of Ventura Annual Tidewater Goby Presence/Absence Survey Santa Clara River Estuary, and the City of Goleta Presence/Absence Survey San Jose Creek Improvement Project.

Crew Leader – California Hardhead Minnow Population Assessment for Southern California Edison Big Creek Hydroelectric Project, Fresno County, California 2009-2010

Mr. Mulder assisted in hardhead minnow population monitoring surveys in support of FERC relicensing monitoring requirement for Southern California Edison's Big Creek 3 Hydroelectric Project. Surveys included snorkel and backpack electrofishing sampling.

Crew Leader - Smallmouth Bass Population Monitoring for Southern California Edison Lower Kern River Hydroelectric Project, Kern County, California, 2008-2009

Cardno ENTRIX conducted annual monitoring of the smallmouth bass population in the lower Kern River Canyon for Southern California Edison. Mr. Mulder assisted in conducting these surveys utilizing backpack and barge electro-fishers, identified and measured captured fish, and sampled scales for age analysis.

Project Manager - San Gabriel River Fish Toxicology Survey, Los Angeles County, California, 2009

Mr. Mulder has conducted fish surveys for the San Gabriel River Regional Monitoring Program, Annual Fish Toxicology Study. The monitoring program is sponsored by the Los Angeles and San Gabriel Rivers Watershed Council. Captured target fish species through a variety of sampling techniques including gill netting, seining, gigging and hook and line. Samples were used to assess fish toxicology associated with human consumption of fish from the San Gabriel River system.

Amphibians and Reptiles

Task Leader – Southern California Edison Big Creek Hydroelectric Relicensing Post License Monitoring – Foothill Yellow Legged Frog and Western Pond turtle Survey, San Joaquin River - Horseshoe Bend, Madera County, California, 2012

Mr. Mulder led the survey task for foothill yellow legged frogs using the Seltenrich and Pool visual encounter methodology for all life-stages. The survey also included observations and distribution mapping of western pond turtle presence. The surveys were performed as part of Southern California Edison's post-license monitoring in the rugged Horseshoe Bend Reach and associated tributaries of the San Joaquin River for the Big Creek 4 Hydroelectric Project.

Task Leader – CalPortland California Red-legged Frog Surveys,5-Year Mitigation and Monitoring Program, Sisquoc River, Santa Barbara County, California, 2012

Mr. Mulder lead the survey task for USFWS protocol-level California red-legged frog surveys for CalPortland's Mitigation and Monitoring Program for gravel mining operations in the lower Sisquoc River.

Project Manager - City of Santa Barbara Andree Clark Bird Refuge Vegetation Maintenance Project– Southwestern Pond Turtle Survey, Andree Clark Bird Refuge, Santa Barbara County, California, 2011

Mr. Mulder managed the survey for southwestern pond turtles the City of Santa Barbara's vegetation maintenance operations in the Andree Clark bird Refuge. The survey included basking trapping and visual surveys.

Crew Leader - Mountain Yellow Legged Frog Survey, North Central Mountain Region, California, 2001-2004

Mr. Mulder served as California Department of Fish and Wildlife crew leader for the north central mountain region of a statewide mountain yellow legged frog survey project. Surveys were conducted high mountain lakes of the Sierra Nevada over four summers; personally completing over 500 individual VES surveys for mountain yellow legged frogs. Mr. Mulder led a series of biological surveys for amphibians and fish which included visual encounter surveys for amphibians, gill net sampling, fish identification, backpack electro-shocking, otolith collection, fish barrier identification, fish spawning area identification, chitrid fungus inspections on mountain yellow legged frogs, fairy shrimp collection, and terrestrial and aquatic habitat surveys. Mr. Mulder was additionally responsible for the project's data management, fish population analysis, GIS mapping, restoration area identification, and co-presentations of project progress and results.

Birds

Task Leader – CalPortland least Bell's Vireo Surveys,5-Year Mitigation and Monitoring Program, Sisquoc River, Santa Barbara County, California, 2012

Mr. Mulder led the survey task for ongoing USFWS protocol-level surveys for the state and federally endangered least Bell's vireo for CalPortland's Mitigation and Monitoring Program for gravel mining operations in the lower Sisquoc River.

Project Manager – Sensitive Bird Species Nesting Survey, Goleta Sanitary District Wastewater Treatment Plant Improvement Project, Santa Barbara County, California, 2011-2012

Mr. Mulder continues to manage monthly surveys for nesting sensitive bird species in the vicinity of the Goleta Sanitary District Wastewater treatment Plant in order to avoid impacts associated with the Plant Upgrade Project. Mr. Mulder has conducted the majority of the surveys and overseen surveys by junior biologists for the project.

Task Leader – Swainson's Hawk Surveys and Monitoring, Gill Ranch Gas Pipeline and Storage Project, Fresno and Madera Counties, California, 2011

Mr. Mulder co-led the survey task for California Department of Fish and Wildlife protocol level surveys for the state threatened Swainson's hawk for the Gill Ranch Pipeline and Storage Project where over 27 square miles were surveyed for hawk presence and nesting. Mr. Mulder also served as one of the primary nest monitors during construction ensuring Swainson's hawk nesting was not being disturbed by project activities.

Task Leader – Pre-Construction Nesting Bird Surveys, Ventura county Watershed Protection District, Ventura County, California, 2007-2011

Mr. Mulder has managed and conducted nesting bird pre-construction surveys for numerous Ventura County Watershed District projects since 2007. Examples of some projects include: Doris Drain Repair Project, Santa Paula Creek Emergency Streambed Protection Project, Parkview Drain Access Road and Bridge Project, Santa Paula Creek 2007 Debris Removal Project, Arroyo Simi at Erringer Road Stabilizer Repair Project, Arroyo Simi Upstream of Los Angele Avenue Stabilizer Repair Project, Gabbert Debris Basin Bleeder Tower Repair Project, Ponderosa Drain Repair Project, and Hopper Creek Debris Removal Project.

Bioassessments

Task Leader – Cachuma conservation and Release Board Biological Assessment for the Cachuma Project, 2013

Mr. Mulder is currently a lead author and project leader for the U.S. Bureau of Reclamation's Section 7 re-consultation with NMFS pursuant to the ESA for operation and maintenance of the Cachuma Project on the Santa Ynez River, Santa Barbara County. Cardno is assisting Reclamation and the Cachuma Conservation Release Board in developing a Biological Assessment related to management of the federally listed steelhead trout and potential impacts to fish passage and habitat in the Lower Santa Ynez River. Mr. Mulder has coordinated the fisheries studies, analyzed flow requirements for fish passage and summer habitat, analyzed the effects of conservation measures enacted under the 2000 consultation for the Project, and developed actions to meet the needs of numerous water users and downstream public trust resources.

Project Manager - City of Santa Barbara Andree Clark Bird Refuge Vegetation Maintenance Project – Biological Assessment and Biological Evaluation 2011

Mr. Mulder served as project manager for a biological assessment and a biological evaluation analyzing the effects of the Andree Clark Bird Refuge Vegetation Maintenance Project on federally listed and other special status species in the Refuge.

Task Leader - Heavenly Valley Creek Bioassessment for Heavenly Valley Ski Resort, El Dorado County, California, 2007- 2013

Mr. Mulder is currently serving as the benthic macroinvertebrate bioassessment leader for conducting Benthic macroinvertebrate collections and analysis for Heavenly Valley's ongoing Total Maximum daily Load Plan.

Crew Leader - Benthic Macroinvertebrate Assessment for Pacific Gas and Electric Rock Creek Cresta Hydroelectric Project, 2009

Mr. Mulder led a large scale field effort to conduct a groundbreaking BMI investigative study on the effects of whitewater releases on BMI communities for PG&E's Rock Creek

Cresta whitewater recreational release program on the North Fork Feather River.

Project Manger - Trout Unlimited/CDM - Trabuco, Oso and San Juan Creek Biological Survey – Orange County, California

Mr. Mulder served as the project manger and field biologist for a biological survey related to the planned replacement of a fish passage barrier at the Metrolink Trabuco Creek Crossing. The project included fish, amphibian, avian, and habitat surveys, as well as a detailed report providing the results of the surveys and recommendations for the barrier replacement and other steelhead habitat enhancement options.

Task Leader - Soboba Springs Driving Range Project Biological Assessment, Soboba Reservation, Riverside County, Californian

Mr. mulder prepared a biological assessment for improvements to the Soboba Springs Driving Range including analysis of project alternatives and potential effects on listed species.

Certifications

> U.S. Fish and Wildlife Service 10(A)1(a) Recovery Permit for California red-legged frog, tidewater goby, unarmored threespine stickleback, and Santa Ana sucker TE-93072A-0

> California Department of Fish and Game. Resident Scientific Collecting Permit No. SC-009186

> Swiftwater Rescue Training, 2008

> Emergency Medical Technician, State of California, 2005

> SCUBA Advanced Open Water Diver, 2006

Professional Training

> Mountain Yellow Legged Frog CDFW inter-regional training, 2001, 2002, 2003

> American Canoe Association Coastal Kayak Instructor Workshop and Examination, 2003

> State Water Resources Control Board Surface Water Ambient Monitoring Program (SWAMP) Workshop, 2007

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Organizational Capabilities

Since 1983 ConSol has been providing energy solutions for new and existing buildings in the form of innovative approaches, in-depth analysis, extensive industry insight and value-driven results. ConSol offers leading-edge research and energy consulting in systems, technologies, codes and energy-efficiency program development to improve the sustainability of new and existing residential and commercial buildings and developments. ConSol is dedicated to helping our clients provide resource-efficient homes and buildings that are efficient, affordable and sustainable. ConSol strives to provide value-added services and form long-term partnerships with our clients. ConSol is a registered California Corporation.

Mission Statement

ConSol is committed to advancing energy efficiency, renewable energy and green building technologies in the marketplace through innovative, cost effective solutions for residential and commercial buildings. ConSol strives to make buildings make cents.

ConSol Leadership

ConSol 's team of highly skilled staff includes experts in energy compliance analysis, mechanical design, field implementation, program design and management, energy research and development, and environmental sustainability and compliance.

Mike Hodgson, President

Mike Hodgson founded ConSol in 1983. He brings over three decades of experience in making new and existing buildings more energy efficient. Hodgson has and continues to work extensively in energy and green codes, program management and market transformation at local, state, and national levels. Hodgson led the development and implementation of several energy efficiency and green market transformation programs. Current ConSol programs include Central Valley Energy Tune Up Program, Southern Nevada Green Builder Program, and Builder Energy Code Training Program. Hodgson has been awarded the National Green Advocate award by National Association of Home Builders (NAHB), U.S. Department of Energy's Technical Assistance Award, the Environmental Protection Agency's Energy Star® Award, and the Pacific Gas & Electric's Energy Efficiency Services Excellence Award. He currently serves as chair for the California Building Industry Association's Energy Subcommittee, and the National Association of Homebuilders' Energy and Green Builder Subcommittees. He is also a founding director of the California Association of Building Energy Consultants. Hodgson holds Bachelor and Master of Science degrees from the University of California at Davis.

Jay Lenzmeier, Chief Financial Officer

Jay Lenzmeier joined ConSol as chief financial officer in 2003. Lenzmeier oversees ConSol's financial operations, information technology and human resources function. He has over 22 years of executive level finance experience with companies throughout the region. Prior to joining ConSol, Lenzmeier spent ten years in the residential new home construction industry as vice president of accounting and administration with the California Building Industry Association. He was responsible for four entities with annual budgets totaling approximately $12M. Lenzmeier served in the U.S. Army in Germany before attending the University of North Dakota where he earned a Bachelor of Science degree in business administration specializing in finance and accounting. He is a C.P.A.

David Meyers, Chief Operating Officer

David Meyers joined ConSol as a business operations analyst in 2005 tasked with successfully leading the company on a path of process and procedural improvements. Under Meyer's leadership, ConSol successfully implemented key accounting, project management and CRM software applications across the company. Meyers was the architect behind ConSol's Online Tracking System (COLTS) which streamlined how ConSol managed its internal operations. Meyers is a proven leader with the ideal skill set and industry expertise to manage all of ConSol's operations departments which includes residential, commercial, and project management. He has earned a reputation as a highly engaged and knowledgeable executive with a long history of delivering superior operational performance. Prior to ConSol, he spent over ten years in high tech manufacturing operations with palmOne

Inc., Netscape Communications and Oracle Corporation. Meyers graduated cum laude with a bachelor's degree in International Relations from the University of California at Davis.

Ignacio Robles, VP Engineering

Ignacio Robles has nearly four decades of experience in facilities engineering, design and construction of energy related projects, with expertise in project management, energy program management both private and for utilities, performance contracting, and consultant and construction administration. He has extensive experience and expertise in the design and evaluation of HVAC systems, analysis, computer simulation, utility rate analysis, project cost estimating, and energy savings calculations. Throughout his career Robles has focused on energy savings design, retro-commissioning and retrofit measures before these became popular in the industry. He has a Bachelor of Science in Civil Engineering and Professional Engineer credentials in Arizona, California, Hawaii, Nevada, and New York.

Services and Industries

For over 30 years ConSol has provided energy solutions and sustainability services to organizations in a wide range of industries including local governments, utilities, public agencies, manufacturers, trade associations, installing subcontractors, land developers, and top U.S. Western builders.

ConSol Services

- Energy Efficiency Program Design & Management
- Residential Home Energy Audits and Assessments
- Energy Code Analysis (T-24, ASHRAE, IECC)
- Sustainable Communities Consulting
- Energy Efficient Housing Consulting
- ASHRAE Energy Audits and Analysis
- Energy Star® Portfolio Manager
- Residential Quality Control (QC) Inspections
- Building Industry Training
- Building Science Research and Analysis
- Evaluation, Measurement and Verification
- Codes and Standards
- 179D Commercial Tax Deduction
- Product Research and Energy Modeling

Government Agencies and Utilities: Residential and Commercial

ConSol has demonstrated capability in designing, managing and partnering with energy efficiency programs for state and national clients such as the DOE, EPA ENERGY STAR®, the California Energy Commission (CEC), the California Public Utilities Commission (CPUC), and utilities (e.g., SMUD, PG&E, SCE, SDG&E, Roseville Electric, Anaheim Public Utility and NV Energy). ConSol designed and implemented residential construction energy efficiency programs for PG&E, SDG&E, Southern California Gas, SCE and NV Energy.

Commercial, Industrial and Institutional

ConSol provides complete and integrated asset management services for commercial and industrial facility owners and managers as well as institutional facilities. ConSol performs ASHRAE building audits to evaluate to determine cost-effective energy and water saving measures. Additionally, the audits look beyond current use and consumption to life-cycles of major assets. ConSol understands that client expenditures for their sustainable goals and programs must be justified beyond life-cycle cost analysis and must have real return-on-investments. Economic analysis is just the starting point. ConSol additionally considers life cycle, maintenance, environmental and social factors. Equipment replacement, building envelop maintenance/repairs, indoor air quality, greenhouse gas emissions, health and safety considerations, water conservation, recycling, and other benefits are considered for a complete and comprehensive sustainable program. ConSol works with buildings, facilities, campuses, cities and portfolio managers to cost-effectively, environmentally and socially meet and succeed their sustainability goals and programs.

"Being an energy manager for 13 years, I have performed many audits and ConSol easily outshined the others in their thoroughness and attention to details in identifying and reporting of energy efficiency measures."

Frank DiLiddo
Energy Manager
Fresno Unified School District

Product Manufacturers and Trade Contractors

ConSol helps businesses develop successful strategies, understand new and emerging technologies, and navigate government regulations. ConSol focuses on the development of strategies and approaches to enter high-potential markets and accelerate market acceptance with new product lines that provide consumer-focused solutions, meet customer requirements, align with new and upcoming energy policy and standards and achieve the energy efficiency market transformation goals of our clients.

Trade Associations

ConSol is a leading source of information and insight for the ever-changing building industry. ConSol's staff of consultants and regulatory experts provides knowledge, context and clarity thru thought-leading technical research on current and future market conditions and building requirements. In addition to technical standards and codes, we provide economic insights and industry market reports to help trade associations, industry groups, and non-profit organizations make confident decisions, develop strategy plans, innovate successfully and offer valuable, timely and relevant data, analysis, research and insight for association and their membership.

Residential Builders and Developers

With over 30 years of experience working with residential homebuilder and developers, ConSol creates energy solutions that provide an unmatched combination of technical information, market insight, and industry expertise which transforms knowledge into customized solutions to meet the strategic and operational goals of our clients.

Featured Clients and Projects

ConSol's expertise includes: energy efficiency and green program design and management; energy auditing documentation and reporting; innovative system and advanced technology research and monitoring; inspections for existing and new buildings; and training on energy and green codes.

California Department of Community Services and Development (CSD)
Weatherization Program QA/ QC

CSD is a State of California Department under the California Health and Human Services Agency. CSD manages statewide energy saving weatherization programs for low-income households through a network of 46 contracted Local Weatherization Service Providers. ConSol was selected to perform quality assurance (QA) field inspections of selected homes and apartment buildings weatherized by CSD's contracted network of Local Weatherization Services Providers. ConSol's QA inspections help ensure that services provided are in conformance with all CSD, U.S. DOE Weatherization Assistance Program and U.S. Department of Health and Human Services Low-Income Home Energy Assistance Program (LIHEAP) standards and policies and all other applicable federal, state, and local laws, regulations and building codes. ConSol, through its CSD contract, developed infrastructure, database, quality control, and reporting procedures necessary to execute 6,500 to 9,000 quality assurance inspections for energy weatherization.

City of Fresno
Central Valley Energy Tune Up: Home Energy Tune Up and Business Energy Tune Up

The City of Fresno developed the Central Valley Energy Tune-up program in collaboration with PG&E and designed the program to provide services not included in traditional energy efficiency programs within California as a way to improve the regional economy through reducing costs for energy. This program is designed to complement residential rebate programs including, but not limited to, Energy Upgrade California, and commercial rebate and financing programs. ConSol serves as the sole Program Manger providing commercial energy audits and analysis to businesses in the Fresno area and over 1,000 residential energy audits per month in eight counties (Fresno, Kings, Kern, Tulare, Madera, Stanislaus, Merced and San Joaquin) making it one of the leading residential audit programs in the Western United States.

"The ConSol team put my concerns at the top of their priority list and took the time to closely observe my building. I cannot express how truly thankful I am for Ignacio, the ConSol team, and the support they gladly provided me. With their invaluable guidance and expertise, I was able to make an informed, educated decision."

Rick Roush
Owner
T.W. Patterson Investors

Pacific Gas and Electric (PG&E) and Southern California Edison (SCE)
Builder Energy Code Training
PG&E and SCE contracted with ConSol, a third party energy efficiency implementation specialist to manage and implement the Builder Energy Code Training (BECT) Program which provides free, in-depth codes and compliance education to help builders, installing contractors, building officials and more in PG&E and SCE service territory to better understand California's rigorous Title 24 Energy Code. Since 1995 this dynamic program has provided a mechanism to train builders and jurisdictions on compliance with California's Building Energy Efficiency Standards (Title 24 Part 6) and has also helped the building industry keep up with changes in the energy codes and utilize practical, quality construction practices. ConSol's training staff worked with classroom attendees to provide valuable information to help with complying with Title 24. ConSol designed classroom, job site and webinar trainings focused on the most comprehensive and cost-effective ways to bring a home up to and above the CA Energy Code requirements.

International Window Film Association
Energy Analysis for Window Films Applications in New and Existing Homes and Offices
The purpose of this study was to demonstrate the cost-effectiveness of energy control window film in homes and offices, in order to make a case for inclusion in energy and green codes, programs and incentives in the state of California and expand opportunities for window film in the California market. ConSol modeled several types of residential window film in multiple California climates, as well as other energy efficiency measures typically used by builders to comply with or exceed California Energy Code. On the commercial side, ConSol modeled window film applications in new and existing office buildings to determine the return on investment (ROI) for window film in California applications.

Sacramento Municipal Utility District
Neighborhood Stabilization Program
In 2010-2012 ConSol worked with a successful Neighborhood Stabilization Program (NSP) applicant and SMUD to propose the "best practice" energy efficient features to the Sacramento Housing and Rehabilitation Agency (SHRA). SHRA has adopted those retrofit energy efficiency features and installation practices for all SHRA NSP housing retrofits. ConSol has assisted both city- and county-based housing agencies for technical assistance, classroom and field training and program management.

City of Pittsburg

"Thank you for your work to bring Building Performance Institute training to Pittsburg. Your service and attentiveness contributed to a great training experience. We appreciate your flexibility as we worked through program design and recruitment processes to initiate the first BPI trainings offered in East Contra Costa County."

Laura Wright
Administrative Officer
City of Pittsburg, CA

City of Pittsburg, CA
BPI Training
ConSol is a large supporter of Energy Upgrade California and our experience with training and certifying contractors on BPI standards did not begin with our work in Fresno. Since 2010, ConSol has delivered BPI Building Analyst and Envelope training to over 200 contractors. One of our more significant BPI training endeavors was with the City of Pittsburg. Through a collaboration of the Workforce Development Board of Contra Costa County, the Contra Costa Small Business Development Center (SBDC) and the Pittsburg Adult Education Center, ConSol provided BPI Building Analyst and Building Envelope Professional training to area contractors during week-long training sessions. The Workforce Development Board subsidized nearly the entire cost to make it affordable for local contractors who had been impacted by the economic downturn. Additionally, SBDC offered one-on-one advising for the graduates of this course to market their new skills and certifications. The Pittsburg Adult Education Center offered their facilities to support the effort and local cities compiled mailing lists and publicized the courses locally. The students, ranging in field and level of experience from new general contractors to experienced energy performance professionals, expressed their enthusiasm and praise for the course.

Anaheim Electric
Retrofit Program
ConSol, through its contracts with the City of Anaheim, developed community retrofit programs including marketing, outreach, customer engagement, incorporating utility resources, identifying and bid requests for contractors, and acquiring bulk discounts for pre-determined home energy improvement packages. ConSol designed a process to review incentives/rebates applications, ensure completeness and accuracy of applications, and review applications and documentation to approve or deny incentives/rebates.

Sacramento Municipal Utility District
Home Performance Neighborhoods
As a Department of Energy (DOE) Building America team lead, ConSol piloted a neighborhood home performance retrofit program with the Sacramento Municipal Utility District (SMUD). Having fulfilled the goals of the pilot neighborhood, ConSol was awarded a further contract with SMUD (using ARRA and DOE Better Buildings funds) to implement the neighborhood program in several other neighborhoods as part of the State Energy Program (SEP). The program was expanded into additional neighborhoods through Better Buildings Program (BBP) funding awarded to SMUD. ConSol was solely responsibility. The Neighborhood Retrofit Program is a simple, low cost, retrofit program that offers bulk discounts through the use of predetermined home energy improvement packages. The home energy improvement packages were developed by ConSol based on market analysis of specific neighborhood characteristics which are gathered through an outreach program and HERS II energy audits of a small sample of volunteer neighborhood homes in order to create a baseline model of the selected neighborhood's housing stock. ConSol then used the audits to model the energy saving effects of improvements which are then used to create cost-effective packages for homeowners. ConSol provided oversight, quality assurance testing and tracking and reporting services for the overall program.

NV Energy
Advanced Building Techniques
ConSol designed, launched and managed the Advanced Building Techniques (ABT) program for NV Energy, Nevada's utility provider, since its inception in 2010. The program is geared toward integration of energy efficiency measures that perform well beyond minimum energy code compliance for homes constructed in Southern Nevada. The NV Energy ABT program stimulates builders to adopt leading edge building science to significantly reduce energy consumption in new homes. The goal of the program is to design homes that meet, or exceed, the Home Energy Rating System (HERS) score of 50, which equates to saving approximately 9,000 kWh per home annually. Builders who participate in this program are entitled to technical analysis and design support, marketing assistance, staff training, and incentives based on accumulated annual energy savings (kWh). Builders who participate in this program can benefit from differentiation in the building industry as well as increase the level of interest in energy efficient new construction home design.

MIKE HODGSON

PRESIDENT

Mike Hodgson founded ConSol in 1983 to provide energy and environmental solutions to the building industry. Mike has worked extensively in resource utilization, market research, and assisting in the development of energy regulations at the local, state and national level. Hodgson led the development and implementation of energy efficiency programs like ComfortWise® and California Green Builder. In 2007, Hodgson served on the International Code Council's consensus committee that developed the National Green Building Standards (ANSI 700), the nation's first consensus standard for green building. In 2008 Hodgson was selected as National Association of Home Builders' (NAHB) Green Building Advocate of Year. He currently serves as the chairman for the California Building Industry Association's Energy Subcommittee and NAHB's Energy Efficient Buildings Tax Credit Working Group

PROFESSIONAL EXPERIENCE

ConSol - 1983 to Present

- **Founder and President**

  Specializing in market analyses, energy savings assessments, interpretation of regulations, and training for local jurisdictions, building industry and utilities. Recent projects include:

  - P&L responsibility for all staffing, budgeting, forecasting, and successful and profitable implementation of ConSol/CHEERS field services
  - Responsible for overseeing ConSol QA Inspections for the Department of Community Services and Development (CSD)
  - In charge of the design & oversight of CHEERS QA inspections program.
  - Responsible for the oversight of Home Energy Audits for key clients where ConSol acts as Program PM
  - Accountable for data integrity of departmental IT systems
  - ICC 700-2008 National Green Building Standards Committee Member
  - Development of California, Arizona and Nevada Green Builder programs for building industry
  - Carbon assessments of buildings to reduce greenhouse gas emissions – various white papers and studies (2004-present)
  - Development of ComfortWise quality control, marketing and energy efficiency program for residential new construction (85,000 homes built since 1996 to ComfortWise standards)
  - Development of Community Energy Efficiency Program throughout California local jurisdictions (over 110 jurisdictions participated to encourage energy efficiency in new communities)

- Builder training program for public private partnership of California Energy Commission and Building Industry Institute to train builders, building inspectors and architects (1994 – present)
- Development of national infrastructure for home energy rating systems and energy efficiency mortgages for U.S. Department of Energy (1994 to present)
- Residential Manual explaining the Model Energy Code for Pacific Northwest National Laboratory (1993 – 1996)
- Development of PG&E Residential New Construction from inception through second generation (1988–2001)
- Development of SCE Residential New Construction Programs (1998-2004)
- Development of SDG&E Residential New Construction Programs (1988-93, 1998-2000)
- Development and delivery of technical training seminars for utility programs (ongoing)
- Development and delivery of technical training seminars on energy codes, programs and best practices to building inspectors, builders and trades (1983 to present)

San Joaquin Delta College, 1977 to 1983

- **Tenured College Instructor**

Wright State School of Medicine, 1977

- **Chief Laboratory Technician**

University of California, Davis, 1973 to 1976

- **Staff Investigator, Department of Psychiatry**

EDUCATION

University of California, Davis

- **Masters of Science, System Physiology**

University of California, Davis

- **Bachelor of Science, Physiology**

TRAINING AND CERTIFICATIONS

Professional Credentials

- **State and National Affiliations**
  - Member, National Green Building Standards ICC 700-2008, ICC-2012 Consensus Committee
  - Vice-Chair, Codes and Construction Committee, California Building Industry Association

- Chairman, Energy and Indoor Air Quality Task Group, California Building Industry Association
- Member, National Association of Home Builders, Energy Subcommittee
- Member, National Association of Home Builders, Green Builder Subcommittee
- Chair, National Association of Home Builders, Energy Efficient Building Tax Credit Working Group
- Member of U.S. Department Of Energy Task Force: Buildings for the 21st Century
- Co-Chair Finance Committee to U.S. Department Of Energy Task Force: Buildings for the 21st Century
- Member, International Conference of Building Officials
- Founding Director, California Association of Building Energy Consultants

Awards and Citations

- **California Building Industry Association – Special Recognition Award for Energy Efficiency Advocacy, 2006**
- **U.S. EPA Energy Star for Homes Outstanding Achievement Award - 2002, 2003, 2004, 2005, 2006, 2007**
- **National Association of Home Builders, Certificate of Appreciation for Chairing the Electric Industry Deregulation Task Group for NAHB, 2001**
- **U.S. EPA Energy Star Homes Award for Outstanding Technical Assistance, 1997**
- **California Building Industry Association, President Award for Outstanding Achievement in the Building Industry, 1995**
- **Co-winner of the American Wood Council's Design for Better Living Award, 1993**
- **PG&E Energy Efficiency Services Excellence Award 1991**
- **1979 California Teacher of the Year Award for Community College System, Presented by the California Teachers Association**

GARTH TORVESTAD

SENIOR PROJECT MANAGER

Garth joined ConSol as Senior Project Manager in 2014. Prior to joining ConSol, he worked at Benningfield Group in Folsom, California, and managed administrative, budgetary, technical, and policy aspects of two efficiency research contracts with the CEC keeping both contracts on time and within budget. Garth expanded Benningfield Group's market presence through presentations at key industry and policy events, strategic planning, and by leading the development of winning proposals.

PROFESSIONAL EXPERIENCE

ConSol - 2014 to Present

- **Senior Project Manager**
  - Manage a broad suite of research and implementation projects for public and private sector clients.

Benningfield Group, Inc. - 2010 to 2014

- **Project Manager: CEC PIER Multi-Family Energy Efficiency Project**
  - Managed implementation and led technical research for a 3-year, $1.3 million PIER project to characterize the multifamily design and construction market with respect to energy efficiency, and to evaluate cost effectiveness and savings potential from incorporation of new efficiency measures into Title 24 Standards.
  - Worked closely with SMUD R&D to develop and refine research plans and evaluation methodology for communicating thermostats (demand response) and energy information displays in the underserved multifamily market.
  - Oversaw SMUD pilot program implementation including development of marketing/recruiting collateral, selection and management of vendors, and monitoring of customer connectivity through the AMI network.
  - Presented research at conferences and industry events statewide.
  - Coordinated with regulatory bodies to propose solutions to code issues and challenges unique to the multifamily market.
  - Directed subcontractor UCD Western Cooling Efficiency Center in development of research plans and protocols, field work, computer modeling, and evaluation of ventilation code impacts.
  - Coordinated workflow and ensured accuracy of technical and impact evaluation work by subcontractors

- **Project Manager: PECI/CEC Residential Existing Buildings – AB 758**
  - Assisted CEC to develop statewide program components that will increase annual and peak energy savings and reduce greenhouse gas emissions associated with energy use in existing California residential buildings.
  - Conducted qualitative evaluation of ARRA-funded pilots, state and local retrofit programs, workforce training, and financing programs through stakeholder and practitioner interviews, and synthesized responses into actionable recommendations.
  - Compiled data on existing residential building stock in order to segment the existing housing market by vintage and type.
  - Coordinated with financiers and service providers of comprehensive energy retrofits to identify and implement best practices.
  - Provided technical support for the development of policies and programs designed to spur broad-based retrofit activity.
  - Expanded acceptance and use of an innovative financing tool to improve energy efficiency in tax credit (low-income) housing.
  - Led the research, analysis, and reporting that compared California's Whole House Energy Rating System (HERS II) to the Home Energy Score and Energy Performance Score systems, and recommended improvements to HERS II.

West Sacramento Redevelopment Agency - 2008 to 2010

- **Graduate Student Intern (Paid)**
  - Negotiated terms and authored Architectural Design Guidelines, a binding portion of a public-private development agreement for an urban infill district with expected 30-year, $2.3 billion build-out.
  - Researched and provided technical support leading to City Council's early adoption of a citywide Green Building Ordinance based around CALGreen Code and performance standards including LEED and Energy Star.
  - Initiated action and contributed to the development of several citywide sustainability policies including pursuit of LEED-ND designation for urban infill district and the PACE energy efficiency finance program.
  - Created sophisticated 3-dimesional computer representations of future build-out scenarios for presentation to elected officials, resulting in City Council approval of policy documents.

EDUCATION

California State University, Sacramento, CA

- **Master of Science, Urban Land Development (Magna cum laude, 2010)**
- **Bachelor of Science, Environmental Horticultural Science (2004)**

LEED Accredited Professional (LEED AP)

- **United States Green Building Council**

IGNACIO ROBLES, P.E.

VICE PRESIDENT OF ENGINEERING

Ignacio Robles serves as the technical director and Senior Mechanical Engineer of ConSol's consulting department. Mr. Robles has over 40 years of experience in facilities engineering, design and construction of energy related projects, with expertise in project management, energy program management both private and for utilities, performance contracting, and consultant and construction administration. He has extensive experience and expertise in the design and evaluation of HVAC systems, analysis, computer simulation, utility rate analysis, project cost estimating, and energy savings calculations. Mr. Robles also has many years of supervision of large engineering and drafting departments for Mechanical (HVAC), plumbing and fire protection including all related specifications for all phases of construction and project close out with successful client acceptance for hundreds of projects in California, Hawaii, New York, other states and projects in over 40 countries. Projects included commercial, hospitals, industrial, institutional, schools and resorts. Throughout his career Mr. Robles has focused on energy savings design, retro-commissioning and retrofit measures before these became popular in the industry. He has designed and implemented co-generation plants in Bogotá, Columbia to energy efficient laundries and kitchens in New York State. Additionally, Mr. Robles is a licensed general contractor in the State of California.

Mr. Robles is recognized as the leading expert in energy evaluation of medical facilities. This is largely due to the highly successful nature of the numerous energy retro-commissioning and retrofit projects he has evaluated and recommended over the years with the main hospital chains such as Kaiser Permanente, Catholic Healthcare West, Sutter Faith, and numerous independent facilities. Mr. Robles' realistic, practical, and cost effective projects have also led to a very high implementation rate and thus generating large incentives to his customers. Often his customers have retained his services to contract and oversee the implementation of their energy saving projects.

PROFESSIONAL EXPERIENCE

ConSol- 2012 to Present

- **Manager for Commercial Services**
- Mr. Robles is the technical director and Senior Mechanical Engineer of ConSol's consulting department. He has trained and mentored staff, and established and grown the commercial department to a successful offering.
- For 2013 and 2015 under the Central Valley Energy Tune-Up program he performed over 190 ASHRAE Level 1 and 2 energy audits. He has established innovative energy savings and cost savings methodologies.
- He was the lead author for the Department of Housing and Community Development Electric Vehicle Readiness Study. He has engineered and project managed the installation of energy projects for nonprofit organizations.
- Successfully addressed the Commercial Building Property Association concerns of the new California Energy Commission's 2016 code. Gaining numerous concessions from the CEC for the CBPA.

Sacramento Municipal Utility District, SMUD - 2011 to 2012

- **Custom Energy Efficiency Program Manager**
  - Mr. Robles was the Custom Energy Efficiency Program Manager and supervisor of the energy advisors. This program focused on all commercial and industrial sectors and any other complicated or out of the ordinary project presented to SMUD.
  - Mr. Robles trained, mentored and established a new energy advisor team within six months.
  - For the 2011 year he set an all-time record for energy savings 6 megawatts and 44 gigawatts. This is the highest saving ever achieved in the history of SMUD.
  - Mr. Robles also instituted a number of process changes and improvements for communications with the key account managers as well as better tracking of projects and their status.
  - He also instituted process improvements that enhanced the technical capability necessary to support the custom program, including lighting spreadsheets, roof top air conditioning energy calculations spreadsheets, energy management system program development and calculations tool, development and recruitment of the Neighborhood Project Program, and revised the custom program offerings and brochure. Overall he "raised the bar" for the quality and consistency of work performed by the custom program group and the subsequent project delivery to the customers.

Comfort Air Mechanical Systems, CAMS - 2009 to 2011

- **Vice President of Engineering**
  - Mr. Robles focused on providing energy savings solutions for clients through all phases of project development, procurement, installation, and operations in the energy sector. His range of specialization and experience has continuously allowed him to provide his clients with solutions in a seamless and cost effective process from conceptual design to start up and system verification.
  - His goal while at CAMS was to see his reports and recommendations through to completion—rather than collecting dust on a shelf. His clients have seen his technical evaluations and recommendations withstand the test of time giving him continuous feedback on what are realistic, practical, and cost effective energy conservation measures. With his extensive experience and unique company structure he was able to assist PG&E achieve long-lasting results, providing cost effective solutions, and improving and maintaining building system performance with verifiable energy savings.
  - His established long term relationship with PG&E has resulted in being approved as a consultant on the PG&E consultant matrix and also approved to conduct Utility Energy Services Contract, UESC work. Additionally, he signed and developed an innovative energy retrofit CWA in the Healthcare Sector to screen and implement previously

performed audits that had not followed through to implementation. This relationship is a result of PG&E recognizing Mr. Robles' track record in his ability to implement energy savings retrofit and retro-commissioning projects.

Quantum / Quantum Energy Services and Technologies, Inc (QuEST) - 2004 to 2009

- **Senior Project Manager**
  - Mr. Robles was a Senior Project Manager at QuEST during that time he served as the project manager and senior project engineer. He reviewed and approved the reports and all engineering energy savings analysis.
  - Mr. Robles also assisted in the construction administration of the successful implementation of the energy saving measures. He interfaced with key clients and PG&E as well as other utility representatives. He also wrote and assisted in creating and writing proposals which most were accepted by the Utility companies.
  - Medical Building Tune - Up Program - Mr. Robles was responsible for recruiting, screening, and selecting hospitals for participation in the new Medical Building Tune-up Program, a regional energy efficiency program sponsored by the PG&E. This program was a result of the highly successful Hospital Pilot Program and was renewed by PG&E for three more years.
  - Hospital Pilot Program - Mr. Robles was responsible for recruiting, screening, and selecting hospitals for participation in the Hospital Pilot Program, a regional energy efficiency program sponsored by the PG&E. This was an innovated program dedicated and tailored to performing retro-commissioning audits in the delicate and complex environment of medical facilities. This program was very successful in producing verifiable energy savings in millions of kilowatt hours and a very high implementation percentage for various Medical Centers throughout the PG&E service territory.
  - Sonoma Energy Watch - Mr. Robles was responsible for recruiting, screening, and selecting commercial and industrial facilities for participation on the Sonoma Energy Watch program, a regional energy efficiency program sponsored by PG&E. He performed on-site audits to determine potential energy conservation measures, developed energy consumption models to calculate energy savings, performs spot measurements on mechanical and electrical building equipment, and installs data loggers. He was also responsible for the design and implementation of energy conservation projects. Mr. Robles at one point managed the energy evaluation of over 45 office buildings. The energy savings derived for the numerous projects exceeded the program goals. This was a highly successful program.
  - Building Tune-Up Program - Mr. Robles was responsible for recruiting, screening, and selecting commercial and industrial facilities for participation on the Building Tune Up program, a regional energy efficiency program sponsored by the California Public Utility Commission. He performs on-site audits to determine potential energy conservation

measures, develops energy consumption models to calculate energy savings, performs spot measurements on mechanical and electrical building equipment, and installs data loggers. He is also responsible for the design and implementation of energy conservation projects. As a result of the successful implementation of his energy conservation measures he has been contracted to design piping and chiller plant modification leading to substantial energy savings for the facilities. Mr. Robles managed the energy evaluation of over 28 retail stores, some hotels and hospitals. One of the retailed stores resulted in 3,500,000 kilowatt hours in energy reduction.

Robles Consulting Engineering, Inc. Napa CA - President and Principal - 2000 to 2004

- **Principal**
  - Mr. Robles's previous experience as the principal of a company dedicated to performing energy studies, facility evaluation, MEP and utility coordination, and construction administration for cities, counties and hospitals.
  - He has also performed extensive mechanical systems design for commercial, institutional, industrial facilities and multi-story high-rise buildings in New York, San Francisco and large building complexes in many countries around the world.

Vice President of Engineering, Tower Enterprises, Inc. Napa CA and Tower of Hawaii, Honolulu, HI. - 1996 to 2000

- **Principal**
  - Mr. Robles was the central contact for all communications with clients. He was in charge of establishing design, drawing and specification standards for the various disciplines. Mr. Robles was also responsible for calculation review and approval, plan check and quality control. He provided oversight of Mechanical, Electrical, Civil and Structural Disciplines for two engineering offices, one in Napa, CA and the other in Honolulu, Hawaii.
  - During this time Mr. Robles was also the de facto in-house engineer for the Hawaiian Healthcare System. This covered all the formerly ran State hospitals in all the Hawaiian Islands. Their focus was on energy conservation and retrofitting the existing infrastructural including all mechanical systems to decrease energy usage and lower their utility bill. Mr. Robles was instrumental in facilitating and coordinating this work.

EDUCATION

University of the Pacific, Stockton, CA

- **Bachelor of Science Degree, Civil Engineering**
  - Cooperative Education Certificate University of the Pacific, Stockton, CA

TRAINING AND CERTIFICATIONS

Credentials and Professional Licenses

- **Professional Registration**
  - License: Mechanical Professional Engineer Registered in Arizona.
  - License: Mechanical Professional Engineer Registered in California.
  - License: Mechanical Professional Engineer Registered in Hawaii.
  - License: Mechanical Professional Engineer Registered in Nevada.
  - License: Mechanical Professional Engineer Registered in New York.
- **National Certification**
  - Certificate: National Certification by NCEES as a professional Mechanical Engineer.
- **Construction License**
  - License: General Contractor in California, B Classification

Certificates of Training

- Certificate: Staefa Control Systems design, 1984.
- Certificate: Trane Air Conditioning Clinic
- Certificate: Carrier HAP
- Certificate: Elite CHVAC Commercial HVAC "ASHRAE" loads
- Certificate: Armstrong Pump
- Certificate: Steam Systems Spirax Sarco
- Certificate:

Synergistic Activities

- **Member: American Society for Healthcare Engineering**
- **Member: American Society of Heating, Refrigeration and Air-Conditioning Engineers**

Tom Gaul

Principal

About

Mr. Gaul has over 30 years of experience as a transportation planner and engineer, and has conducted studies for public agencies, private firms and institutions throughout the western United States. Mr. Gaul has managed areawide transportation planning studies involving needs assessment, travel demand modeling, alternatives evaluation and public outreach, including general plans, specific plans and corridor studies. He has conducted traffic impact, circulation, parking and site access studies for residential, commercial, institutional, industrial, mixed-use and entertainment developments. He is experienced at recreational and special events planning, including circulation studies for the Disneyland Resort in Anaheim and parking and circulation improvements for Los Angeles Dodger Stadium. He has conducted alternatives analysis, station access planning and rail/traffic integration studies for rail transit projects in Los Angeles and Honolulu and was a task manager for the Los Angeles County HOV Performance Program and HOV System Integration Plan studies for MTA and Caltrans. He has managed preparation of Caltrans Project Study Reports and/or Project Reports for various improvement projects on the state highway system. Finally, Mr. Gaul is experienced with multimodal planning including complete streets, streetscape plans and bicycle/pedestrian studies.

Education

Graduate Course Work, University of California, Berkeley, 1982
Bachelor of Science, Civil Engineering, Massachusetts Institute of Technology, 1981

Affiliations

Institute of Transportation Engineers

Publications and Presentations

- The Making of Iniki Express (The Kauai Emergency Bus System), 1993 ITE District 6 Annual Meeting
- Warner Center: A Plan for the 21st Century, 1993 ITE District 6 Annual Meeting
- Planning in Motion: The 2030 Oahu Regional Transportation Plan, 2006 ITE District 6 Annual Meeting
- Growing Without Vehicle Trips: The Santa Monica LUCE, 2011 AEP California State Conference

Project Experience

Transportation and Outreach Consultant Services for the Update of the City of Los Angeles, CA General Plan Mobility Element

Fehr & Peers is leading a team updating the General Plan Mobility Element for the City of Los Angeles. From a selection of alternative approaches, the City chose a multimodal layered-network approach with a context sensitive overlay to update its street classification system. Fehr & Peers is picking up where its LA Street Classification and Benchmarking System study left off and working with the City to develop concepts for a layered network. Fehr & Peers will work with the City to create new street standards based on the development of that layered network. Through an extensive social media campaign and a series of meetings and workshops, Fehr & Peers will frame the conversation in terms of transportation choices, where options and tradeoffs are clearly defined to reflect both aspirational goals and the constraints of conditions on the ground. This framing allows for the productive

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exchange of ideas between the public and the City. The Fehr & Peers team is working with the City to prepare a Streetscape Manual that identifies required improvements associated with each street type and addresses the existing disconnects between policy goals and current street standards. Throughout the project, our team is performing outreach and branding related to public engagement for the Mobility Element (now called LA2B). Using an innovative social media approach, the engagement approach includes crowdsourced idea generation and dialogue, a custom contest for ideas, and in-person workshops across the City. Mr. Gaul is Principal-in-Charge.

Santa Monica Land Use and Circulation Elements Travel Demand Model

With Tom as Principal-in-Charge and Project Manager, Fehr & Peers developed a citywide travel demand model for the award-winning Santa Monica General Plan Land Use and Circulation Elements (LUCE) update. The study included development of performance measures for evaluating and monitoring transportation-related goals, development of a travel demand model to evaluate proposed land use scenarios and circulation strategies, a transportation analysis for the LUCE EIR, and a nexus study to develop multi-modal transportation-based impact fees. The model incorporated many state-of-the-art and unusual features, including smart growth sensitivity to fully capture the potential effects of the General Plan alternatives on vehicle travel, greenhouse gas emissions, a Saturday model in addition to a traditional weekday model, a walking and bicycling demand GIS model, and a direct ridership model providing the ability to predict the change in the likelihood of transit use based on differences in development density in proximity to rail transit stations as well as changes in rail service levels. In addition to traditional LOS, the model was used to evaluate innovative performance measures including travel times, greenhouse gases, and the ability of the City to achieve its groundbreaking "no net new PM peak trips" policy. Mr. Gaul was Principal-in-Charge.

Westside Mobility Plan, City of Los Angeles

Fehr & Peers is leading a multi-disciplinary team to develop a long-term comprehensive Mobility Plan for the Westside of the City of Los Angeles, California. The study includes development of a state-of-the-art travel demand model; a mobility and rail connectivity study including the potential for north/south rail transit connections from the LAX area through the Westside and integration of transit, highway, bicycle and pedestrian modes; a comprehensive Westside parking study; updates to the Coastal Transportation Corridor and the West Los Angeles Transportation Specific Plans (including trip fee nexus studies for each); and a livable boulevards study addressing the integration of urban design/streetscape and transportation planning. The study includes a substantial public outreach program to engage the community throughout the process. The Westside Mobility Plan blueprint is intended to serve as a catalyst for future action to improve transportation on the Westside. Mr. Gaul is Project Manager.

Oahu Regional Transportation Plan

Fehr & Peers prepared the 2030 Oahu Regional Transportation Plan for the Oahu Metropolitan Planning Organization, a comprehensive package of transportation improvements with accompanying financial plan intended to accommodate projected growth and development on the island of Oahu. The study, managed by Mr. Gaul, required coordinating the planning efforts of OMPO, the City and County of Honolulu, and the State of Hawaii. The Fehr & Peers team implemented a broad-based multi-faceted community outreach program that built consensus between decision makers and the community.

Boyle Heights Mixed-Use Project Specific Plan

Mr. Gaul managed a transportation study for a mixed-use smart growth project in the Boyle Heights area of Los Angeles. The project consisted of redevelopment of the Wyvernwood apartment complex, containing about 1,200 existing residential units, into a mixed-use development. Fehr & Peers assisted with site master planning, identified measures to reduce trip generation and greenhouse gas emissions, and prepared the traffic study for the EIR.

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Chelsea Richer, AICP

Transportation Planner

About

Ms. Richer has five years of experience in transportation planning with expertise in multi-modal data collection, survey design, and active transportation planning. Using spatial analysis, statistical analysis, and design software, Chelsea effectively communicates complex, data-driven findings to a wide variety of audiences. She is proficient in ArcGIS, Adobe InDesign, Adobe Illustrator and SPSS.

Education

Master of Urban & Regional Planning, University of California at Los Angeles, 2014

Bachelor of Arts, Environmental Studies and Public Policy, University of Chicago, 2008

Professional Registration

American Institute of Certified Planners, Certification Number 027878

Affiliations

American Planning Association (APA)

Awards

Lewis Center of UCLA GIS Contest – 2nd place 2014

Project Experience

Since joining Fehr & Peers, Ms. Richer has worked on the following projects.

Vision Zero – LA Department of Transportation
Vision Zero is an ambitious initiative to eliminate traffic fatalities and severe injuries among all roadway users. First implemented in Sweden in the 1990s, Vision Zero has proven successful across Europe – and now it's gaining momentum in American cities. Fehr & Peers is leading a robust data-driven effort to identify the leading causes of traffic injuries and match efficient and cost-effective engineering countermeasures to address the safety challenges. As part of this process, Fehr & Peers conducted an extensive peer city review, including key interviews and led a robust, data-driven effort to identify the driving causes of traffic injuries and match efficient and cost-effective engineering countermeasures to address the safety challenges. Ms. Richer was responsible for developing materials, conducting, and interpreting these interviews to guide the process of completing the data analysis for the City of Los Angeles. In addition, Ms. Richer is working with the team to effectively communicate the findings of the data analysis and translate these findings into an actionable strategy for the Department of Transportation.

Active Transportation Strategic Plan for Metro
Fehr & Peers is leading a team preparing the Active Transportation Strategic Plan for Metro. The team is developing an understanding of the existing conditions and existing active transportation networks as well as the gaps, constraints, and opportunities in the existing inter-jurisdictional bikeway network. Following the analysis of existing conditions and the development of an active transportation project list, Fehr & Peers is developing an implementation plan that includes performance metrics, benchmarks, and implementation strategies to assist decision makers with better understanding how these investments benefit Metro and the County. Ms. Richer was involved in the development and execution of the existing

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conditions analysis, including data selection, analysis method, written communication and documentation of the processes related to the development of the plan.

Sherman Way Conceptual Plan Project, Los Angeles, CA
Sherman Way is a classic San Fernando neighborhood boulevard that is a focal point in the Reseda Rising Initiative. This project is developing a neighborhood-driven Conceptual Plan for streetscape, façade and public and private development enhancements with a focus on multimodal user experience. Fehr & Peers is assisting the team with neighborhood research and data collection on existing conditions, based in part on a site walk with the project steering committee to identify mobility opportunities and constraints. Based on feedback collected at community meetings, Fehr & Peers is developing visualizations of concept options for streetscape improvements and enhancements. Chelsea is Project Manager.

Gateway Cities Transportation Strategic Plan Phase II
As part of a team chosen by Metro, Fehr & Peers is completing the Active Transportation Element of the Gateway Cities Council of Governments' Strategic Transportation Plan to identify projects and programs to increase the use of active modes of transportation, while improving safety for those who are currently walking and bicycling. The analysis is considering the broader transportation and infrastructure context (freeways, surface streets, flood control, port facilities, etc.) and how modes are related. Recommendations are informed by local and national experience, and will provide both quantitative and qualitative benefit assessments. Specific recommendations will include interagency projects of regional significance, improving access to transit stations and key bicycle and pedestrian facilities, identifying local and state best practices, researching impacts to health and safety, and prioritizing improvement locations throughout the 26-city region. Key stakeholders are being engaged to both generate ideas and vet the best solutions.

Downey Citywide Bicycle Master Plan
Fehr & Peers is leading the preparation of the Downey Citywide Bicycle Master Plan, following Fehr & Peers' effort on the regional Gateway Cities Council of Governments (GCCOG) Active Transportation Plan (ATP). Fehr & Peers is coordinating with city staff to develop a network of proposed bicycle facilities that identify bicycle parking locations and the bicycle facility classification and appropriateness for a given street, based on facility type, street characteristics, and nearby bicycle generators. Analysis of proposed facilities will focus on consolidating prior efforts and providing implementation and prioritization strategies based on local conditions and preferences, consistent with BTA requirements and anticipated ATP grant requirements. We will synthesize input gathered from the public through social media channels, the project website, community workshops, a Bicycle Circulation Assessment Needs Survey, and discussions with city staff to define the overarching goals and specific supporting objectives of the Bicycle Master Plan. Specific aspects of this project include a bicycle collision analysis, development of bicycle shed maps accounting for freeways and high-stress facilities, bicycle parking and amenity policies, the development of the Bicycle Master Plan document, and preparation of two grant applications.

Santa Barbara City College Transportation Demand Management Plan Update
Fehr & Peers is providing assistance to Santa Barbara City College (SBCC) in the update to their Transportation Demand Management Plan (TDMP). We are compiling existing conditions data on campus users, their residential locations, and their mode of access to campus, as well as parking, vehicle, transit, bicyclist and pedestrian count data to prepare an existing conditions report detailing current transportation trends on campus. Based on the data collection efforts and the overall findings from the current transportation trends report, we are evaluating the effectiveness of the current TDMP strategies. Fehr & Peers is preparing a matrix of TDM strategies at universities based on a literature review of what is working well to reduce SOV trips and parking demand at universities across the country as well as our experience working with leading California universities, such as UC Santa Barbara, UC Berkeley, UC Davis, CSU Long Beach and Stanford, among others. Based on these findings, we are providing recommendations to SBCC on improving student access to campus and updating the TDMP. The recommendations include modifications to existing strategies as well as the identification of new short- and long-term strategies for reducing SOV travel to campus and alleviating the demand for constrained parking resources.

Los Angeles Union Station & 1st/Central Station Linkages

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Fehr & Peers is leveraging our multi-modal planning and design expertise in collaboration with the rest of the design team and our agency partners at Metro and the City of Los Angeles to develop transformative projects that address mobility barriers and linkage needs identified by the community. During the mobility evaluation phase, we conducted walking and biking audits with the design team around each station to identify key linkage constraints and opportunities for enhancements. Working with the design team, we prepared a detailed set of mobility maps identifying areas of high collision frequency, locations with high transit boardings, as well as well as detailed multi-modal networks as planned by the City of Los Angeles in the ongoing Mobility Element update that we are leading. As a member of both the Union Station Master Plan team and the Linkages design team, Fehr & Peers is ensuring seamless coordination between the circulation and access concepts at Union Station, and the linkages necessary to connect with the adjacent neighborhoods.

Marina del Rey Mobility Element
The County of Los Angeles has undertaken a process to update the Marina del Rey Local Coastal Program (LCP). As part of that effort, the County is developing a new vision that will guide development in Marina del Rey for the next 15 to 20 years. A key component of this effort is the development of a multi-modal mobility plan for the Marina, one that will serve the residents, visitors, boaters, and employees of the Marina safely and efficiently through a variety of transportation modes. Achieving this multi-modal mobility vision for the Marina requires a creative and experienced team, and Fehr & Peers is leading the team to support the County during this process. Our team's work plan incorporates innovative approaches to measuring mobility performance, detailed evaluation of barriers to pedestrian and bicycle mobility within the Marina, and through our experience on the Westside Mobility Plan, and a deep understanding of how the transit, bicycle, pedestrian, and automobile facilities of Marina del Rey interact with the mobility system of the whole Westside area. We are conducting a review of mobility best practices from relevant coastal communities to document the types of mobility strategies best suited to the unique needs of Marina del Rey and evaluating the existing circulation and transportation system in Marina del Rey to identify existing strengths, as well as opportunities for mobility improvements. Individual modes, such as auto, transit, pedestrian, bicycle, and water taxi are being evaluated to document their performance individually as well as holistically, to document the overall performance of Marina del Rey's mobility network.

Westside Mobility Plan, City of Los Angeles
Fehr & Peers is leading a multi-disciplinary team to develop a long-term comprehensive Mobility Plan for the Westside of the City of Los Angeles, California. The study includes six major components: a state-of-the-art travel demand model; a mobility and rail connectivity study including the potential for north/south transit connections from the LAX area through the Westside, including evaluations of light rail and Bus Rapid Transit, the integration of transit, highway, bicycle and pedestrian modes; a comprehensive Westside parking study; updates to the Coastal Transportation Corridor and the LA Transportation Specific Plans (including trip fee nexus studies for each); and a livable boulevards study addressing the integration of urban design/streetscape and transportation planning. The Westside Mobility Plan blueprint is intended to serve as a catalyst for action to improve transportation on the Westside. Our Westside Dashboard won the Award of Excellence for Innovative Use of Technology for the 2013 APA LA Awards.

Before joining Fehr & Peers, Ms. Richer participated in the projects described below.

Safe Routes to School, City of Chicago
Ms. Richer managed the Safe Routes to School program for the City of Chicago, housed in the Pedestrian Safety Program at the Chicago Department of Transportation. This program included comprehensive education and outreach components, safety training, and inter-agency coordination with Chicago Public Schools, Chicago Parks Department, Chicago Police Department, and the Chicago Department of Public Health.

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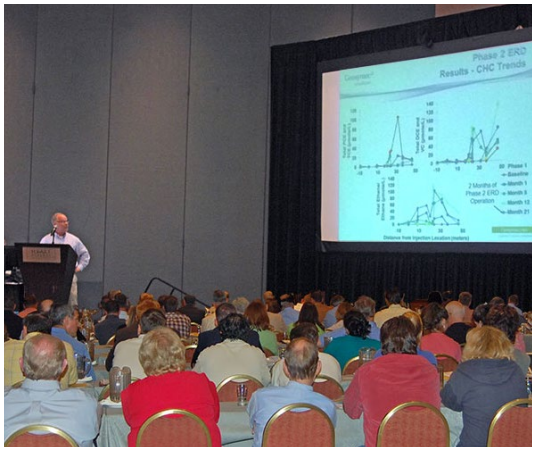
Geosyntec consultants

engineers | scientists | innovators

Statement of Qualifications

Geosyntec consultants

About Us



Geosyntec Consultants is a leading consulting and engineering family of companies with engineers, geologists, environmental scientists, and other technical and project staff based in offices throughout North America, Asia, Australia, and Europe. Our high-value services, first-to-field deployment of emerging technologies, and innovative solutions address new ventures and complex challenges involving our environment, natural resources, and infrastructure for our private and public sector clients.

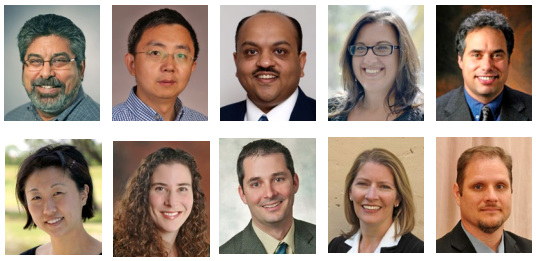
Our private sector clients come from a variety of industries including oil and gas, chemical, aerospace, pharmaceutical, diversified manufacturing, advanced technology, power and utility, and environmental management. They also include regional and national developers, large commercial property owners, and law firms. Our public sector clients comprise of departments and agencies of municipal, state, provincial, regional, and national governments.

Since our founding in 1983, we have grown based on the application of sustainability principles to projects involving environmental contamination studies and remediation; natural resources assessment and restoration; compliance management for air emissions, wastewater discharges, and waste disposal; and engineering and design for the environmental, water resources, and civil infrastructures. We also provide construction management and quality assurance services in support of these practices and are known for our technology leadership, broad experience, and exceptional client service.

Our goals are to provide service and solutions highly valued by our clients, to advance technology options available to clients in our primary practice areas, and to provide a stimulating, progressive, and friendly work environment that will enable us to continue to attract exceptional, talented staff.

Geosyntec consultants

At Geosyntec, we believe **technology leadership** and **client service** are the foundations for producing **solutions of exceptional value**.



At Geosyntec, our vision of success builds on our internal culture of technical excellence, the outstanding qualities and common commitment to our core values of our staff, and our long-held belief that exceptional client service coupled with project solutions that "exceed the ordinary", in terms of performance and value, will result in long-term, mutually rewarding business relationships.

Our university liaisons, internally- and externally-funded applied research, and first-to-field deployment of emerging technologies provide us with a differentiated set of tools to use in creating innovative, high-value solutions to challenges involving the environment, our natural resources, and our geotechnical infrastructure.

We have built a work environment that enables our engineers and scientists to focus their energies and creativity on applying these tools to our clients' most exciting ventures and complex problems.

We have been and remain a forward-looking company working diligently to develop solutions for some of society's emerging challenges and issues. Today, Geosyntec staff are developing practical approaches related to sustainable, low impact development, operating protocols to lower greenhouse gas emissions, and environmental management initiatives that help clients reduce their energy consumption, use of hazardous chemicals, and stormwater impacts to receiving water.

To learn more about our company, please visit www.geosyntec.com or contact a Geosyntec professional where you can learn more about our practice specialties and capabilities.

Geosyntec consultants

Practices

We apply our experience and expertise to projects involving environmental studies and remediation; natural resources assessment and restoration; compliance management for air emissions, wastewater discharges, and waste disposal; and management of the environmental, water resources, and civil infrastructure. Our primary practice areas are:

Contaminated Site Assessment and Cleanup

Environmental Planning and Management

Building Health Evaluations and Rehabilitation

Air Quality Management and Air Pollution Control

Water and Natural Resources Assessment, Management, and Restoration

Water and Wastewater System Planning, Engineering, and Design

Waste Management Planning, Engineering, and Design

Civil Site Engineering and Design

Geotechnical and Geoenvironmental Analysis, Modeling, and Engineering

Structure and Fluid Analysis, Modeling, and Engineering

Facility Hazard Definition and Risk Management

Geosyntec consultants

People

Engineering

Chemical	Geoenvironmental
Civil	Hydraulic
Earthquake	Mechanical
Environmental	Structural
Geotechnical	Water Resources

Earth Sciences

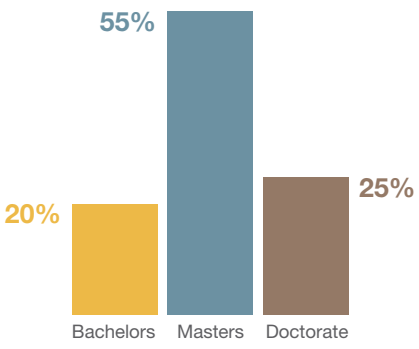
Geology	Geochemistry
Geomorphology	Geophysics
Hydrogeology	Geography
Hydrology	GIS

Environmental and Biological Sciences

Aquatic Biology	Microbiology
Biochemistry	Public Health
Biology	Soil Science
Chemistry	Toxicology
Environmental Science	Wetlands Science
Fisheries Science	Zoology
Marine Biology	

Construction Management and Operations

CADD	Health and Safety
Construction Mgmt.	Industrial Hygiene
Construction QC/QA	Project Controls
GPS Surveying	Regulatory Affairs



Professional Staff Highest Degree

Geosyntec attracts some of the brightest, most creative engineers, scientists, and professionals in the consulting and engineering business. Our practitioners' exceptional technical and problem-solving skills foster a collaborative environment that puts our clients' needs first. Geosyntec's high retention rate is due to our interesting clients, projects, and technology development initiatives that has promoted a supportive work environment that manifests itself in the quality of our work products, our trust-based relationships with academic and regulatory agency colleagues, and the value our clients tell us we bring to every assignment.

Approximately 80% of our technical staff hold advanced degrees in engineering, scientific, and business management disciplines. With more than 20 in-house technical disciplines, we have the depth and breadth of resources to apply our expertise and experience to every project.

Geosyntec has built its Water and Natural Resources practice to address our clients' most challenging regulatory, sustainability, and restoration issues.

At the center of Geosyntec's Water and Natural Resources practice is a collaborative group of nationally recognized scientists and engineers dedicated to achieving the balance between the built and natural environments. Their practice specialties represent a diverse array of disciplines, including geomorphology, ecology, biology, statistics, construction management, computer science, and engineering.

Our practitioners are at the forefront of policy analyses, regulatory compliance, and technology applications that promote sustainable water resources management and ecosystem restoration.

Erosion and Sediment Control

Soil erosion, and its resulting sedimentation, has the ability to cause widespread damage to waterways and impact drinking water quality, endanger wildlife resources, and hinder the flood-control capacity of lakes and reservoirs. For the most challenging projects and construction programs, Geosyntec has extensive experience developing effective stormwater pollution prevention plans (SWPPPs), erosion and sediment (E&S) control and re-vegetation plans, hydrologic and hydraulic models, and designs for stormwater best management practices (BMPs).

Groundwater and Surface Water Supply Studies and Development

Geosyntec provides a wide range of specialized services in the areas of water resources, water supply development, and water conservation. Our scientists, engineers, and permitting specialists provide our clients with integrated solutions that balance the needs for water supply development and ecological health. The holistic approach our practitioners provide regarding the design and implementation of effective and sustainable solutions identifies and addresses known and unknown issues related to surface water and groundwater supplies.

Water and Natural Resources Conservation and Restoration

As the leading practitioners in water and natural resource laws and regulations, resource protection, and resource rehabilitation, our practitioners can address the most challenging regulatory, sustainability, and restoration issues facing our clients. Due to their diverse array of disciplines in engineering, science, and project management, we can provide a holistic approach for our clients' conservation and restoration issues that is unmatched in the industry.

Watershed and Stormwater Management

We specialize in conceptualizing, implementing, and permitting management systems for developed and undeveloped watersheds and stormwater runoff for public and private entities. This often-challenging task for governments and companies from scientific, regulatory, and policy perspectives is addressed by assembling multidisciplinary teams of our respected and experienced practitioners

who are regarded as industry leaders for their innovative work in watershed and stormwater management.

Advancing the State of the Practice

Geosyntec uses state-of-the-practice tools, such as remote sensing; innovative water quality models; sampling designs based on statistical analyses, hydromodification assessments, and hydrodynamic models; and endangered species investigations to assess water quality impacts and develop appropriate solutions.

Our practitioners are industry leaders in the application of continuous hydrologic simulations coupled with hydrodynamic models to evaluate long-term hydraulic, sediment transport, and ecological characteristics of aquatic resources of interest. This capability is an improvement over traditional approaches, which are based solely on design-event analysis, in that it provides a greater degree of accuracy when designing aquatic habitats for species with varying hydraulic threshold requirements. Hydrodynamic modeling also provides greater assurance that a particular design solution (e.g., design of structures, sediment transport, flood plain characteristics, and bank stability) produces a stable and functional system.

Geosyntec
consultants

AARON PORESKY, P.E.

environmental data analysis
hydrologic and hydraulic analysis
stormwater quality analysis
BMP selection and design
stormwater design guidance
applied research

EDUCATION

B.S., Civil Engineering, Oregon State University, Corvallis, Oregon, 2005
B.S., Environmental Engineering, Oregon State University, Corvallis, Oregon, 2005

REGISTRATIONS AND CERTIFICATIONS

Civil Engineer, State of Oregon, 77015

CAREER SUMMARY

Mr. Aaron Poresky, P.E., Senior Engineer, supports clients in the municipal, research and private sectors with challenging issues related to watershed management. He has more than 10 years of experience in water quality planning; evaluation of stormwater BMP effectiveness; innovative BMP design; BMP and watershed monitoring; hydrologic, hydraulic and water quality; development of custom modeling and decision support tools; and development of technical guidance. His experience includes high profile and complex projects related to green infrastructure/low impact development, stream protection/restoration, flood risk mitigation, integrated planning, groundwater augmentation, and environmental monitoring.

REPRESENTATIVE PROJECT EXPERIENCE

Technical Guidance for Implementing LID and Hydromodification, *Orange County, Ventura County, and San Diego County.* Mr. Poresky assisted municipal permittees in Orange County (2009-present), Ventura County (2009-2011), and San Diego County (2013-present) with preparation of technical guidance to support updates to their land development stormwater programs. The guidance is intended to support project applicants and plan reviewers in determining the feasibility of infiltrating stormwater on-site, including BMP selection, siting, and feasibility criteria. Mr. Poresky has delivered training, provided ongoing "help desk" support, supported local implementation documents, and completed document updates.

Green Infrastructure Design Review and Specifications, *various clients.* Mr. Poresky has assisted several municipalities with review of green infrastructure designs and has

assisted in developing standard specifications for green infrastructure BMPs, including plant selection, specialized media designs, hydraulic controls, and instrumentation.

Green Infrastructure Monitoring and Effectiveness Evaluations, *various clients.* Mr. Poresky has assisted a range of clients with monitoring-based evaluation of green infrastructure effectiveness, including the Kitsap County (WA), The Boeing Company, the City of San Diego, Ventura County, a confidential land developer, and others. These projects resulted in recommendations for improved design standards and/or improvements in methods of modeling these facilities.

Los Angeles Department of Water and Power Stormwater Capture Master Plan, *City of Los Angeles, California.* Mr. Poresky served as task lead for development of a Stormwater Capture Master Plan Los Angeles Department of Water and Power. The Plan quantified the benefits and costs of approaches for increasing water supply as well as reducing pollutant loads and attenuating peak flows.

Bethany Creek Falls Real Time Control Detention Facility*, Polygon Homes and Clean Water Services, Beaverton, OR.* Mr. Poresky led the design and implementation of a real time control (RTC) detention facility as part of a new development project. RTC was used to improve flow duration control compared to a passive facility, while maintaining peak flow control in large storms and minimizing pond footprint.

Mill Creek Wetlands, *Lewis Homes, San Bernardino County.* The Mill Creek Wetlands project is a large natural treatment system, built in conjunction with a master planned development project. Mr. Poresky supported this project from planning and permitting, through final design and bidding as project engineer responsible for water quality design elements. The project was constructed in 2013.

Newhall Ranch Water Quality Planning and CWA Permitting Support. *Newhall Land, Los Angeles County.* The Newhall Ranch planned community in Los Angeles County has applied LID planning principles as part of its planning level stormwater management approach in compliance with MS4 permit requirements as well as conditions of its Section 401 certification. Mr. Poresky led the technical effort to develop and analyze the LID stormwater management approach for the Ranch and supported CWA Section 401/404 permitting of the overall Ranch development and individual projects.

Newhall Ranch Tributary Channel Design*, Newhall Land, Los Angeles County*. The Newhall Ranch Sub-Regional Stormwater Mitigation Plan calls for geomorphically-referenced channel design for five channels tributary to the Santa Clara River. Geosyntec conducted hydrologic and hydraulic modeling, coupled with sediment transport metrics, to support tributary channel design efforts as part of an interdisciplinary team. Mr. Poresky led hydrologic and hydraulic modeling efforts.

Mission Village BMP Selection and Design Technical Support, *Newhall Land and Farming Company, Valencia, California*. Mr. Poresky led the technical effort to develop and analyze a green infrastructure-based stormwater management approach for a major master planned community comprising over 1,200 acres. He has assisted the land owner with multiple tiers of plan development and approval.

Impact of Decentralized Green Stormwater Controls*, City of Austin, Texas.* Mr. Poresky led the evaluation of distributed stormwater infrastructure for addressing water quality and flood control issues in a case study watershed. This project provided valuable insights into adapting BMP designs and coupling "green" and "grey" solutions to increase flooding level of service and better achieve watershed goals.

International BMP Database, *WERF, ASCE, and USEPA.* In support of this ongoing project, Mr. Poresky has provided ongoing assistance in the analysis and summary of BMP performance information contained in the database. Mr. Poresky recently authored a peer-reviewed technical report on volume reduction in BMPs.

Oak Park Advanced Biofiltration Design, *County of Ventura, California.* Mr. Poresky provided technical assistance with the design of an advanced biofiltration design facility, including advanced media specifications to address pathogens, nutrients, and dissolved metals. Geosyntec is also provided construction phase support.

Los Alisos Apartments Hydromodification Control Analysis and Design, *Orange County, California.* Interim hydromodification control criteria for priority development projects in South Orange County require the use of continuous simulation modeling to evaluate flow frequency and flow duration. Geosyntec was contracted by Hunsaker and Associates to conduct project-specific hydromodification control calculations for a multi-family redevelopment project. Geosyntec's analysis resulted in significant savings to the project while developing conceptual plans for a protective hydromodification control system. Mr. Poresky provided technical direction and review of this project.

Centennial Hydromodification Management and Drainage Planning*, Centennial Founders LLC, Los Angeles County*. The Centennial Specific Plan is a proposed master planned urban development in the Antelope Valley. As part of the CEQA EIS/EIR process, Geosyntec prepared a hydromodification management technical report and conducted conceptual drainage planning to describe approaches for mitigating hydromodification impacts on stream channels within the project. Mr. Poresky managed watershed-scale hydrologic and hydraulic modeling efforts.

Rock Creek Regional Stormwater Facilities Conceptual Design*, Clackamas County, Oregon*. Geosyntec's scope of services included two parts: (1) evaluating the functionality and applicability of the WES Hydromodification Sizing Tool (developed by others) for sizing and design of regional facilities, and (2) applying the Sizing Tool in a customized way to develop conceptual designs of regional facilities. Mr. Poresky

developed conceptual designs and provided recommendations regarding design features to enhance recreational opportunities, public education, and habitat function.

La Pata Avenue Gap Closure Hydromodification and WQMP Support*, Orange County Public Works.* OCPW designed and permitted a major new segment of La Pata Avenue to close a gap in its arterial road network. This project crosses three regional watersheds and discharges stormwater to receiving channels that are sensitive to hydromodification impacts under the 2009 South Orange County MS4 permit. Mr. Poresky led Geosyntec's efforts to conduct hydromodification control analyses and develop the water quality management plan (WQMP) for this project.

Lake Tahoe Pollutant Load Reduction Model (PLRM), *US Army Corps of Engineers and Desert Research Institute.* As part of the effort to address phosphorus and fine sediment loading to Lake Tahoe, Geosyntec helped develop the Pollutant Load Reduction Model (PLRM), a decision support framework for estimating pollutant load generation and reduction associated with stormwater management approaches. Mr. Poresky assisted in the development and peer review of this modeling framework which includes a fully customized user interface built around EPA SWMM5 that provides an expert system to translate management actions to model inputs.

Structural BMP Prioritization and Analysis Tool (SBPAT), *County of Los Angeles, City of Los Angeles, and Heal the Bay.* SBPAT was developed to assist the City and County of Los Angeles in evaluating management alternatives for addressing receiving water quality impairments. Mr. Poresky served as a technical lead for the SBPAT project, contributing to development of the model framework, model testing/validation, and conducting user training seminars. The model is currently being used by City staff and consultants to evaluate stormwater management alternatives.

PROFESSIONAL EXPERIENCE

Geosyntec Consultants, Portland, Oregon, 2006-Present
OTAK, Inc, Lake Oswego, Oregon, 2005 (Internship)
Clean Water Services, Hillsboro, Oregon, 2004 (Internship)
Montgomery Watson Harza, Portland, Oregon, 2003 (Internship)

PROFESSIONAL AFFILIATIONS

American Society of Civil Engineers, Environment and Water Resources Group. Member, 2006-Present.

Urban Water Resources Research Council (UWRRC) of EWRI. Member since 2012.

Engineers Without Borders, Portland Professionals Chapter. Active member, 2006-Present. Chapter President, 2008-2009.

Geosyntec
consultants

AUSTIN M. ORR

urban stormwater management
stormwater quality assessment
hydrologic modeling

EDUCATION

M.S., Civil and Environmental Engineering, Water Resources, University of Utah, Salt Lake City, 2013
B.S., Civil and Environmental Engineering, University of Utah, Salt Lake City, 2011

REGISTRATIONS AND CERTIFICATIONS

Engineer-in-Training, Utah, 2009
40-Hour OSHA HAZWOPER 29 CFR 1910.120(e)(3)I Training

CAREER SUMMARY

Mr. Orr applies his background in civil engineering, stormwater control measure design and monitoring, biological nutrient processing, and hydrologic modeling to regional stormwater mitigation projects and development of water quality control guidance. He provides support on a number of projects related to urban stormwater management.

Urban Stormwater Management

Hydromodification BMP Sizing, *Ventura County, California.* Mr. Orr is using the EPA's Storm Water Management Model (SWMM Version 5.0) to generate sizing nomographs and design guidance for bioinfiltration BMPs to control downstream erosion potential. This effort is part of the Ventura County Hydromodification Control Plan (HCP).

BMP Operations and Maintenance Estimation, *Port of Portland, Oregon.* Mr. Orr assisted in the long-term operations and maintenance level of effort (LOE) assessment for the Port of Portland Design Standards Manual for each of the recommended water quality treatment BMP types. The LOE assessment included annual hourly requirements and required maintenance equipment.

Newhall Ranch Project, *Los Angeles, California.* Mr. Orr provides modeling, GIS, and document editing support for stormwater management planning tasks for this master-planned community in Los Angeles County. Submittals include BMP assistance and LID conformance memos, water quality technical reports (WQTRs), and Environmental Impact Statements/Environmental Impact Reports (EIS/EIR).

Grapevine Project, *Kern County, California.* Mr. Orr provides GIS and technical writing support for this proposed development in Kern County, California. This effort includes

preparation of document figures, analysis of the hydrologic and water quality changes due to development, and documentation of project impacts.

Centennial Project, *Los Angeles, California.* Mr. Orr provides GIS, water quality modeling and technical writing support for this proposed development in Southern California. This effort includes preparation of document figures, analysis of the hydrologic and water quality changes due to development, and documentation of project impacts.

Northlake Project, *Los Angeles, California.* Mr. Orr provides GIS, hydromodification modeling, water quality modeling, and technical writing support for this proposed development in Los Angeles, California. This effort includes preparation of document figures, analysis of the hydrologic and water quality changes due to development, and documentation of project impacts in the WQTR and the hydromodification technical report (HMTR).

Coordinated Integrated Monitoring Plan (CIMP), North Santa Monica Bay Enhanced Watershed Management Program, *California.* Mr. Orr provides technical writing and GIS analysis support for this long-term integrated monitoring plan. He has produced a comprehensive table of the constituents of concern including detection limits, sample bottling requirements, and regulatory targets. This effort included a detailed cost estimate for the first year of field monitoring and technical writing support in the standard operating procedures (SOP) attachment.

Bay Area Street Sweeping Study, Clean Watersheds for a Clean Bay (CW4CB) Task 4, *Richmond, San Jose, and Sunnyvale, California.* Mr. Orr compiled field and laboratory data produced over ten sampling events at the four street sweeping study locations. He has performed an analysis of this data to form characteristic loading rates for each site to be used in calibrated WinSLAMM modeling efforts. These models are used to form estimates of pollutant load reductions for mercury and PCBs as result of multiple street sweeping scenarios.

Stormwater Quality Assessment

San Francisco Bay Region Municipal Regional Stormwater NPDES Permit Integrated Monitoring Report Part C, Bay Area Stormwater Management Agencies Association (BASMAA), *Alameda and Contra Costa Counties, California.* Mr. Orr prepared an estimate for baseline annual loading of sediment-bound PCBs for each participating municipality within the study area. Using a regression that tied the results of long-term PCB pollutant concentration monitoring to land use (new/old industrial, urban, open space, etc.), Mr. Orr performed a spatial analysis using GIS to determine total annual PCB loading as part of BASMAA's Integrated Monitoring Report.

Alameda Countywide Clean Watersheds Program (ACCWP), *Alameda County, California.* Mr. Orr is using County databases, parcel geometry, and aerial imagery to develop a parcel screening process to aid municipalities in locating potential PCB sources in stormwater runoff. Recent efforts have included creating spreadsheet analysis tools for planning green infrastructure implementation, and efforts to develop a load reduction accounting methodology.

Contra Costa Clean Water Program, *Contra Costa, California.* Mr. Orr is supporting ongoing efforts to aid in the identification of potential PCB sources in stormwater runoff. This effort includes development of a desktop screening process which incorporated historical aerial photographs and land uses to identify parcels for targeted sampling.

NPDES Permitting and Compliance

Stormwater Sampling for California Industrial General Permit, Confidential Client, *Oakland, California.* Mr. Orr assists in stormwater sampling at an industrial site subject to the California General Permit requirements. He also provides support by performing periodic site inspections and review of laboratory reports for quality assurance/quality control.

Storm Water Pollution Prevention Plan (SWPPP), Fisher-Smith Boatworks, Roy Wilson Yard, *Watsonville, California.* Mr. Orr has helped prepare several SWPPPs for industrial sites as part of the Industrial General Permit. He supports these projects by visiting site locations to assess potential stormwater quality concerns, prescribe best management practices to mitigate site issues, preparing the written document for submission to the water board, and creating GIS maps.

Academic Research and Experience

Evaluation of Transpiration Volume in Bioretention Systems, University of Utah, *Salt Lake City, Utah.* For his M.S. thesis research, Mr. Orr designed and performed an experiment to assess transpiration volume conveyed by semi-arid adapted vegetation in bioretention systems designed for desert climates. Field work required knowledge of plant physiology including growth patterns, gas exchange characteristics, root structures, and utilization of sensitive infrared gas analyzer instrumentation. Mr. Orr designed and calibrated field instrumentation including custom tipping buckets and built service platform suitable for automated water quality sampling. He programmed dataloggers and maintained instrumentation for measuring soil moisture content, tipping bucket tips, atmospheric conditions, and leaf-level gas exchange data. Mr. Orr managed large datasets containing both continuous data and discrete event information and performed quality assurance. He assisted in the construction of six bioretention gardens including excavation, materials sourcing, surface grading, and vegetation selection.

Graduate Teaching Assistant, Hydraulics, University of Utah, *Salt Lake City, Utah.* Mr. Orr taught lab lectures and reviewed course material with a class of 25 students. He graded lab projects, course exams, and administered weekly quizzes. Mr. Orr was responsible for lab experiment preparation, equipment maintenance, and inventory. He met with students weekly to assist with challenging homework and lab assignments.

Research Laboratory Technician, Biological Systems Laboratory, University of Utah, *Salt Lake City, Utah.* Mr. Orr conducted an experiment to determine the effect of geological carbon sequestration on groundwater quality by examining the viability of carbon dioxide as a carbon source for nitrifying bacteria. He assisted with a field research project that monitored water quality in the Great Salt Lake watershed including Utah Lake and the Jordan River. Mr. Orr also

helped to establish and operate a membrane bio-reactor to develop bacteriophages that prevent membrane fouling.

PROFESSIONAL EXPERIENCE

Geosyntec Consultants, Oakland, California, September 2013 – Present
University of Utah Department of Civil and Environmental Engineering, Graduate Student Researcher, Graduate Teaching Assistant, Salt Lake City, Utah, 2013
University of Utah Department of Civil and Environmental Engineering, Undergraduate Student Researcher, Salt Lake City, Utah, 2011

AFFILIATIONS

American Society of Civil Engineers
American Water Resources Association
Water Environment Federation

PUBLICATIONS AND PRESENTATIONS

13-01 Orr, A.M., 2013. "Transpiration Performance in Bioretention Systems Designed for Semiarid Climates," M.S. Thesis, Department of Civil and Environmental Engineering, University of Utah, Salt Lake City, Utah.

13-02 Orr, A.M., 2013. "Plant Performance in Semiarid Bioretention Systems," *Spring Runoff Conference 2013*, Utah State University, Logan, Utah. 9 April.

13-03 Orr, A.M., 2013. "Plant Performance Considerations for Semi-Arid Bioretention and Bioinfiltration System Design," *World Environmental and Water Resources Congress*, Cincinnati, Ohio, 21 May.

12-01 Orr, A.M., 2012. "Evapotranspiration in Semiarid Bioretention System during Plant Dormancy," *World Environmental and Water Resources Congress*, Albuquerque, New Mexico, 21 May.

11-01 Orr, A.M., 2011. "Effect of Geological Carbon Sequestration on Nitrifying Bacteria and Ground Water Quality," Undergraduate Honors Thesis, Department of Civil and Environmental Engineering, University of Utah, Salt Lake City, Utah.

Joel James Mulder

Senior Manager

ICF International

EXPERIENCE OVERVIEW

Mr. Mulder has more than 15 years of experience in ecological and biological communities in California. Focusing primarily on freshwater ecology, his experience includes aquatic habitats and endemic fishes, reptiles, and amphibians of the west coast. Mr. Mulder holds a federal 10(a)1(A) recovery permit for unarmored threespine stickleback, Santa Ana sucker, tidewater goby, and California red-legged frog. His experience also includes sampling, monitoring, mitigation, and relocation of a variety of other special status aquatic, terrestrial, and avian species. As a project manager, Mr. Mulder is proficient in project planning and implementation, field data collection and analysis, document writing, and client communication.

Mr. Mulder has conducted environmental studies for a wide range of projects throughout California including large-scale dam removal, infrastructure, wastewater treatment, flood control, mining, development, and energy projects.

Education

- B.S., Environmental Organismic and Population Biology, University of Colorado Boulder, 2003

Certifications and Training

- USFWS 10(a)1(A) Recovery Permit for unarmored threespine stickleback, Santa Ana sucker, tidewater goby, California red-legged frog TE-93072A-0
- CDFW Scientific Collection Permit SC-009186
- County of Santa Barbara approved biologist.
- Sierra Nevada Yellow Legged Frog CDFW inter-regional training, 2001, 2002, 2003
- State Water Resources Control Board Surface Water Ambient Monitoring Program(SWAMP) Workshop, 2007

PROJECT EXPERIENCE

Fish

Project Manager, Santa Ana Sucker Translocation Plan, San Bernardino Valley Municipal Water District, 2015-2016. While employed at Cardno Inc., Mr. Mulder was the lead Santa Ana sucker technical advisor for development of a ground-breaking translocation plan designed to reintroduce federally threatened Santa Ana sucker to streams that had been historically occupied by the species. The Plan included genetics and rearing facility management, a translocation site assessment methodology, and detailed translocation guidance. The document was developed with participation from a large number of private and public stakeholders.

Task Leader, Carmel River Reroute and Dam Removal Project, Granite Construction, 2014-2016. While employed at Cardno Inc., Mr. Mulder served as the lead fisheries biologist for the Project, heading up a team of biologists to conduct capture and relocation of steelhead out of the project area for the removal of San Clemente Dam on the Carmel River. The effort included various modes of capture including novel methods for removing fish from the reservoir. Mr. Mulder also served as the biological liaison between the construction contractor and various state and federal agencies for matters concerning aquatic special status species.

Project Manager, Santa Margarita River Steelhead Habitat Assessment and Enhancement Plan, Trout Unlimited, 2013-2014. While employed at Cardno Inc., Mr. Mulder in partnership with Trout Unlimited conducted a steelhead habitat assessment in the middle Santa Margarita River under a Fisheries Restoration Grant Program grant in 2012 and 2013. The project purpose was to develop watershed restoration objectives for the anadromous waters of the middle watershed that emphasize the needs of southern California steelhead. The Plan also documented existing watershed conditions as they relate to the habitat needs for southern California steelhead, identified limiting factors to steelhead recovery, and provided prioritized solutions to address limiting factors to steelhead recovery. Habitat characterization and barrier assessment was conducted according to the California Salmonid Stream Restoration Manual Habitat Inventory and Fish Passage Inventory methods.

Task Leader, San Clemente Dam Drawdown Project, CalAm, 2007-2013. While employed at Cardno Inc., Mr. Mulder served annually as a lead fisheries biologist and task leader for steelhead trout trapping and relocation for CalAm's San Clemente Dam Drawdown Project located on the Carmel River. Mr. Mulder assisted in all field aspects of the project including trap and live-car installation and removal, daily fish rescue operations, fish relocation, and water quality monitoring. Additionally, Mr. Mulder performed all fish data analysis and authored the fisheries section of the annual reports to NOAA.

Project Manager, Flood Control Maintenance Projects, Ventura County Watershed Protection District, 2007-2015. While employed at Cardno Inc., Mr. Mulder served as lead biologist and Project Manager for numerous projects involving the repair, maintenance, and construction of District flood protection facilities. The projects have included pre- construction biological surveys, on-site biological monitoring during construction, fish rescue, and surface water quality monitoring. Examples of such projects include: Doris Drain Repair Project Aquatic Species Surveys and Rescue, Hueneme Drain Tidewater Goby Project, Santa Paula Creek Emergency Streambed Protection Project, Parkview Drain Access Road and Bridge Project, Santa Paula Creek 2007 Debris Removal Project, Arroyo Simi at Erringer Road Stabilizer Repair Project, Gabbert Debris Basin Bleeder Tower Repair Project, Ponderosa Drain Repair Project, and Ormond Lagoon Emergency Breaching Project.

Project Manager, River Road Bridge Replacement Project, Riverside County Transportation District, 2008-2010. While employed at Cardno Inc., Mr. Mulder assisted in 7 separate federally threatened Santa Ana sucker rescue and relocation efforts in 2009 and 2010 on the Santa Ana River for the removal and replacement of River Road Bridge. Mr. Mulder managed the project, organized the field crew, assisted in reporting, and helped move over 485 suckers.

Crew Leader, Caltrans Culvert Fish Passage Survey, Caltrans, 2007. While employed at Cardno Inc., Mr. Mulder Conducted habitat and steelhead passage assessments throughout Ventura, Santa Barbara, Los Angeles, and San Luis Obispo county highway systems. Conducted field surveys and analysis of potential fish passage barriers, and inventoried culvert and bridge locations.

Project Manager, Federally Endangered Tidewater Goby Protocol Surveys, 2006-2016. While employed at Cardno Inc., Mr. Mulder conducted numerous protocol level surveys for tidewater gobies in lagoons and estuaries throughout southern and central California, as well as performing rescue and relocation for several projects to avoid impacts to gobies. Examples of some of these surveys include: City of Santa Barbara Laguna Tide Gate Maintenance Project, City of Santa Barbara Cabrillo Bridge Replacement Project, City of Santa Barbara Andree Clark Refuge Vegetation Maintenance Project, PXP Reverse Osmosis Outfall Project, City of Malibu Presence/Absence Survey Las Flores Canyon, City of Ventura Annual Tidewater Goby Presence/Absence Survey Santa Clara River Estuary, and the City of Goleta Presence/Absence Survey San Jose Creek Improvement Project.

Crew Leader, California Hardhead Minnow Population Assessment for the Big Creek Hydroelectric Project, Southern California Edison, 2009-2015. While employed at Cardno Inc., Mr. Mulder lead hardhead minnow population monitoring surveys in support of FERC post-relicensing monitoring requirement for Southern California Edison's Big Creek 3 Hydroelectric Project. Surveys included snorkel and backpack electrofishing sampling to track population and demographic trends. The project also includes a study to determine if recreational whitewater releases displace hardhead, using radio tracking of individual fish.

Project Manager, Calleguas Creek fish Toxicology, Larry Walker and Associates, 2008-2016. While employed at Cardno Inc., Mr. Mulder managed annual fish tissue collection in Calleguas Creek, Ventura County, for toxicology assessment under the TMDL plan for the watershed. The collections included collection of numerous fish species throughout the watershed.

Project Manager, Jameson Lake Fish Relocation. Montecito Water District. 2015-2016. Mr. Mulder managed the monitoring of water quality, development of a fish rescue plan, and rescue and relocation of rainbow trout from Jameson Lake, Santa Barbara County. These trout are genetically pure ancestral steelhead and their continued existence was threatened by the ongoing California drought. Mr. Mulder collaborated closely with the District and CDFW to plan and implement a rescue to move these rare fish to a CDFW hatchery for their protection and eventual return to the lake.

Task Leader, The Old Road Outlet Project, City of Santa Clarita, 2007–2008. While employed at Cardno Inc., Mr. Mulder assisted with a biological assessment of the project area, impact assessment, pre-construction surveys for aquatic and terrestrial species and construction worker awareness training and construction monitoring. Mr. Mulder also worked with CDFW to create a diversion and aquatic species relocation plan, and successfully implemented this plan resulting in the recovery and relocation of thousands of California Fully Protected unarmored threespine stickleback.

Amphibians and Reptiles

Project Manager, Newhall Ranch Southern Western Pond Turtle Nesting Habitat Study, Newhall Land and Farming, 2015. While employed at Cardno Inc., Mr. Mulder led a comprehensive investigation into habitat use for nesting by southern western pond turtle for Newhall Ranch. The study involved GPS tracking of female pond turtles to determine if upland

habitat, with the potential to be affected by the Ranch project, is being used for nesting by pond turtles in the Santa Clara River.

Task Leader, Sandbar Diversion Hydroelectric Project - Foothill Yellow Legged Frog Population Monitoring, PG&E, 2013.

While employed at Cardno Inc., Mr. Mulder led the survey task for foothill yellow legged frogs using visual encounter methodology for all life-stages, including documenting larval gosner stages. Capture and handling of frogs was required to measure and photo-document individuals. The monitoring was conducted as part of a multi-year population monitoring effort for the upstream hydroelectric project.

Task Leader, Big Creek 4 Hydroelectric Relicensing Post License Monitoring – Foothill Yellow Legged Frog and Western Pond Turtle Survey, Southern California Edison, 2012-2015. While employed at Cardno Inc., Mr. Mulder led the survey task for foothill yellow legged frogs using the Seltenrich and Pool visual encounter methodology for all life-stages. He has also lead annual western pond turtle demographic surveys for the study reach. The surveys were performed as part of Southern California Edison's post-license monitoring in the rugged Horseshoe Bend Reach and associated tributaries of the San Joaquin River for the Big Creek 4 Hydroelectric Project.

Task Leader, Red-legged Frog Surveys for the 5-Year Mitigation and Monitoring Program, CalPortland, 2012. While employed at Cardno Inc., Mr. Mulder lead the survey task for USFWS protocol-level California red-legged frog surveys for CalPortland's Mitigation and Monitoring Program for gravel mining operations in the lower Sisquoc River. The study included and analysis of potential impacts to red-legged frogs from proposed gravel mining operations in the riverbed.

Project Manager, Castaic Power Plant Southwestern Pond Turtle Management Plan, Los Angeles Department of Water and Power, 2010. While employed at Cardno Inc., Mr. Mulder managed the survey and relocation of southwestern pond turtles for LADWP's Castaic Power Plant sediment basin management activities and developed a pond turtle management plan in coordination with LADWP, CDFW, and USFS for future management activities. The plan included translocation methods, as well as a protective restoration area for turtles.

Project Manager, California Red-legged Frog Surveys for the Santa Paula Creek Fish Ladder Project, CalTrans, 2010. While employed at Cardno Inc., Mr. Mulder performed surveys for California red-legged frog within Santa Paula Creek in the vicinity of State Route 150 Bridge No. 52-105. The surveys were performed in support of Caltrans' Santa Paula Creek Fish Ladder Project which will construct a rock weir and concreted rock slope protection with the capacity to facilitate fish passage upstream of Bridge No. 52-0105. The surveys strictly followed the USFWS survey protocol.

Crew Leader, Sierra Nevada Yellow Legged Frog Survey, North Central Mountain Region, California, 2001-2004. Mr. Mulder served as California Department of Fish and Wildlife crew leader for the north central mountain region of a statewide mountain yellow legged frog survey

project. Surveys were conducted high mountain lakes of the Sierra Nevada over four summers; personally completing over 500 individual VES surveys for mountain yellow legged frogs. Mr. Mulder led a series of biological surveys for amphibians and fish which included visual encounter surveys for amphibians, gill net sampling, fish identification, backpack electro-shocking, otolith collection, fish barrier identification, fish spawning area identification, chitrid fungus inspections on mountain yellow legged frogs, fairy shrimp collection, and terrestrial and aquatic habitat surveys. Mr. Mulder was additionally responsible for the project's data management, fish population analysis, GIS mapping, restoration area identification, and co-presentations of project progress and results.

Birds

Task Leader, Least Bell's Vireo Surveys for the 5-Year Mitigation and Monitoring Program, CalPortland, 2012.

While employed at Cardno Inc., Mr. Mulder led the survey task for ongoing USFWS protocol-level surveys for the state and federally endangered least Bell's vireo for CalPortland's Mitigation and Monitoring Program for gravel mining operations in the lower Sisquoc River.

Project Manager, Sensitive Bird Species Nesting Survey, Goleta Sanitary District Wastewater Treatment Plant Improvement Project, Santa Barbara County, California, 2011- 2012

While employed at Cardno Inc., Mr. Mulder managed and conducted monthly surveys for nesting sensitive bird species in the vicinity of the Goleta Sanitary District Wastewater treatment Plant in order to avoid impacts associated with the Plant Upgrade Project. Mr. Mulder conducted the majority of the surveys and oversaw surveys by junior biologists for the project.

Task Leader, Swainson's Hawk Surveys and Monitoring, Gill Ranch Gas Pipeline and Storage, 2011. While employed at Cardno Inc., Mr. Mulder co-led the survey task for California Department of Fish and Wildlife protocol level surveys for the state threatened Swainson's hawk for the Gill Ranch Pipeline and Storage Project where over 27 square miles were surveyed for hawk presence and nesting. Mr. Mulder also served as one of the primary nest monitors during construction ensuring Swainson's hawk nesting was not being disturbed by project activities.

Task Leader, Pre-Construction Nesting Bird Surveys, Ventura county Watershed Protection District, Ventura County, California, 2007-2015. While employed at Cardno Inc., Mr. Mulder has managed and conducted nesting bird pre-construction surveys for numerous Ventura County Watershed District projects since 2007. Examples of some projects include: Doris Drain Repair Project, Santa Paula Creek Emergency Streambed Protection Project, Parkview Drain Access Road and Bridge Project, Santa Paula Creek 2007 Debris Removal Project, Arroyo Simi at Erringer Road Stabilizer Repair Project, Arroyo Simi Upstream of Los Angele Avenue Stabilizer Repair Project, Gabbert Debris Basin Bleeder Tower Repair Project, Ponderosa Drain Repair Project, and Hopper Creek Debris Removal Project.

Biological Assessments and Evaluations

Task Leader, Upper Llagas Creek Project Biological Assessment, Santa Clara Valley Water District, 2014. While employed at Cardno Inc., Mr. Mulder served as the lead author for a biological assessment of effects to California red-legged frog and California tiger salamander for the Santa Clara Valley Water District's Upper Llagas Creek Project. The Project involves widening of the Llagas Creek channel for additional flood control capacity.

Project Manager, Section 7 Consultation for the Cachuma Project, Cachuma Conservation and Release Board, 2013-2016. While employed at Cardno Inc., Mr. Mulder was a lead author and project leader for the U.S. Bureau of Reclamation's Section 7 re-consultation with NMFS pursuant to the ESA for operation and maintenance of the Cachuma Project on the Santa Ynez River, Santa Barbara County. Mr. Mulder assisted Reclamation and the Cachuma Conservation Release Board in developing a Biological Assessment related to management of the federally listed steelhead trout and potential impacts to fish passage and habitat in the Lower Santa Ynez River. Mr. Mulder has coordinated the fisheries studies, analyzed flow requirements for fish passage and summer habitat, analyzed the effects of conservation measures enacted under the 2000 consultation for the Project, and developed actions to meet the needs of numerous water users and downstream public trust resources.

Project Manager, Andree Clark Bird Refuge Vegetation Maintenance Project – Biological Assessment and Biological Evaluation, City of Santa Barbara, 2011. While employed at Cardno Inc., Mr. Mulder served as project manager for a biological assessment and a biological evaluation analyzing the effects of the Andree Clark Bird Refuge Vegetation Maintenance Project on federally listed and other special status species in the Refuge.

Task Leader, Heavenly Valley Creek Bioassessment for Heavenly Valley Ski Resort, El Dorado County, California, 2007- 2013. While employed at Cardno Inc., Mr. Mulder served as the benthic macroinvertebrate bioassessment leader for conducting benthic macroinvertebrate collections and analysis for Heavenly Valley's ongoing Total Maximum Daily Load Plan.

Crew Leader, Benthic Macroinvertebrate Assessment for Rock Creek Cresta Hydroelectric Project, PG&E, 2009. While employed at Cardno Inc., Mr. Mulder led a large scale field effort to conduct a groundbreaking BMI investigative study on the effects of whitewater releases on BMI communities for PG&E's Rock Creek Cresta whitewater recreational release program on the North Fork Feather River.

Project Manager, Trabuco, Oso and San Juan Creek Biological Survey, Trout Unlimited/CDM, 2009. While employed at Cardno Inc., Mr. Mulder served as the project manager and field biologist for a biological survey related to the planned replacement of a fish passage barrier at the Metrolink Trabuco Creek Crossing. The project included fish, amphibian, avian, and habitat surveys, as well as a detailed report providing the results of the surveys and recommendations for the barrier replacement and other steelhead habitat enhancement options.

Task Leader, Soboba Springs Driving Range Project Biological Assessment, Soboba Reservation, 2010. While employed at Cardno Inc., Mr. Mulder prepared a biological

assessment for improvements to the Soboba Springs Driving Range including analysis of project alternatives and potential effects on listed species.

Field Crew, Santa Paula Creek Maintenance Project Biological Evaluation, Ventura County Watershed Protection District, 2007. While employed at Cardno Inc., a biological evaluation, including field surveys, was performed for the Ventura County Watershed Protection District on lower Santa Paula Creek. This included a fish survey. Mr. Mulder assisted in the survey which included capture of Santa Ana suckers, Owen's suckers, and their hybrids, and with development of the assessment document.

SELECTED PUBLICATIONS AND PRESENTATIONS

Swift, C.C., Howard, S., Mulder, J., Pondella, D; and Keegan, T.P. (2014). *Expansion of the non-native Mississippi Silverside, Menidia audens (Pisces, Atherinopsidae), into fresh and marine waters of coastal southern California*. Bulletin of the Southern California Academy of Sciences: Vol. 113: Iss. 3.

PROFESSIONAL AFFILIATIONS

American Fisheries Society

EMPLOYMENT HISTORY

Cardno Inc.	Senior Project Scientist	2006–2016
US Forest Service	Biological Technician	2006
California Department of Fish and Wildlife	Scientific Aid	2001-2004

Firm Profile

Meridian Consultants LLC is an industry leader in the fields of community, environmental, and natural resource planning. The Meridian Team offers a history of diverse experience in assisting public agencies, private businesses, and landowners throughout California in meeting the challenges of entitlement and regulatory compliance.

Our team has extensive experience in land use planning, environmental review, and natural resource management. Our experience includes the successful environmental review and entitlement of some of the largest and most complex projects in California. Meridian also assists our clients with processing local, state, and federal permits under a variety of regulations; stakeholder outreach; mitigation implementation; and the preparation of a wide range of supporting technical studies.

Meridian has expertise in the preparation of a broad range of environmental documents to meet the requirements of the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). Our team has consistently been at the forefront of emerging issues, such as climate change and water supply sustainability, and we are regularly sought out for our CEQA expertise and technical capabilities to address complex and controversial projects.

Our partners have an extensive history of successful work on major projects subject to intense public and legal scrutiny. Our technical expertise and experience is matched by our ability to communicate planning and environmental information in well-organized and straightforward reports and presentations that produce successful outcomes.

Experience.
Expertise.
Excellence.

Services and Expertise

Meridian Consultants provides its clients with a wide range of services including:

- Strategic Compliance Planning and Management
- CEQA/NEPA Compliance
- Regulatory Permitting Services
- Land Use Planning
- Noise Studies
- Air Quality and Greenhouse Gas Studies
- Water Rights Permitting Services and Water Banking and Transfer Consulting
- Water Supply Assessments and Verifications
- Mitigation Implementation and Monitoring
- Public Outreach and Facilitation

Strategic Compliance Planning and Management

The partners of Meridian Consulting excel at assisting our clients in navigating the environmental compliance process deliberately and strategically. Through hands-on collaboration, we work with our clients to identify key issues and stakeholders and develop a strategy to ensure efficient and timely completion of the various permits, environmental, and regulatory compliance processes required for each project. This includes early evaluation of project constraints and opportunities; dialogue with regulatory agencies and other interested and involved parties; and coordination of scheduling of key tasks and deliverables, such as CEQA documentation and permit applications, to avoid unnecessary delays.

Early input from agency and other stakeholders can help identify ways of modifying a project to reduce environmental impacts and minimize potential cost, schedule, and litigation issues while making sure that project objectives are met. Meridian Consultants assists our clients by identifying all processing and review requirements, technical information needed, and team members required at the beginning of the project. Developing and maintaining project schedules by actively managing the activities of the project team is a primary focus of the Meridian Consultants approach.

CEQA/NEPA Compliance

Achieving CEQA and NEPA compliance are fundamental to the success of our client's planning and infrastructure projects. Our team has prepared CEQA and NEPA documents for a wide variety of projects throughout California. We take pride in our ability to turn smaller documents around in a quick, cost-effective manner without sacrificing

quality. Our partners have provided expert and responsive assistance with the full spectrum of CEQA and NEPA compliance documents, ranging from Notices of Exemption or Exclusion to Initial Studies and Environmental Assessments to complex Environmental Impact Reports (EIRs), Environmental Impact Statements (EISs), and joint documents for major projects.

Regulatory Permitting Services

As part of our services, we are able to work with a variety of regulatory permitting and agency negotiation services. We understand the need for efficient and solution-oriented agency coordination and are known for our ability to work productively with resource agency staff. When regulatory permits are required, we are able to call on a combination of outstanding technical expertise and solid regulatory skills, ensuring successful project implementation.

Land Use Planning

Meridian Consultants offer expertise in all aspects of the land use planning process, including preparation and amendment of General Plans and Specific Plans, preparation of land use and project opportunity and constraint studies, identification of entitlements required for projects, and assistance with processing.

Noise Studies

Meridian Consultants has the capability to evaluate noise sources associated with a range of projects, from special events to spectator sports facilities, land development, and vehicle traffic. All measurements are taken in accordance with accepted methodologies such as ISO or ASTM, using Type I/II integrating sound level meters. Evaluations are made in reference to community planning standards, such as local noise control ordinances and the California Model Community Noise Control Ordinance, and are based on accepted community noise equivalent level/day-night average sound level (CNEL/Ldn) measurement methodology.

Meridian Consultants utilizes computer models to predict noise impacts from increased traffic volumes or other activities associated with proposed land uses. Anticipated noise levels are projected with respect to parcel boundaries or planimetric features and in accordance with applicable regulations or client objectives. Predictive studies may address a variety of variables, such as traffic volumes, vehicle mix, stationary source operation patterns, topographic conditions, and mitigation options.

- Noise level management
- Strategic sampling
- Monitoring
- Predictive modeling
- National, state, and/or local Register resource evaluations
- Noise contour mapping
- Attenuation/Control plans

Meridian Consultants staff has prepared Noise Control Plans as part of mitigation requirements and conducts long-term noise monitoring. We own several noise monitors and related equipment and have the staff available to mobilize and monitor noise on short notice. The Noise Control Plans incorporate the most practical and effective measures to mitigate noise and vibration impacts from the construction activities. Our Plans includes the following elements:

- Noise monitoring with state-of-the-art equipment
- Reporting and availability of monitoring data
- Mapping of sensitive receptors and noise monitoring meter locations
- Action levels to evaluate noise from construction operations
- Complaint resolution processes

Air Quality and Greenhouse Gas Studies

Meridian Consultants' air quality and climate change professionals are a specialized team with an up-to-date and in-depth understanding of the complex and evolving regulatory landscape. The services offered include air quality impact assessments for CEQA and NEPA documents, health risk assessments (HRAs), greenhouse gas (GHG) inventories, and stationary source permitting and emission inventories.

Our services include:

- Feasibility studies
- Air quality impact assessments (CEQA/NEPA)
- Health risk assessments (HRAs)
- Agency negotiation and litigation support
- Construction equipment loading and emissions monitoring
- Stationary source permitting and emission inventories
- Construction dust monitoring

In conducting construction air quality mitigation, the following components are included:

- Assign in-house SCAQMD-certified dust control supervisors
- Use meteorological data to assist in selecting the sampler locations
- Monitor work area dust using hand-held dust monitors
- Ensure applicable Best Available Control Measures (BACMs)
- Obtain Tier certifications for construction equipment as needed
- Ensure that air quality monitors provide written records of all dust control measures well as fugitive dust observations and data
- Complete all required SCAQMD forms

Water Rights Permitting and Water Banking & Transfers

Meridian is a leader in completing water rights permitting and the associate environmental review. As the lead environmental consultant for the State Water Resources Control Board (SWRCB) Water Rights Division, we are responsible for assisting the Division with the environmental review of water rights permit applications throughout California.

Our senior staff has experience in water banking and water purchases and transfers. Through a variety of projects, we have worked with water agencies and water banks to address the short and long-term environmental issues associated with these projects. Through our involvement, we have become experienced in the intricacies associated with habitat issues, movement, and storage of water through a variety of methods, water quality and mixing issues, and water rights implications.

Water Supply Assessment and Water Supply Verification

Meridian is recognized statewide as a leading preparer of water supply assessments (WSAs) required under California Water Code Sections 10910 and of water supply verifications (WSVs) required under Government Code Section 66473.7. We have provided water reliability planning for projects in communities across the state, and are regularly sought out to prepare WSAs in areas where water supply is a complex and controversial issue. We provide water reliability planning consulting services as a stand-alone service or as part of a comprehensive package of services that also includes CEQA compliance and other related support.

Mitigation Implementation

Completing CEQA/NEPA compliance and obtaining regulatory permits enables project initiation, but successful project completion requires that mitigation and permit terms be implemented in a manner that meets regulatory requirements while allowing construction to move ahead smoothly. With that in mind, we can provide a full range of mitigation implementation and monitoring services, including “tailgate” training sessions for construction personnel. Our experienced personnel interface effectively with construction, agency, and local jurisdiction staff, providing efficient and economical mitigation implementation.

Public Outreach and Facilitation

We provide stakeholder outreach in support of land use and water planning, infrastructure development, and environmental compliance processes, ranging from individual milestone meetings with specifically designated goals to formulating and implementing comprehensive outreach programs. CEQA and NEPA establish minimum requirements for public dialogue, and for some projects additional outreach can be essential to project success, offering a powerful tool to build trust at project initiation, and providing the opportunity to resolve issues if opposition is identified during the process. For each project, Meridian staff works closely with our clients to develop and implement a carefully coordinated program of services designed to achieve the specific objectives of the project.

Tony Locacciato

Partner

Practice Group Leader, Environmental Compliance and Planning

About

Mr. Locacciato is an urban and regional planner with 30 years of diverse experience in planning and environmental analysis. His background in consulting, public sector planning, and private development results in an understanding of the relationships between land use regulations, environmental impacts, and the implementation of projects. Mr. Locacciato has experience in land use planning; land use studies; the preparation of Specific Plans, Master Plans, Environmental Assessments, Program and Project Environmental Impact Reports (EIRs), Supplemental EIRs and Addendums to EIRs, Initial Studies, and Mitigated Negative Declarations (MNDs); and site feasibility and constraints analysis. He also has provided a wide range of environmental consulting services to cities, including the preparation of EIRs, the review of EIRs, and the direction of mitigation monitoring programs.

Mr. Locacciato has been involved in the planning and environmental review of commercial, industrial, residential, and mixed-use projects in urban and rural settings for communities throughout California as well as for a wide variety of public infrastructure and public facility projects. His specialty is the management of complex multidisciplinary projects. Mr. Locacciato provides oversight and direction of projects and directly manages complex projects.

Education

Bachelor of Science, City and Regional Planning, California Polytechnic University, San Luis Obispo, California

Affiliations

Member, American Institute of Certified Planners

Member, American Planning Association

Member, Association of Environmental Professionals

Member, Urban Land Institute

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805.367.5720

Relevant Project Experience

Project Manager for the **Music Festivals Plan** Environmental Impact Report (EIR) in the city of Indio, California. The project proposed an amendment to the City of Indio Municipal Code to adopt an ordinance pertaining to Major Music Festival Event Permits; a Major Music Festival Event Permit; and a Development Agreement. The Major Music Festival Event Permit would allow an increase in attendance for the Coachella and Stagecoach Music Festivals and for two events in the fall through 2030. The EIR analysis focused on the potential environmental impacts to local and regional air quality and greenhouse gases, biological resources, land use compatibility with the surrounding residential neighborhoods, noise associated with the festival events, public services, and traffic on the surrounding communities.

Project manager for the **Centre at La Quinta Specific Plan** Environmental Impact Report (EIR) for the City of La Quinta, California. This EIR evaluated a Specific Plan proposed for an automobile dealership mall on one-half of this site at Washington Street and Highway 111, and for a major retail commercial center on the other half of the site. Mr. Locacciato was also retained by the City to prepare a Supplemental EIR for this project that addressed a proposed amendment to the Specific Plan to allow for greater flexibility in the mix of auto-related and general commercial uses on the site. To garner support for the approval of the retail center component of the project, Mr. Locacciato completed an Addendum to the previous EIRs that focused on the potential impacts of having a new Super Walmart anchoring this center.

Project director for the preparation of the **Glendale Town Center** Environmental Impact Report (EIR) for the Glendale Redevelopment Agency in Glendale, California. This EIR provided a comprehensive analysis of a mixed-use commercial and residential project on a key 16-acre site in the center of downtown Glendale. The Glendale Town Center includes 475,000 square feet of retail and entertainment uses, with 338 residential units in the upper floors of the buildings. A major objective of this project was to connect major facilities and development in the downtown area, including the adjacent Glendale Galleria Mall, the existing retail development along Brand Boulevard, and the City's Central Library by creating pedestrian connections through the site and the new public park, which would serve as the centerpiece of the Project. A full project EIR was prepared, and Mr. Locacciato managed all phases of the environmental review process for the redevelopment agency. A lawsuit was filed on the adequacy of the EIR, which was found to be adequate by the Los Angeles Superior Court; and this decision was upheld on appeal.

Project manager for the **Burbank Media Center** Environmental Impact Report (EIR) for the City of Burbank, California. Over a period of 4 years, Mr. Locacciato prepared two project EIRs for a mixed-use project proposed on a 4-acre site at a key location in the Burbank Media District. As originally proposed, the Burbank Media Center consisted of 925,000 square feet of development, including office uses; a business- and visitor-serving hotel; a health club; a childcare facility; retail space; and a church in 3-, 6-, and 18-story buildings. The first EIR included an analysis of several alternative configurations of uses and buildings on the site. After the original project was not approved, Mr. Locacciato prepared a second EIR for the City, evaluating four additional development scenarios at an equal level of detail to assist the City in determining the appropriate intensity of development for this site. After completion of the second EIR, the City approved a residential and retail commercial project.

Project director for the **LA County Hall of Justice** Environmental Assessment/Environmental Impact Report (EA/EIR) for the County of Los Angeles, California. Mr. Locacciato prepared a National Environmental Policy Act (NEPA) EA for the Federal Emergency Management Agency and an EIR for the County for the repair and renovation of the historic Hall of Justice. Built in 1925 and damaged in the 1994 Northridge Earthquake, the Hall of Justice is the oldest public building in the Civic Center. The full EIR and EA evaluated the County's proposal to renovate the building to provide Class A office space for the County, build a new 1,000-space parking structure next to the Hall of Justice, and make landscape and hardscape improvements to the site. Topics evaluated in the EA/EIR included geology and soils, aesthetics, air quality, noise, traffic, historical resources, and utilities and public services.

Project manager for the **Warner Bros. Studio Master Plan Expansion** Environmental Impact Report (EIR) for the City of Burbank, California. Mr. Locacciato organized and conducted public scoping meetings and prepared an Expanded Initial Study to determine the scope of this EIR, which addressed master plans for two separate studio sites in the City of Burbank. The project involved plans to add more than 4 million square feet of new studio facilities over a 20-year period. Traffic, aesthetics, historical resources, and neighborhood compatibility were major issues of concern. Mr. Locacciato also prepared an addendum to this EIR for the City that provided a detailed analysis of a multilevel parking garage located next to an existing residential neighborhood.

Project manager for the **Wilshire Vermont Joint Use Project** Addendum to the Environmental Impact Report (EIR) for the Los Angeles Community Redevelopment Agency and the Metropolitan Transportation Agency in Wilshire, California. Mr. Locacciato prepared a comprehensive addendum to the Wilshire Center and Koreatown Redevelopment Project EIR evaluating a mixed-use residential and retail commercial project proposed on the site above the Metro Red Line's Wilshire/Vermont Station. The project included 444 residential apartments planned in six levels above a ground level containing approximately 30,600 square feet of retail commercial space. Parking was provided in a 3-story subterranean parking structure containing 732 parking spaces. Reconfiguration of the portal to the Red Line Station was also a part of the project.

Project manager for the **Wilshire Boulevard Temple** Master Plan Environmental Impact Report (EIR) for the City of Los Angeles, California. This master plan addressed the renovation of the Wilshire Boulevard Temple, designated as a City of Los Angeles Historic-Cultural Monument and listed in the National Register of Historic Places and California Register of Historic Resources, and the addition of a new school and other facilities to this key block on Wilshire Boulevard to accommodate its evolving spiritual, educational, community, and administrative programs. The main topic addressed in the EIR was the compatibility of new buildings with the existing historic building on the site.

Project manager for the **University Gateway** Environmental Impact Report (EIR) for the Los Angeles Community Redevelopment Agency. This 8-story, 630,000-square-foot residential and commercial building at the northwest corner of the intersection of Figueroa Street and Jefferson Boulevard provided 421 new student apartments designed to accommodate up to 1,656 University of Southern California (USC) students, with retail commercial uses on the ground floor. The project is located within the Exposition/University Park Redevelopment Project Area, and is also part of the Figueroa Corridor. Key issues associated with this project and preparation of the environmental analysis for the project included the provision of adequate on- and off-site parking, consistency with the Exposition/ University Park Redevelopment Plan and the South Los Angeles Community Plan, impacts upon the adjacent historic Shrine Auditorium, aesthetic impacts, and traffic and parking impacts upon the surrounding community.

Project director for the **City Center II Project** in the City of Glendale, California, a mixed-use residential and hotel high-rise development project. The project includes a 20-story residential tower and an 18-story hotel/ residential mixed-use tower. In addition, a retail/café component is to be provided on the ground floor of the east tower and would open up to the existing City Center I Plaza. A full project Environmental Impact Report (EIR) was prepared based on direction from the Glendale Redevelopment Agency (GRA). Issues addressed in the EIR included land use and planning, population and housing, aesthetics, geologic and seismic hazards, hydrology and water quality, traffic and circulation, air quality, noise, archeological and historic resources, hazards and hazardous materials, public services, utilities and services systems, and recreation.

Project manager for the **Figueroa and Adams Student Housing Project** Environmental Impact Report (EIR) for the City of Los Angeles, California. This project involved the development of a residential building containing 137 student housing units and replacement parking for an adjacent church on Figueroa Street near the University of Southern California (USC). Key issues addressed in the EIR included historic resources and aesthetics because of the presence of adjacent historic properties; archaeological resources due to the potential for impacts to a portion of a late 1800s water delivery system, and to

encounter buried remains of a circa 1888 residential complex; traffic and circulation; and the effects of construction on air quality and noise.

Project Manager for the **Glendale Triangle Project** Environmental Impact Report (EIR) for the City of Glendale, California. The project is a mixed-use development containing 218 dwelling units and 54,000 square feet of commercial space with 3½ levels of subterranean parking. Key issues being addressed in the EIR are construction aesthetics, noise, and parking.

Project director for the **California State University, Northridge (CSUN)** Master Plan Environmental Impact Report (EIR). The Master Plan for the 353-acre San Fernando Valley campus was proposed to enable the University to accommodate the growing enrollment and broadening range of programs offered on the campus. The Master Plan addresses the expansion of academic and administrative facilities; the enhancement of campus open space; the expansion of student housing and dining facilities; the development of faculty and staff housing; improved vehicle and pedestrian access and circulation; new parking facilities; and upgrades of campus utilities. The EIR evaluated the overall Master Plan as well as a number of the individual new buildings and facilities included in the Master Plan. Major issues included traffic and circulation, parking, housing, and a range of aesthetic issues, including balancing increased campus development with retention of open space and the creation of an attractive, distinct campus identity along the community interface.

Project director for the **Brentwood School Campus** Master Plan Environmental Impact Report (EIR). The Brentwood School, a private K–12 coed day school, currently operates on two separate campuses located east and west of Sunset Boulevard in the community of Brentwood, within the City of Los Angeles, California. The Master Plan provides for adding approximately 240,000 square feet of new facilities to both campuses and guiding land use and development at the school for the next 25 years. The majority of the new facilities would be added to the East Campus, which houses the middle and high school; the smaller portion of new facilities would be added to the West Campus, which is home to the elementary school. Key issues relate to the compatibility of the new facilities with the surrounding residential neighborhoods, including visual, traffic, and circulation impacts. Impacts during construction are also being thoroughly assessed to address neighborhood concerns.

Project manager for the 500-acre **East Area 1** Specific Plan Environmental Impact Report (EIR) for the City of Santa Paula, California. Over a span of 6 years, Mr. Locacciato prepared and managed the preparation of the full range of technical, environmental, and economic studies to guide the preparation of a Specific Plan and EIR for this project and supported the review and approval of a Sphere of Influence amendment and annexation of this area by the County of Ventura Local Agency Formation Commission in March 2011.

Project manager for the **Runkle Canyon** Specific Plan EIR for the City of Simi Valley, California. This specific plan was prepared to allow for the development of a master-planned residential community on 1,595 acres, containing a mix of residential densities, natural open space, a neighborhood park, a multiuse trail system, and an area for a potential future public golf course. The specific plan allows 460 homes on approximately 150 acres in the northern portion of the specific plan area. Approximately 1,454 acres will remain in open space and recreational uses, including a 10-acre neighborhood park, 1,150 acres of natural open space, and approximately 220 acres designated for the potential future development of a public golf course. In addition to supporting the adoption of the Specific Plan by the City of Simi Valley, this EIR served as the environmental clearance document for approval of annexation of this site by the Ventura Local Agency Formation Commission (LAFCO).

Project director for the **Azusa Pacific University** Master Plan Environmental Impact Report (EIR) for the City of Azusa, California. This long-range Master Plan provided for the addition of new educational facilities on the east and west campuses located in Azusa. The objectives of the Master Plan included balancing the uses on both campuses by providing additional student housing and parking on both campuses in addition to new classroom buildings. Key issues included the compatibility of the proposed increase in intensity of uses on the campus with existing surrounding neighborhoods and the proposed redevelopment of the Azusa Drive-In Theater, which is designated as a historic resource and eligible for

listing on the California Register of Historic Resources as the last drive-in theater on historic Route 66 in the state.

Project manager for the **Sun City Shadow Hills Project** Master Plan Environmental Impact Report (EIR) for the City of Indio, California. This full-scope EIR, prepared over a 7-month period for the City, evaluated the first major development project proposed in Indio's Gateway Conceptual Specific Plan Area in north Indio. The Shadow Hills project consisted of a proposal to develop a private, age-restricted residential community on approximately 800 acres with 2,500 single-family homes, a golf course, and 65 acres of commercial uses. Key issues included compatibility with the Bermuda Dunes Airport, changes to the General Plan Circulation Plan for north Indio, and the preparation of one of the first SB 610 Water Supply Assessments (WSA) for a major project served by the Coachella Valley Water District.

Project manager for the **Sun City Shadow Hills Expansion** for the City of Indio, California. This Supplemental EIR evaluated the addition of 305 acres to the Sun City Shadow Hills Community to allow for the development of a third phase. This full-scope EIR evaluated the proposed development of an additional 1,200 homes and an 18-hole golf course on the expansion area.

Project manager for the **Travertine Point** Specific Plan Environmental Impact Report (EIR) for the County of Riverside, California. The County of Riverside certified this EIR and adopted the Specific Plan for this new 5,000-acre master planned community in December 2011. Travertine Point is a new town planned on the northwest shore of the Salton Sea. The majority of this Specific Plan area is located in Riverside County with a portion located in Imperial County. Portions of the Project site also include Torres Martinez Desert Cahuilla Indian tribal lands. This comprehensive EIR addresses a Specific Plan permitting the development of over 16,655 new homes and 5 million square feet of commercial and light industrial development. This full scope EIR includes extensive analysis of traffic impacts, greenhouse gas and other air quality impacts, cultural resource and other impacts, as well as a Water Supply Assessment.

Project director for the **2011 City of Coachella General Plan Update EIR**. Mr. Locacciato assisted the City of Coachella and its General Plan consultant with the General Plan update program by preparing a Program EIR on the 2011 General Plan.

Project manager for the **La Quinta Resort Master Plan EIR** for the City of La Quinta, California. This EIR addressed a proposed amendment to the Specific Plan for the La Quinta Resort to allow for an expansion of the resort. New facilities were proposed to add 800 new hotel and timeshare units to the existing resort. Proposed buildings in the resort core included a new four-story hotel/conference center building. Key issues assessed in this EIR included aesthetic impacts, traffic impacts, and potential historic resource impacts from the proposed intensification of resort facilities.

Project manager for the **Shadow View Specific Plan EIR** for the City of Coachella, California. This EIR evaluated a residential and retail commercial project proposed on an important 455-acre site located at the entry of the City's Commercial Entertainment Zone. A full-scope EIR addressed all potential impacts of the proposed gated residential golf course community and major retail center. Major topics of interest included the consistency of the proposed uses with the City's General Plan Land Use and Circulation Elements. After a new plan was developed for the project, the entire EIR was revised and recirculated for additional public review. Mr. Locacciato also prepared the Specific Plan document for the City.

Project manager for the **Desert Lakes Specific Plan** for the City of Coachella, California. Mr. Locacciato prepared a full-scope EIR for this Specific Plan for approximately 2,500 acres located north of the I-10 Freeway. As proposed, the Desert Lakes community was to include 7,300 new homes in three separate residential villages surrounding a town center containing up to 300,000 square feet of retail/commercial, office, and high-density residential uses. Services provided include full management of the environmental review process, including conducting scoping and agency consultation meetings, and directing the preparation of all technical studies, including traffic, cultural resources, and geology studies. In addition, Mr. Locacciato coordinated the preparation of a Water Supply Assessment and consultation with Native American tribal representatives on traditional tribal cultural places as required by SB 18.

Project manager for the **Country Club of the Desert Specific Plan EIR** for the City of La Quinta, California. Mr. Locacciato prepared a comprehensive EIR for the City of La Quinta for this Specific Plan addressing a 990-acre site located immediately north of the PGA West Community in La Quinta. This Specific Plan allows for the development of approximately 525 acres of the 988-acre site as a private golf course country club with three 18-hole golf courses and related clubhouse facilities. Development of approximately 402 acres with a variety of single-family homes, including custom homes, detached production homes, detached villas, and attached casitas, is also allowed by this Specific Plan. After the initial approval of this project, the City retained Mr. Locacciato to prepare a comprehensive Addendum to the original EIR to add 120 acres to the Specific Plan area and to revise the permitted land uses to allow for the development of the site with the Madison Club and Hideaway development projects.

Project manager for **The Ranch Specific Plan EIR**, SilverRock Resort Specific Plan, MND, and an Addendum to this MND for the City of La Quinta, California. Mr. Locacciato served as the City of La Quinta's environmental planning consultant on this important 700-acre site located north of the PGA West Community over several years. A comprehensive EIR was prepared by Mr. Locacciato for a new resort proposed for this site. Following preparation of this EIR, Mr. Locacciato prepared an MND for acquisition of this site by the City's Redevelopment Agency. Mr. Locacciato then supported the City's planning and development efforts for this site by preparing a Specific Plan for the golf course and resort hotel project and an Addendum to MND evaluating this proposed Specific Plan.

Project manager for **The Pointe Specific Plan EIR** for the City of La Quinta, California. Mr. Locacciato prepared an EIR for this Specific Plan to guide the development of a residential retirement community on a 43-acre site located adjacent to the Santa Rosa Mountains and south of Highway 111 and west of Washington Street. A comprehensive EIR was prepared focusing on potential biological resource, aesthetic, and traffic impacts.

Project director for the **Supplemental EIR for Amendment No. 4 to Specific Plan No. 281** (Sun City Palm Desert) for the County of Riverside, California. This EIR evaluated a major amendment to this Specific Plan to realign major roadways, other infrastructure, and planning area boundaries in the northern half of this 1,575-acre Specific Plan area. A comprehensive evaluation of all aspects of this amendment was provided in this EIR.

Managed the preparation of an **Addendum to the County of Riverside EIR** for the Sun City Palm Desert project to evaluate the impacts of an amendment to the Specific Plan for the County of Riverside, California. Also managed the preparation of an EA and EIR Addendum for the City of Palm Desert evaluating the impacts of a set of preannexation actions on the Sun City Palm Desert project, including a General Plan Amendment, Zone Change, and approval of a Development Agreement.

Project manager for the **Desert Dunes Specific Plan EIR** for the County of Riverside, California. This comprehensive EIR evaluated the adoption of a Specific Plan by the County of Riverside to allow 2,250 homes to be developed on 475 acres located around the existing Desert Dunes golf Course located 2 miles north of the I-10 Freeway and 1 mile south of the City of Desert Hot Springs in the Coachella Valley.

Project director for the **Eden Rock Subsequent EIR** for the City of La Quinta, California. Mr. Locacciato prepared this Subsequent EIR, evaluating a residential development project proposed for the undeveloped land portion of the PGA West Community. A General Plan Amendment and Zone Change were proposed to allow 97 multifamily residential condominiums to be developed on 42 acres in the center of the PGA West Golf Course Community. This Subsequent EIR updated the information and analysis in the Final EIR for the PGA West project to evaluate this proposed project.

Project manager for the **RiverPark Specific Plan EIR** for the City of Oxnard, California. This EIR evaluated the impacts of the largest mixed-use project ever approved in Ventura County. The 700-acre RiverPark Project includes 2,800 residential units and 2.8 million square feet of commercial development. The land plan reflects new urbanism planning principles and incorporates a mixed-use town center. The project involves the annexation and reclamation of an existing sand and gravel mine site located next to the Santa Clara River, a

sensitive area for biological resources. Mr. Locacciato directed the preparation of a full range of detailed technical studies and prepared a detailed full-scope EIR addressing all topics. Mr. Locacciato also reviewed and directed the preparation of the Specific Plan by the applicant.

Project manager for the **Northwest Golf Course Community Specific Plan and EIR** for the City of Oxnard, California. Managed a multidisciplinary team to prepare a specific plan for the addition of 18 holes to an existing golf course and the creation of a compatible community of 450 homes. The golf course extension was planned on a closed landfill and an amendment of the approved closure plan was required as well as an adjustment of the sphere of influence for the City and annexation of the property.

Project manager for the **North Shore at Mandalay Bay EIR** for the City of Oxnard, California. Managed the preparation of a series of technical studies to determine the feasibility of redeveloping a closed oil field waste site for residential uses. A comprehensive consultation process with responsible agencies was conducted to determine the scope of the EIR for the project. The EIR evaluated a proposal for 450 waterfront homes on this 80-acre site in the coastal zone.

Project manager for the **Central LA Middle School No. 3 Project** for the Los Angeles Unified School District in Los Angeles, California. This EIR evaluated a new 789 two-semester seat middle school in a new 30-classroom building on a 2.5-acre site above the Metro Red Line Wilshire/Vermont Station.

Project manager for the **Chaffey Community Master Plan** for the Chaffey Community College District in Rancho Cucamonga, California. This EIR looked at the Master Plan for expansion of the main campus on Haven Avenue in the City of Rancho Cucamonga. Major issues included the impacts of changes in the access and circulation system for the campus and traffic impacts on the streets surrounding the campus.

Project manager for the **Canyon Oaks Supplemental EIR** for the County of Los Angeles, California. This comprehensive Supplemental EIR evaluated a revised project proposed for a sensitive 100-acre site in the Santa Monica Mountains. Previous proposals for this site had been under review for over 12 years. Visual impacts, land use compatibility, effect on community character, biology, grading, geologic stability, and water quality were issues of concern.

Project director for the **Mountaingate South EIR** for the City of Los Angeles, California. Mountaingate South is located in a steep canyon area of the Santa Monica Mountains. The project area totaled 281 acres with development on 61 acres with 29 dwelling units. The remaining portions of the project area are dedicated as permanent open space. A full-scope EIR was prepared for this project with key issues including plant and animal habitats, fire management, and viewsheds.

Project director for the **Sierra Madre Master Environmental Assessment (MEA)** and General Plan EIR in Sierra Madre, California. The MEA was compiled to provide information to the City's General Plan Advisory Committee for use during the process of updating the General Plan. The EIR was prepared after the draft update of the General Plan was completed based on the information in the MEA.

Project manager for the **Commercial Development Standards EIR** for the City of Santa Monica, California. This EIR provided a comparative evaluation of 12 different sets of alternative development standards being considered by the City for all commercial and industrial zones in the City.

Project manager for preparation of the **Sun City Tehama Specific Plan EIR** for the County of Tehama, California. This project proposed the development of a master-planned, mixed-use community including residential, commercial, and institutional uses. The proposed Specific Plan would allow for the development of a total of approximately 4,200 residential units, with the majority (approximately 3,700 units) comprised by an age-restricted retirement community. Approximately 500,000 square feet of commercial uses were also initially proposed. Mr. Locacciato prepared and circulated a comprehensive full-scope EIR for Tehama County and also prepared a revised EIR for recirculation after the project was modified in response to comments on the original Draft EIR. Major issues include the provision of

public services to this planned new community and the impact of the project on the adjacent I-5 Freeway.

Project director for the **Rancho La Sierra Specific Plan** in Riverside, California. Directed the preparation of the Specific Plan document, which incorporated a land plan designed through a public planning process.

Project manager for the **City of Santa Monica Master Environmental Assessment (MEA)** in Santa Monica, California. This MEA was prepared during a moratorium on commercial and industrial development in the City in order to provide a comprehensive source of information on environmental conditions throughout the City. This MEA also included an analysis of the potential cumulative effects of development based on a master list of projects for the entire City. This MEA was prepared based on available published information and is updated on an annual basis.

Project manager for the **College Park Project Environmental Database** for the City of Palmdale, California. This database was compiled for a 640-acre site in the foothills of the San Gabriel Mountains to guide the preparation of a Specific Plan for this site and to provide information for the Specific Plan EIR. Planned uses included a community college campus and residential uses. The site was located in a sensitive foothill area adjacent to the San Andreas Fault. Mr. Locacciato also managed the preparation of a Supplemental EIR on this project, which evaluated a set of comprehensive revisions to the Specific Plan.

Project manager for the **Arroyo Linda Crossroads Specific Plan EIR** for the City of Arroyo Grande, California. This EIR evaluated the impacts of the development of mixed commercial, light industrial, and residential uses on a 290-acre site in San Luis Obispo County. The project involved annexing 185 acres to the City of Arroyo Grande.

Project director for the **Antelope Valley Enterprise Zone EIR** for the Cities of Palmdale and Lancaster and the County of Los Angeles, California. This program EIR evaluated the potential impacts of designating a 28,000-acre area under the jurisdiction of the cities of Lancaster and Palmdale and the County of Los Angeles as an Enterprise Zone. The EIR was prepared within a short time frame based on existing planning and environmental documents previously prepared by the three jurisdictions.

Project director for a **Master Environmental Assessment (MEA) and General Plan EIR for the City of Lancaster**, California. The MEA provided a statement of existing conditions for the city to be used to streamline environmental documentation of future projects. The MEA is formatted for the City to update on an as-needed basis. The General Plan EIR analyzes three potential development scenarios, including an expanded sphere of influence area extending to the San Bernardino County line.

Project director for a **Program EIR on the General Plan Update** for the City of South Pasadena, California. The project involved the update of the City of South Pasadena General Plan with the exception of the Housing Element.

Project manager for the **Douglas Ranch Specific Plan** project for the City of Simi Valley, California. The Specific Plan provides for the development of several residential areas and a cemetery on a hillside site.

Project director for the **West Main Street Corridor Redevelopment Master Plan EIR** in Alhambra, California. The project involved a Master Plan for the redevelopment of a five-block portion of West Main Street in downtown Alhambra, as well as the redevelopment of four sites in downtown Alhambra totaling approximately 13.96 acres, and would result in the creation of nearly 70,000 square feet of commercial uses, 725 residential units, including for-sale condominiums and rental apartments, and offices. Proposed redevelopment is intended to complement the previous redevelopment of West Main Street in the adjacent Civic Center district of Alhambra. Key project elements include the creation of comprehensive design standards for use throughout the West Main Street redevelopment area, the creation of public open space, a provision of affordable housing, and the relocation of the public library. Major issues to be addressed include traffic and circulation; population and housing, including relocation of existing businesses and residents; aesthetics; and historic architectural resources.

Prepared an EIR for the City of Simi Valley, California which evaluated a major amendment to the City's adopted **Whiteface Specific Plan** for the Lost Canyons Specific Plan, which guides development in 1,770 acres of hillside and canyon areas in the northern portion of the City. The Lost Canyons Golf Club currently consists of two 18-hole golf courses in this existing Specific Plan area. The Lost Canyons Specific Plan would allow for the redevelopment of one of these golf courses into a new residential community containing 365 homes. This comprehensive EIR includes an analysis of potential impacts with regard to aesthetics, air quality, biology, cultural resources, geology, hazards and hazardous materials, hydrology, land use, mineral resources, noise, population and housing, public services, traffic, and utilities.

Project manager for the EIR for the **Downtown Specific Plan for the Uptown and Town Center** areas of the City of Paso Robles, California. The goals of the Specific Plan included continuing revitalization of the City's historic downtown district while encouraging appropriate infill development. The EIR evaluated the growth projected to occur under the new Form-Based Code included in the Specific Plan. Key issues evaluated in the EIR identify environmental impacts within five key walkability sheds, which represent the extent of the distance a typical pedestrian will walk (approximately 5 minutes or one-quarter of a mile). Environmental issues evaluated in the EIR will include impacts to the Salinas River Corridor from Specific Plan implementation, transportation and traffic impacts, infrastructure improvements, land use and planning, cultural and historic resources, and public services.

Project director for the **Verdugo Gardens EIR** in the City of Glendale, California, which evaluated a proposed 24-story residential condominium building that includes 287 housing units; 3,600 square feet of ground-floor retail-commercial uses; a public open space plaza and park; landscaping; lighting; utilities; subterranean and above-grade parking, which would be screened from public streets with perimeter housing; and associated amenities. A full project EIR was prepared based on direction from the Glendale Redevelopment Agency (GRA). Issues addressed in the EIR included land use and planning, population and housing, aesthetics, geologic and seismic hazards, hydrology and water quality, traffic and circulation, air quality, noise, archeological and historic resources, hazards and hazardous materials, public

Project director for the **Walmart Food Distribution Center EIR** for the City of Barstow, California. This EIR evaluated the proposed West Barstow Specific Plan No. 4, which authorizes the construction and operation of a 1 million square foot regional food distribution center (FDC) on approximately 145-acres of land in Barstow. Topics evaluated in this EIR included aesthetics, agricultural resources, air quality, biological, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, population and housing, public services, recreation, transportation and traffic, and utilities and service systems.

Project manager for the **Thousand Oaks Boulevard Specific Plan EIR** for the City of Thousand Oaks, California. This proposed Specific Plan addressed over 275 acres within the core of the City of Thousand Oaks along 3.5 miles of Thousand Oaks Boulevard. This Specific Plan regulates the mix of land uses, heights, setbacks and parking requirements allowed within the Specific Plan Area and contains new development standards allowing mixed-use projects, increased height and density, and master planned streetscape and landscape standards to improve the visual and pedestrian character of the Boulevard. The EIR evaluated the potential impacts of up to 1.1 million square feet of commercial development and 370 housing units within the Specific Plan area.

Project manager for the **NBC Studios Master Plan EIR** for the City of Burbank, California. The Master Plan was designed to meet the changing needs of NBC and the media sector. The master plan included six new studios, each consisting of approximately 23,000 square feet and four 15-story office buildings, and each containing approximately 475,000 square feet of space. Required parking was provided through the construction of multilevel parking structures, which included over 7,000 spaces. Development of these facilities was phased to meet the business needs of NBC. This EIR was prepared and certified within 7 months.

Bruce Lackow

Principal Consultant

About

Mr. Lackow is an environmental planner with more than 25 years of experience in environmental consulting. He is adept at preparing all forms of California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) documentation and has extensive experience in successfully completing the requisite documentation for highly complex and often controversial large-scale projects. Mr. Lackow provides services to the public and private sectors as well as guidance on the determination of appropriate analytical and research methodologies. Known for both his exacting standards and extensive experience, Mr. Lackow is frequently retained by public and private sector clients to prepare and review the technical and regulatory adequacy of Environmental Impact Reports (EIRs) and Environmental Impact Statements (EISs) for developments of regional importance throughout Southern California.

Mr. Lackow exhibits a comprehensive knowledge of a wide range of environmental issues, with specialized expertise in issues affecting the urban environment, such as land use, visual resources, transportation, air quality, noise, and demographics.

Education

Bachelor of Science (Magna Cum Laude), Urban and Regional Planning, California Polytechnic University, Pomona, California

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Relevant Project Experience

Project manager for the **Los Angeles Sports and Entertainment District** EIR, currently known as LA LIVE, a mixed-use development that complements and physically surrounds the STAPLES Center in downtown Los Angeles. LA LIVE is located within six City blocks centered around the intersection of Figueroa and 11th Streets. The original project included the development of 1,800 hotel rooms, 1.1 million square feet of retail/entertainment/ restaurant uses (including a 7,000-seat live theater), 300,000 square feet of office uses, a 125,000-square foot health/sports club, and 800 residential units. This development program was transformed from its initial approvals via its equivalency program (i.e., changes that occurred via ministerial actions by the City) to a development consisting of 1,700 hotel rooms, 790,000 square feet of retail/ entertainment/restaurant uses (including a 7,000-seat live theater), 246,000 square feet of office uses, a 120,000-square-foot cinema, and more than 2,100 residential units. Mr. Lackow managed the Draft and Final EIRs for this dynamic urban project, as well as a series of land use equivalency transfer reports and Addendums to implement subsequent rounds of land use changes.

Managed the preparation of an Initial Study and Project Manager for the **Universal City Evolution Plan** Environmental Impact Report (EIR), which sets forth a framework to guide the development of the existing 391-acre Universal Studios property located in the east San Fernando Valley. The EIR analyzes the potential environmental effects of development pursuant to the Universal Studios Specific Plan, which would guide future development within the portion of the project site located within unincorporated Los Angeles County, and site-specific zoning for the portion of the project site located within the City of Los Angeles. The project was originally proposed as a very large mixed-use development (i.e., nearly 3,000 residential units and approximately 2.6 million square feet of various types of commercial uses); however, in response to political and community input, the applicant revised the project by dropping the residential component and increasing the commercial component, thereby reinforcing the project site's identity as a working entertainment studio. This transition was incorporated into the Final EIR and was done so in a manner that precluded the need to recirculate the Draft EIR, thereby resulting in substantial time-and-resources savings. Mr. Lackow has been involved with this property in a leadership role for nearly 20 years, managing and preparing various environmental documents.

Project manager for the **Homestead South** EIR for the Newhall Land & Farming Company, the next subdivision to be entitled at a project level within their 12,000-acre Newhall Ranch planned community, located west of Valencia. In 2003, the County of Los Angeles approved the Newhall Ranch Specific Plan, which anticipates the development of up to 21,308 dwelling units; 629 acres of mixed-use development; 67 acres of commercial uses; 249 acres of business park uses; 37 acres of visitor-serving uses; 1,014 acres of open space (including 181 acres of community parks and 833 acres in other open spaces); 5,157 acres in Special Management Areas; 55 acres in 10 neighborhood parks; a 15-acre lake; a public trail system; an 18-hole golf course; two fire stations; a public library; an electrical substation; reservation of five elementary school sites, one junior high school site, and one high school site; a 6.8-million-gallon-per-day (mgd) water reclamation plant; and other associated community facilities within Newhall Ranch. Build-out of Newhall Ranch is projected to occur over approximately 25 to 30 years. When completed, Newhall Ranch would add approximately 70,000 residents to the Santa Clarita Valley, and the job centers in Newhall Ranch and Valencia will result in the creation of approximately 100,000 jobs in the Santa Clarita Valley.

Project manager for the preparation of multiple environmental documents for the **Playa Vista** development located in the City of Los Angeles. Located in the Marina del Rey area of the City of Los Angeles, the Playa Vista Project has involved large-scale phased development of residential, retail, commercial, and recreational uses throughout a 1,100-acre site. This highly controversial project has successfully endured litigation, with political and community issues of concern including the scale of development, traffic/ transportation, and compatibility with the Ballona Wetlands. The Master Plan, which dates back to the early 1990s, included more than 13,000 residential units and 7 million square feet of commercial development. The last in the Project's long line of environmental

documents for which Mr. Lackow served as project manager is the Village at Playa Vista project. The Village at Playa Vista, consisting of 2,600 residential units and 325,000 square feet of commercial uses, would complete development of the property included within the Playa Vista Area D Specific Plan. Over the past 20-plus years, Mr. Lackow has prepared and managed the documentation for all phases of the Playa Vista Project.

Principal-in-Charge for the **Century Plaza Mixed-Use Development** EIR, which involved the redevelopment of the site of the historic Century Plaza Hotel in the Century City area of the City of Los Angeles. The project was analyzed in the Draft EIR as two different development options, with the fundamental difference being the treatment of the existing hotel. The first option, which was based on the original proposal, would remove all on-site improvements, including the hotel, associated buildings, and landscaping, and construct a mixed¬-use development that would include two 49-story buildings positioned on either side of an approximately 2-acre publicly accessible plaza surrounded by ground-level retail and restaurant uses. The second option, which was designed in response to opposition from the community and the Los Angeles Conservancy over the demolition of the existing hotel, would retain and rehabilitate the existing hotel building, converting it into a mixed-use building containing hotel, residential, retail, and restaurant uses. Two new 46-story buildings and a publicly accessible plaza surrounded by ground-level retail and restaurant uses would be developed adjacent to the rehabilitated hotel and integrated into the overall site design. Initially viewed as a highly contentious proposal, the project eventually received unanimous approval from the City Council with no public opposition, demonstrating the effectiveness of the developer's community outreach efforts and the overall quality of the EIR.

Victoria Boyd

Staff Planner/GIS Analyst

About

Ms. Boyd has more than 2 years of experience and currently serves as a Staff Planner and GIS Analyst for Meridian Consultants LLC. Her background in environmental analysis within a variety of fields enables her to provide thorough assistance in the research and preparation of environmental documents. She has successfully worked on several projects complying with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA).

Most recently, Ms. Boyd spent her time working regulatory compliance and completing environmental permits, including stormwater permits, a groundwater monitoring plan exemption, and zoning clearances, for a local oil and gas consulting company. In the past, she was able to gain hands-on experience through an internship at Grant-Kohrs Ranch National Historic Site in Deer Lodge, Montana. Here, she assisted other professionals in dealing with the environmental impacts at the historic site by engaging in soil sampling, water sampling, and mapping of weeds. She also assisted teams in managing a Superfund site complete with archeological surveys and helped to prepare an Environmental Assessment (EA) for the Columbian ground squirrels. Ms. Boyd spent some of her time at Cal Poly establishing a monitoring and management plan for a local creek that included water sampling and testing, and wrote a report containing a thorough analysis of the findings and instructions on the continuation of the project.

At Meridian Consultants, Ms. Boyd is responsible for planning, preparing, and monitoring environmental research, as well as completing impact analyses and devising mitigation measures for various projects. She also helps to provide GIS mapping services to better illustrate projects and planning.

Education

Bachelor of Science, Environmental Management and Protection, California Polytechnic State University, San Luis Obispo

Meridian Consultants

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Project Experience

Ms. Boyd helped to prepare the initial study for the **LARC Ranch Pipeline** in the City of Santa Clarita. The project would include the addition of a 16-inch, 9,500 foot water pipeline that would expand the existing Santa Clarita Water District (SCWD) and provide the LARC Foundation with City water. Ms. Boyd was responsible for the biology and noise impacts of the project as well as assisting in editing additional parts of the project.

Ms. Boyd assisted in the preparation of the Initial Study (IS) for the **Section 24 Planning Area 8 Specific Plan** in Riverside County. The Section 24 Specific Plan (Tribal Specific Plan) Environmental Impact Statement (EIS) was prepared by Meridian Consultants and approved by the Agua Caliente Band of Cahuilla Indians in November 2014. As plans to continue on with the entire Project changed, Pulte Home Corporation and SCC Rancho Mirage Holdings LP have decided to construct the Active Adult Community within Planning Area 8 of the Section 24 Specific Plan under the discretion of Riverside County Planning Department, while remaining consistent with the Tribal Specific Plan. The proposed Project will consist of the development of an Active Adult Community with up to 1,200 units on approximately 321 acres on what is currently Tribal Land near the City of Rancho Mirage.

Ms. Boyd most recently spent her time **interpreting and diagramming well bore data** for a variety of oil and gas clients throughout the Los Angeles basin and Bakersfield area. This process is required by all California operators prior to any underground injection activities within a quarter mile radius of the proposed injection well in order to prove groundwater protection.

Ms. Boyd helped to prepare a **stormwater management plan** for a local oil and gas company with operations throughout central California. She aided in the preparation of Notices of Non-Applicability (NONAs) and Non-Exposure Certificates (NECs), and with creating lists of applicable best management plans (BMPs) for each operator. She also assisted the civil engineer in the field with hydrology and photo documentation, and executed the process through which maps were created for the entirety of the project.

Ms. Boyd was on a small team that helped obtain a **groundwater monitoring plan exemption** for an oil and gas operator in Sespe Mountains. She aided the geologist in photo, map, and document preparation to provide evidence to the Water Quality Control Board that there is no access to groundwater via this particular section within Sespe, and that, therefore, a groundwater management plan was deemed unnecessary.

Ms. Boyd has prepared a number of **zoning clearances** for a variety of oil and gas operations and operators. She has worked with the clients as well as the Ventura and Kern Counties, to help get projects permitted by creating detailed project descriptions and maps that show existing and proposed conditions.

Ms. Boyd created a monitoring and management plan for **Stenner Creek at California Polytechnic State University** in San Luis Obispo, California, that included establishing sample site locations, conducting environmental and chemical analysis of the locations; and writing a report describing the future plan for the Creek.

Ms. Boyd worked on an Environmental Assessment (EA) for **Grant-Kohrs Ranch National Historic Site** located in Deer Lodge, Montana, for the management of Columbian ground squirrels. There, she helped establish a monitoring plan to assess the baseline conditions, researched regulations on monitoring issues, and began to create the EA under the National Environmental Policy Act (NEPA), which included proper mitigation and monitoring measures.

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Lisa Maturkanic

Administrative Services Manager

About

Mrs. Maturkanic has more than 9 years of administrative and publications experience in the environmental consulting industry. Her experience includes word processing, editing, graphics design and coordination, document production and distribution, and project support. Ms. Maturkanic currently oversees a team of four publications staff, including a publications coordinator, graphics specialist, production coordinator, and editor, and is responsible for developing standards and protocols for the publications department. In addition, Ms. Maturkanic oversees the firm's Marketing department and the preparation of proposals, SOQs, and other related materials.

She is a graduate of California State University, Channel Islands with a degree in economics. Her educational career has also allowed her to study abroad in South Korea, where she was able to gain valuable insight and experience into international business perspectives.

Mrs. Maturkanic is a volunteer in the community of Camarillo, where she lives with her three children. She has also managed the Meridian softball team for 8 seasons in a row.

Education

Bachelor of Arts, Economics, California State University, Channel Islands, Camarillo, California

Relevant Project Experience

The following are notable and significant projects for which Ms. Maturkanic has provided support.

- Solvang Water System Update
  - Managed all publication efforts.
- Music Festivals Plan
  - Managed all publication efforts, from NOP to Final EIR.
- Travertine Certified Environmental Impact Report (EIR)
  - Managed all publication efforts.
- East Area 1
  - Managed all publication efforts.
- East Gateway
  - Managed all publication efforts.
- Hidden Terraces
  - Managed editing and graphics support, as well as client-specific global formatting and editing guidelines.
- Tropico Apartments Project
  - Managed all publication efforts.
- NBC Burbank Studios Addendum
  - Managed all publication efforts.
- IKEA Project
  - Managed all publication efforts, from NOP to Final EIR.
- Rancho Mirage (Section 24) Master Plan EIR/EIS
  - Managed all publication efforts, from NOP to Final EIR, including public distribution compliance with both CEQA and Tribal Environmental Policy Act (TEPA).
- Homestead South EIR
  - Managed editing and graphics support, as well as client-specific global formatting and editing guidelines, references library, and an extensive volume of appendices.
- 1311 Cahuenga Mixed-Use Project
  - Managed all publication efforts, from NOP to Final EIR, including compliance with City of Los Angeles guidelines for public distribution. Created HTML file for website posting.
- Central Coast Business Park EIR and Specific Plan
  - Managed all publication efforts, from NOP to Final EIR.
- Inyo County Adventure Trails of the Eastern Sierra EIR
  - Managed all publication efforts, from NOP to Final EIR.
- Santa Paula West Industrial Park
  - Managed all publication efforts, from NOP to Final EIR.
- Castaic High School EIR
  - Managed all publication efforts, from NOP to Final EIR. Oversee timely compilation of Compliance Manual on a monthly basis.
- Los Angeles World Airports
  - Managed publication efforts for all environmental documents under client-specific global formats.
- Brentwood School Education Master Plan EIR
  - Managed all publication efforts, from NOP to Final EIR including compliance with City of Los Angeles guidelines for public distribution. Created HTML file for website posting.

Other representative projects for which Ms. Maturkanic has provided support include:

<u>City of Glendale</u>

- Brand and Wilson Addendum
- Orange and Wilson Addendum
- Central and Wilson Addendum
- Verdugo Gardens
- Tropico Apartments Project EIR
- Glendale Triangle Addendum
- North Central Addendum
- Brand Mixed-Use Project
- Citi Live/Work Project EIR

<u>City of Burbank</u>

- Empire Center Traffic Mitigation Program
- Premier at First EIR
- Colorado Street Mixed-Use Project EIR
- Public Storage Project
-

<u>City of Los Angeles</u>

- Hollywood & Hillhurst IS
- Herald Examiner Addendum
- South Park Sites 1, 1A, and 4/4A IS/MND
- Baldwin Hills Crenshaw Plaza Revised EIR

Other

- Hidden Creeks Specific Plan
- Buddhist Tzu Chi Noise Study
- Tzu Chi San Dimas Headquarters Master Plan Project
- Albert Einstein Charter School
- Palm Springs Unified School District (multiple projects)

Moffatt & Nichol

MORE THAN 65 YEARS OF ENGINEERING EXCELLENCE

Moffatt & Nichol is nationally recognized for providing quality engineering solutions in the areas of transportation and public works engineering. The firm has a 65-plus-year history in providing bridge design engineering services. Throughout the years, Moffatt & Nichol has developed a reputation for providing cost-effective, quality engineering solutions that meet our client's budget and schedule, as evidenced by a repeat client rate of more than 90 percent.

Moffatt & Nichol is consistently ranked as an ENR Top 500 design firm, and the firm's professional design staff includes more than 150 licensed civil, structural and transportation engineers—many of whom have more than 25 years of experience in the design of bridge and roadway projects for transportation facilities.

Structural capabilities at Moffatt & Nichol encompass all aspects of bridge design including bridge inspections, widening, rehabilitation, planning and final design of bridges and grade separations, seismic retrofit of bridges and construction inspection services. The firm has prepared final plans, specifications, and cost estimates (PS&E) for the construction of more than 700 highway bridges and railroad grade separations throughout California alone.

Moffatt & Nichol's design expertise is further demonstrated by the fact we were selected to participate in the preparation of ATC-6, "Seismic Guidelines for Design of Highway Bridges." In addition, members of our structural design staff have been appointed to the Caltrans Seismic Peer Review Panel and as members of the ATC-32 Panel, "Review and Revise Caltrans Standards, Performance Criteria, Specifications and Practices for the Design of New Bridge Structures and the Rehabilitation of Existing Structures."

Moffatt & Nichol has worked directly for Caltrans, county transportation agencies, the major railroads and municipalities throughout California on assignments that required multi-agency participation and coordination, accelerated design schedules, and budget constraints. Highlights of Moffatt & Nichol's experience include the following:

- Project experience that includes more than 700 successful California state highway, roadway, bridges and railroad/roadway grade separations
- Experience in supporting local program procedures and requirements to meet state and federal funding requirements
- Specialized experience in local government public works
- Ongoing participation in state and federal code development

Bridge design capabilities at Moffatt & Nichol encompass a full range of services, from planning to the final design of bridges and grade separations. Our projects have included fixed and movable spans, some in excess of 500 feet, and have incorporated various superstructure types. Seismic design and retrofit of bridges is a special area of firm expertise, for which Moffatt & Nichol has received national recognition.

PROFESSIONAL EXCELLENCE, TECHNICAL EXPERTISE

Moffatt & Nichol has received national and state awards for many transportation project designs, including four Caltrans Excellence in Transportation awards. The firm's record of performance on major transportation projects in California is unmatched.

Moffatt & Nichol – Award Winning Projects and Commendations

Project	Award
Route 241/Alton Parkway Urban Interchange	Caltrans Excellence in Transportation Award
I-5/405 Confluence and Bake Parkway Interchange	Caltrans Excellence in Transportation Award
Route 55/Highway 1 "Arches" Interchange	ASCE Project Achievement Award, 1999 Award
Vincent Thomas Bridge Seismic Retrofit Project	OCEC Engineering Project Achievement Award
Arroyo Seco Railroad Bridge, Pasadena, CA	California Preservation Foundation Design Award
State Route 55 Freeway, 17th Street to Route 22, Santa Ana and Tustin	OCTA Letter of Commendation
Interstate 5 Freeway Reconstruction Merced County	Caltrans District 10, Letter of Appreciation Caltrans Consultant Evaluation (Perfect 10's)

ADDRESSING THE COMPLEX NEEDS OF TODAY'S PUBLIC CLIENT

Moffatt & Nichol is accustomed to working on challenging assignments that impact a multitude of agencies and stakeholders. We take pride in our ability to work effectively with diverse political, business, and community interests to resolve public concerns and bring a project to successful completion. Success has been achieved, oftentimes, while operating under tight schedules and budget constraints.

Moffatt & Nichol has a successful record in delivering projects that range in size and complexity from small-scale local street improvements to complex, multi-billion dollar projects involving several modes such as the Alameda Corridor Program. Our experience encompasses all phases of project development, including feasibility studies, preliminary and final design, and construction support.

Throughout our history, we have developed a reputation as a hands-on, client-oriented firm by being responsive to our client's needs and providing top quality customer service. We are a multidiscipline engineering design firm, and provide the following services for our bridge clients:

- Bridge planning studies
- Type selection
- Deep foundation design
- Bridge scour design
- Inspections
- Seismic retrofit
- Final design, PS&E
- Constructability review
- Bridge aesthetics
- Freeway overcrossings

- Bridges over waterways
- Grade separations
- Roadway design
- Utilities design
- CEQA and NEPA support
- Vessel collision

GARY ANTONUCCI, PE

Bridge and Transportation Manager

Education:

- BS, Civil Engineering, California State Polytechnic University, Pomona

Registration:

- California, C34294

Professional Affiliations:

- American Society of Civil Engineers
- American Public Works Association
- WTS, Advancing Women in Transportation
- ACEC of California – Bay Bridge Chapter President; Member, Caltrans Professional Liaison Committee (Headquarters)

Relevant Experience:

Mr. Antonucci has more than 30 years of engineering experience in the planning and design of transportation structures. His bridge design experience includes conventional and prestressed concrete, precast, prestressed concrete girders, and structural steel. His work has encompassed more than 200 bridges for heavy and light rail, urban and interstate highways, and pedestrian facilities. He is experienced in all aspects of bridge production, including analysis, plan preparation, specification writing, and cost estimating. Mr. Antonucci has practiced in California his entire career and is familiar with local engineering conditions and design standards. He has a strong Caltrans bridge design background and has completed numerous state highway bridges requiring Caltrans' review and approval.

Serving as project manager or lead structural engineer, Mr. Antonucci's bridge engineering experience has involved more than 20 highway/railway grade separations. His experience on these projects has included serving as liaison with railroad staff as well as preparing PUC and railroad agreements. Mr. Antonucci's expertise in completion of Federal HBP projects has given him thorough familiarity with the technical and administrative procedures that must be followed. He has completed several projects under this program and recently completed project management for two major HBP assignments including the $20 million River Road Bridge over the Santa Ana River, and the $15 million Orange and Alabama Street bridge replacements in Redlands. He has also undergone Caltrans' five-part course in management of federal projects.

Cherry and Citrus Interchanges at I-10, Fontana, CA. Project manager for preparation of final plans, specifications, and estimates for reconstruction of two highly-congested interchanges in the rapidly expanding City of Fontana. Improvements included new loop on-ramps for WB traffic, and realignment and widening of all other ramps. Each project required new overcrossings of the freeway, widening of bridges over UPRR, and numerous "special-design" retaining walls. Two stand-alone bid packages were prepared, and combined construction cost for the project was approximately $100M. Assistance was also provided for right-of-way acquisition, which included a hotel and scrap yard.

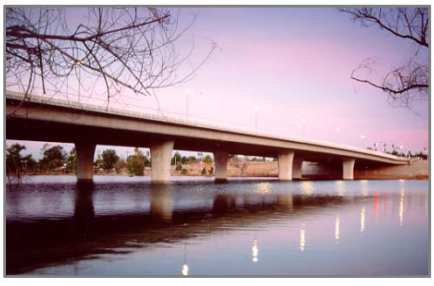
I-880 to Route 238 East West Connector, Fremont and Union City, CA. Project manager for final PS&E for the East West Connector project. This project provided an improved link between I-880 and Route 238 in the cities of Fremont and Union City and included planning and design for a combination of new roadways and improvements to existing roadways. The project also included two railroad underpasses, one BART underpass, two crossings of Alameda Creek, and one flood control channel crossing. The project had an extensive environmental and public involvement component.

Greenspot Road Bridge at Santa Ana River, Highland, CA. Project manager for this federally-funded (HBP) bridge across the Santa Ana River in Highland, constructed just downstream of Seven Oaks Dam. Mr. Antonucci was responsible for managing a multi-discipline team. He was also responsible for overseeing the environmental approval process and obtaining approval of geometric alignment which eliminates substandard design conditions. The new bridge is a prestressed concrete box girder. Rather than demolishing the existing historic bridge, it was rehabilitated and maintained for recreational use.

Pacific Coast Highway Pedestrian Bridge, Dana Point, CA. Lead structural engineer for Final PS&E and construction support for a new pedestrian bridge over Pacific Coast Highway in Dana Point. In addition to improving operations of a nearby intersection and enhancing pedestrian access to Doheny State Beach, the bridge serves as an iconic gateway to the city. The bridge consists of precast concrete girders with stairway and elevator access. The abutment walls incorporate four murals prepared by local artists, depicting scenes which represent the city's heritage.

Streeter Avenue Underpass at UPRR, Riverside, CA. Project manager for preliminary engineering and final design for a grade separation on UPRR's tracks in the City of Riverside. The project involves depressing Streeter Avenue under the existing tracks, construction of a three-track, precast concrete railroad bridge, and realignment of an intersecting city street. Project features also include a stormwater pumping station, sewer and water line relocation, and acquisition of multiple properties.

Linnel Lane Overcrossing at I-215, Murrieta, CA. Project manager for a fast-track project to construct a new overcrossing on I-215 in Murrieta. The new bridge is a 285'-long cast-in-place box girder that is being designed to accommodate the future 12-lane freeway section. In a special arrangement with Caltrans, the PSR/PR and final design were conducted concurrently, which saved approximately two years in the project schedule.



River Road Bridge at Santa Ana River, Riverside County, CA. Project manager for a major federally funded project to replace a bridge across the Santa Ana River. He led a multi-discipline team and was responsible for oversight of the environmental consultant in preparing an EIR/EIS for the project. He also directed detailed hydraulic scour analysis, right-of-way evaluation, and engineering design. The new bridge is a 1200'-long prestressed concrete box girder.

Caltrans Seismic Retrofit, Statewide, CA. Project manager for contracts totaling $6 million in fees with the California Department of Transportation for seismic retrofit of bridges statewide. The projects required specialized application of earthquake engineering techniques and implementation of new retrofit measures developed in the aftermath of the Loma Prieta earthquake. The plans, specifications, and estimate packages were completed for 50 bridges, including the retrofit of San Lorenzo Creek bridge, a historic arch bridge in Santa Cruz County. Responsible for administration of as many as eight simultaneous task orders and direct oversight of more than 40 technical and administrative personnel. The nature of the work required completion of PS&E under fast-track conditions.

Route 168 Structures PS&E, Fresno, CA. Project manager for type selection and preparation of final plans, specifications, and estimates for 14 bridges and two retaining walls on three segments of Route 168 in Fresno. In the initial segment, he worked alongside Caltrans District 6 design staff, who prepared the roadway plans for the project.

Route 210/Interstate 215 Interchange, San Bernardino, CA. Lead structural engineer in charge of design and/or type selection of 20 structures in this freeway-to-freeway interchange for SANBAG and Caltrans District 8. Responsible for directing design efforts of three structural and two geotechnical firms for over $50 million of bridge construction. A major challenge of the project was to develop structural concepts to accommodate vertical surface rupture, a loading condition that has not previously been encountered in California bridge design. Mr. Antonucci spearheaded the studies and coordination with Caltrans Division of Structures to devise innovative approaches to address this complex problem.

Alabama and Orange Street Bridges, Redlands, CA. Project manager who prepared final plans, specifications, and estimates to replace two low-flow crossings on the Santa Ana River with all-weather bridges. The new bridges are each 400 feet in length and are designed to pass 100-year storm flows. Each was funded through the Federal HPB program, and required full compliance with FHWA and Caltrans design criteria and procdures.

5th Street Widening and Bridge Replacement, Highland, CA. Project manager of a multidiscipline team for widening and reconstruction of two miles of arterial roadway and replacement of the 5th Street Bridge over City Creek. In addition to the bridge, improvements included acquisition of right-of-way, new traffic signals and curb, gutter, and sidewalk. The project was federally funded; thus, all design had to comply with FHWA and Caltrans District 8 requirements. In charge of support and interface with the environmental consultant for preparation of an ND/FONSI.

Crosstown Bicycle/Pedestrian Trail, Belmont, CA. Project engineer for preliminary engineering of four miles of Class I and Class II bicycle/pedestrian trail. The new trail links a city recreational center and the San Francisco Bay Regional Trail System to Belmont's downtown transit center. A centerpiece of the project is a new signature bridge over US101. He developed a variety of concepts that were used in public workshops to help develop community support.

moffatt & nichol

Garrett Dekker, PE

Bridge Engineer

EDUCATION

MS Structural Engineering, University of California, San Diego, 2009

BS Structural Engineering, University of California, San Diego, 2008

REGISTRATION

California, Civil, 77718, 2010

AFFILIATIONS

American Society of Civil Engineers

American Society of Civil Engineers Younger Members Forum

Mr. Dekker graduated from the University of California, San Diego after completing his research project that compared the cost feasibility of cable-stayed and extradosed bridges. He joined Moffatt & Nichol in July 2012, bringing four years of structural engineering experience. He is knowledgeable in bridge design, seismic retrofit design, structures rehabilitation, and structural inspection. He has experience working on a multitude of projects at various stages of their development and construction.

REPRESENTATIVE PROJECT EXPERIENCE

South Milliken Avenue Grade Separation, Ontario, California. Structural engineer who provided structural design services to develop the final plans, specifications, and estimates associated with a grade separation between South Milliken Avenue and Union Pacific Railroad tracks. The highway overcrossing minimizes impacts to railroad operations along this important north–south corridor serving both Ontario International Airport and Foreign Trade Zone No. 50-1, an extension of the Port of Long Beach's FTZ No-50.

Cinta Costera Viaduct, Panama City, Panama. Structural designer who provided a preliminary girder design for two multispan precast post-tensioned girder structures intended to route traffic around a World Heritage site. A quick and accurate design was required so the contractor could begin purchasing forms and materials to construct the girders. Four distinct girder designs were provided for the pedestrian structure and vehicular structure. The design was complicated by curved roadway geometrics and limited freeboard.

Willamette River Transit Bridge, Portland, Oregon. Structural designer who designed the pylons and transverse pylon struts and provided the longitudinal design of the partially prestressed superstructure for the Willamette River Transit Bridge, a five-span cable-stayed bridge that carries light rail and pedestrian traffic. The bridge is located in an area with high vessel traffic and high seismic demands.

West Mission Bay Drive Bridge over the San Diego River, San Diego, California. Structural designer who prepared reports for the City of San Diego and the California Department of Transportation (Caltrans) to assess the structural integrity of the existing bridge, provide recommendations for potential interim remediation measures, compare viable superstructure and substructure types, and outline the cost and environmental impacts of various bridge types. Prepared Caltrans documentation, provided type selection support, and determined potential structure loadings for preliminary foundation design.

Alton Avenue Overcrossing, Santa Ana, California. Structural designer who formed a complete design check of the Alton Avenue Overcrossing over State Route 55 in Santa Ana, California. The design check was complicated by horizontal curves, non-parallel girders, and a high bridge skew. The overcrossing is a cast-in-place prestressed box with a single bent, hexagonal columns, and high seat abutments. The structure is supported on piles and is located in a high seismic area.

Veterans Memorial Bridge, Portland, Maine. Structural designer for Veterans Memorial Bridge, a precast segmental box girder bridge replacement structure that crosses the Fore River in Portland, Maine. Performed the design of the precast

segments for shear and torsion loads. Performed the transverse design of the web and soffit. Additionally, designed the deck drain layout to avoid conflicts during the construction sequence and provided the pile cap design for each of the bridge's six piers.

SANDAG Task Order 11, San Diego, California. Structural designer who provided a quantity and cost estimate check of critical structural and roadway items for Caltrans on several highway corridor improvements. The highway corridors will be widened and improved with managed lanes, which will require the construction of new retaining walls and the widening and/or replacement of many overcrossings and undercrossings. The cost estimate check ensured a proper allocation of public funds for the corridor improvements.

Huey P. Long Bridge Widening, Jefferson Parish, Louisiana. Structural designer who performed non-linear buckling and stability analyses to capture expected forces from the lifting operation associated with the widening of the Huey P. Long steel truss bridge over the Mississippi River. The results of the study were assessed and presented to the contractor to serve as a guide for the erection sequence. The contractor was provided with a lifting factor of safety, a safe operational wind speed, and provisions for determining safe truss deflections during lifting. Six sections of widening trusses were fabricated off-site and delivered to the bridge on barges.

Lewis Road Overhead (Widen) Falsework, Camarillo, California. Structural designer who provided a complete falsework design check of the complex Lewis Road Overhead Widening. The curvilinear falsework design included skewed traffic and railroad openings, as well as non-typical load distributions. Provided the contractor with expected member deflections over the railroad span and made camber recommendations for the railroad tunnel stringers.

Onyx Street Bridge, Eugene, Oregon. Consultant to the contractor on a simple span bridge over Mill Creek in Eugene, Oregon. Improved upon plans in real time to facilitate construction in the field. Discussed viable work options with the contractor to solve unforeseen construction problems. Ensured quality and workmanship of nearly all phases of construction, and approved and stamped shop drawings. Survey analysis was necessary to ensure proper positioning and elevation of all bridge components and approaching roadways.

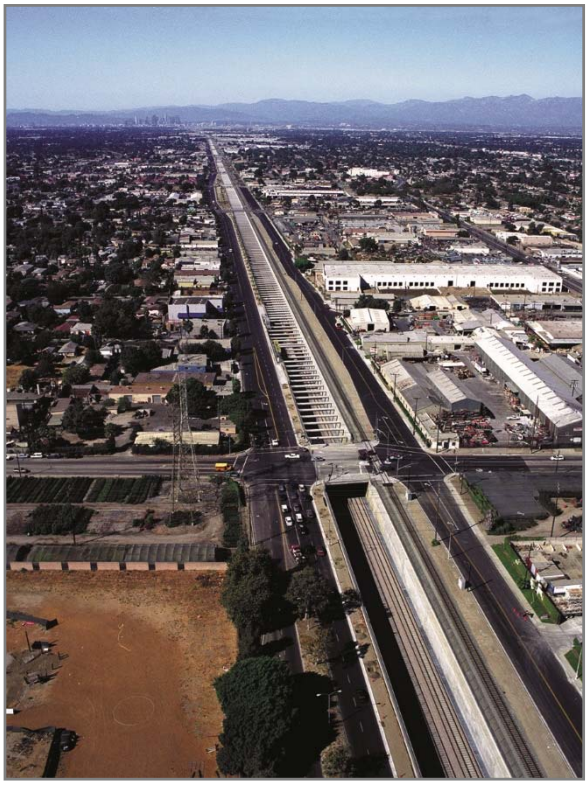
Bridge Conditions and Inspection Assessments, Statewide, Oregon. Structural designer who worked on behalf of the Oregon Department of Transportation (ODOT) to perform inspections of various bridges throughout Oregon, including those of concrete, steel, and timber superstructure types. Responsible for inspecting individual structural components and assigning condition criteria based on the findings. The results of the inspections helped ODOT manage and assess their bridge inventory.

Benicia-Martinez Bridge, Martinez, California. Field engineering intern with the post-tensioning crew on the Benicia-Martinez Bridge, a cantilever segmental bridge located in Martinez, California. Collaborated with subcontractors and material contractors to procure materials and track costs. Balanced man-hours and quantities to keep production on budget, as well as interpreted blueprints to direct construction in the field and to determine daily and weekly work schedules. Worked with Caltrans inspectors to ensure quality, production, and safety.

Relevant Project Experience

ALAMEDA CORRIDOR PROJECT – Los Angeles County, California

Owner: Alameda Corridor Transportation Authority



Moffatt & Nichol, in a joint venture, provided professional services for the planning and program management of the award-winning "P3" Alameda Corridor Program under the direction of the Alameda Corridor Transportation Authority (ACTA). The $2.4 billion multi-modal transportation program encompassed major highway, rail, and bridge improvements. The project consolidated 90 miles of freight train tracks and reconstructed over 20 miles of urban arterial highway into one 22-mile high capacity transportation corridor connecting the Ports of Long Beach and Los Angeles and transcontinental rail system and freeway network near downtown Los Angeles. The centerpiece of the program is the Mid-Corridor Design-Build Project - 10 miles of depressed open trench with 30 grade crossing structures and reconstruction of the parallel and urban highways. The program also included six major highway-to-rail and rail-to-rail grade separation projects, and six waterway crossings.

The project required detailed coordination with ACTA, the Ports of Los Angeles and Long Beach, the Cities of Los Angeles and Long Beach, the six cities along the corridor (Vernon, Huntington Park, South Gate, Lynwood, Compton, and Carson), the County of Los Angeles, Metropolitan Transportation Authority, Caltrans, numerous utilities and the operating railroads (Union Pacific and Burlington Northern Santa Fe).

During the planning phase of the program, the Joint Venture was responsible for the preparation of project reports, capacity studies, conceptual design alternatives, cost estimates, and preparation of a complete EIR/EIS. During the design and construction phase of the program, Moffatt & Nichol had staff responsible for program standards and procedures, preliminary and final design, cost estimates, program schedule, a Design-Build RFP for the Mid-Corridor and other bidding documents for the balance of the program, evaluation of the design-build technical proposal, and the management of the design consultants and contractors.

The program was financed with an unprecedented combination of loans and traditional sources, including $1.1 billion in non-recourse revenue bonds, a $400 million Federal loan (which became the model for the TIFIA program) and a $400 million loan from the local ports for initial project funding. Revenues are derived from use fees charged to the railroads. The facility is owned by Authority and operated by the railroads. The project opened to revenue service on-time and within budget and was lauded by USDOT as one of the best managed examples of a mega-project.

SAN DIEGO DOWNTOWN RAIL STUDY – San Diego, California

Owner: Center City Development Corporation

Moffatt & Nichol prepared a concept study of below-grade rail separation in the City of San Diego. The report, prepared for The Centre City Development Corporation (CCDC), considered below-grade rail separation alternatives along the 2.5 mile long rail corridor between Laurel Street and 8th Avenue. The study was initiated because of traffic delays, pedestrian safety concerns, and noise and vibration problems generated by the trains at grade crossings associated with commuter and freight transit.

The existing site has limited right-of-way (ROW) and active freight, commuter, and light rail traffic that must be maintained during any construction scenario. Apartment and condominium complexes straddle the tracks at G Street, severely restricting below grade options. There are two large sanitary sewer lines that cross the route, as well as several water, gas, storm drain, and electric utilities that would require relocation for any below grade option.

The options were reviewed to include potential grade differences, street closures, minimization of ROW transactions, and environmental impacts. There are limited options for uninterrupted reaches that would allow transitions from the existing above grade-rails to the proposed below-grade rails without closing roadways or encroaching on Switzer Creek, located south of 8th Avenue. The scope of this study included the following tasks: field visits to assess existing conditions, preparing plans of proposed improvements to indicate limits of construction, impacts to surrounding area, and overall layout, and preparing presentation graphics that identify and describe issues and impacts suitable for meetings and discussions.

ALVARADO CANYON REALIGNMENT – San Diego, California

Owner: City of San Diego

Moffatt & Nichol prepared the Project Study Report for the City of San Diego for the Alvarado Canyon Road Realignment. The realigned road provides a new connection to Mission Gorge Road, alleviating traffic congestion at the interchange with Interstate 8, improving the existing westbound freeway off ramp configuration.

The Moffatt & Nichol team provided Civil, Hydrology/ Hydraulics, Bridge Planning, Environmental, and Geotechnical engineering. A key component to the success of this project was providing community outreach to the various local planning groups interested in the status of the project and working closely with Caltrans and SANDAG. Moffatt & Nichol's in-house graphics staff prepared photo renderings (as shown) of the proposed transportation projects. The photo renderings were used to accurately convey the benefits of the projects to the local community.

PACIFIC COAST HIGHWAY BRIDGE AT BOLSA CHICA INLET – Huntington Beach, California

Owner: U.S. Fish & Wildlife Service

Moffatt & Nichol was selected to provide engineering and construction management services to implement the restoration of approximately 880 acres of wetland at Bolsa Chica in Huntington Beach, California.

The restoration plan called for the construction of a tidal inlet across the Pacific Coast Highway (PCH), a new PCH Bridge over the inlet, and modifications to the highway. The roadway horizontal alignment remained unchanged and the vertical alignment of PCH was revised to accommodate the tidal inlet. The project borders the Bolsa State Beach to the west. Due to the change in profile, access from the State Beach to PCH was modified to a standard highway entrance which in turn required reconfiguration of the adjacent parking lot. The multi-purpose trail paralleling the beach was rerouted and relocated to the new bridge. A PSR/PR was submitted to Caltrans for approval.

The concrete slab bridge is 410 feet long and 105 feet wide and is supported on precast concrete piles. The bridge is designed to accommodate six traffic lanes with shoulders and a 20 foot wide multi-purpose trail. Non-standard barrier/railing (to accommodate vehicular, pedestrian and bicycle traffic and meeting aesthetic requirements) was developed for this bridge. The site is adjacent to the Newport-Inglewood Fault and has high liquefaction potential. The bridge and its approach retaining walls are designed for these high seismic conditions. Dynamic analysis and push-over analysis were performed to assess the performance of the bridge under seismic load. Structure Type Selection Report was submitted to Caltrans for approval.

The Project required coordination between U.S. Fish and Wildlife Service, Aera Energy LLC, State of California Department of Parks and Recreation, State Lands Commission, California Coastal Commission, U.S. Army Corps of Engineers, Regional Water Quality Control Board, and Caltrans. The PS&E effort was carried-out under an aggressively accelerated schedule to accommodate the limited tidal inlet construction window.

PORTOLA AVENUE BRIDGE AT WHITEWATER RIVER – Palm Desert, California

Owner: City of Palm Desert

Moffatt & Nichol was responsible for initial and final phases of the Portola Avenue Bridge over the Whitewater River in the City of Palm Desert, California. During the initial phase, M&N was responsible for conceptual design development, multi-agency coordination, preparation of environmental documents, bridge aesthetics development, hydraulic analyses, and scour analyses.

During the final phase, M&N was responsible for the preparation of plans, specifications, and estimates (PS&E). The new structure is 437-feet-long and 92-feet-wide consisting of a concrete precast prestressed

“I” girder superstructure founded on pile supported footings. The new structure replaced an existing at-grade crossing.

FRENCH VALLEY PARKWAY INTERCHANGE : PHASE I – Riverside County, California

Client: Client: City of Temecula

Moffatt & Nichol was responsible for preparing a Project Report (PR), Environmental Documents, and Geometric Approval Drawings (GAD) for a new interchange at French Valley Parkway on Interstate 15 (I-15). The project required a corridor study along I-15 and I-215, this study extended from the Rancho California Road Interchange on I-15 to Murrieta Hot Springs Road Interchanges on the I-15 and I-215 freeways, approximately 4 miles north. The new interchange will be located between Winchester Road and the I-15/I-215 freeway to freeway interchange and required close coordination with Caltrans and FHWA, the City of Murrieta and the City of Temecula. The closely spaced interchanges and resulting weave sections were mitigated by the use of a collector/distributor (C/D) roadway system. Other elements of the project included modifications to local streets, evaluation of impacts to local drainage channels, and relocation of major utilities.

Phase I of the project involves the preparation of plans, specifications, and estimates (PS&E) for the construction of an early-phase project. This project includes the widening of the exiting southbound off-ramp at the Winchester Avenue Interchange, a new southbound off-ramp at the future French Valley, and improvements to Jefferson Avenue.

NIBLICK ROAD BRIDGE WIDENING & SEISMIC RETROFIT – Paso Robles, California

Owner: City of Paso Robles

Moffatt & Nichol was responsible for the preparation of the preliminary design, a combined PSR (Project Study Report) and PR (Project Report) and advance planning studies, and is currently responsible for final PS&E and an option for construction management of this bridge widening and seismic retrofit project. The existing Niblick Road Bridge is a 1,400-foot long, two-lane, concrete cast-in-place box girder structure located in Paso Robles, California, and spans SR-101, the Salinas River, and the Union Pacific Railway. The proposed widening varies from 71 to 84 feet, and consists of the addition of two traffic lanes, two bike lanes, and a sidewalk. The added bridge will be of concrete cast-in-place prestressed box girder construction with single column bents supported on pilings. The bent columns will align with the existing bridge columns, and debris walls will be added between the existing and proposed columns to improve hydraulic efficiency and seismic response. Support services include traffic design, geotechnical exploration and design, survey, right-of-way assessment, and a hydraulic study of the Salinas River for existing and proposed conditions. Project report and advance planning studies were reviewed and approved through Caltrans local assistance.

CARLSBAD BLVD. BRIDGE OVER BATIQUITOS LAGOON – Carlsbad, California

Owner: City of Carlsbad

Moffatt & Nichol was responsible for the design of a 460-acre wetland restoration project at Batiquitos Lagoon in Carlsbad, California. The project provides mitigation for expansion at the Port of Los Angeles as part of their 2020 Plan. Moffatt & Nichol provided preliminary engineering and final design services for preparation of plans, specifications and estimates for replacement of the Carlsbad Boulevard Bridges across the Batiquitos Lagoon tidal inlet (San Marcos Creek).

East and West Carlsbad Bridges:

- Northbound / Southbound Carlsbad Boulevard across the Batiquitos Lagoon Inlet
- Twin bridges, 41'6" wide by 208' long
- Cast-in-place reinforced concrete slab superstructure, supported on precast prestressed concrete pile bents, diaphragm type abutments.

Other work related to the replacement of the two bridges included:

- Bridge hydraulic study
- Bridge scour analysis
- Roadway plans for reconstruction to raise the existing profile to increase the bridge clearance across the tidal inlet
- Reconfiguration of roadway, entrance gate, and parking at the State Beach Park
- Relocation of three large diameter sewer force mains
- Stage construction, traffic detours and construction traffic handling.

The roadway and bridge replacement plans were reviewed and approved by Caltrans District 11 and Division of Engineering Services because of funding through the FHWA bridge replacement program.

SAN FRANCISCO-OAKLAND BAY BRIDGE EAST SPANS – Oakland, California

Owner: Caltrans Division of Structures

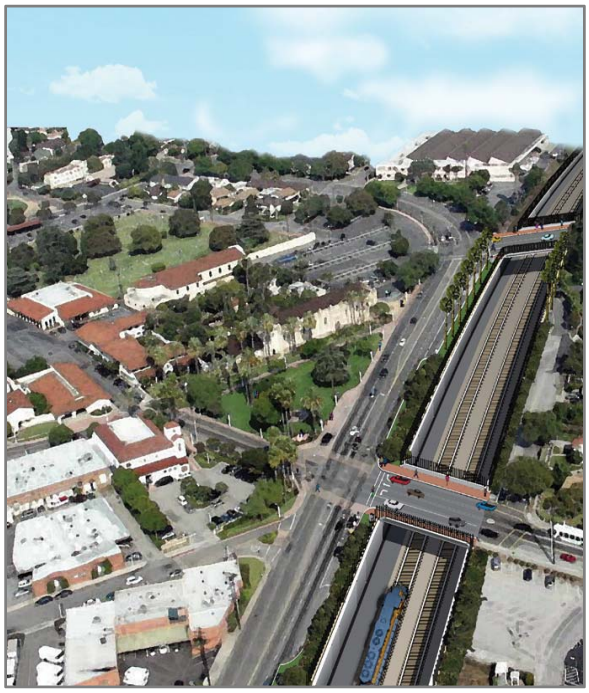
As part of a joint venture, Moffatt & Nichol provided overall project management and planning, design, construction documents and post-construction-award services for the east span replacement of the San Francisco-Oakland Bay Bridge. The East Span is a 2.2-mile-long, 10-lane bridge comprised of twin, structurally independent five-lane structures that carry Interstate 80 between Yerba Buena Island and the East Bay communities of Oakland and Alameda.

In addition to overall project management, Moffatt & Nichol was responsible for design of the YBI

structures and Oakland approach structures, along with the foundations design for the Main Span and Skyway bridges. Additional services by Moffatt & Nichol included vessel collision system, and the Main Span tower's elevator and dehumidification system. The vessel collision system utilized fender protection units on the main tower pier and adjacent bridge piers within the navigable waterway.

SAN GABRIEL TRENCH GRADE SEPARATION PROJECT – San Gabriel, California

Client: Alameda Corridor East Construction Authority



Moffatt & Nichol is currently providing engineering services for a 2.5-mile rail trench and grade separation of five streets over the Union Pacific rail line in the City of San Gabriel for the Alameda Corridor-East Construction Authority (ACE). Moffatt & Nichol's initial task was to provide ACE with preliminary engineering and analysis to better determine whether the project should proceed as design-build or design-bid-build procurement.

Coined as the "Gateway to America", the Alameda Corridor-East extends the Alameda Corridor grade separation program eastward through Los Angeles County, connecting the Los Angeles and Long Beach ports to the transcontinental rail network—creating a faster, more environmentally sound method of distributing a projected $314 billion in annual trade. The San Gabriel project is the largest project in the ACE program. Moffatt & Nichol has submitted the 95% PS&E package and currently completing the 100% PS&E.

YERBA BUENA ISLAND BRIDGE – San Francisco Bay, California

Owner: San Francisco County Transportation Authority

Moffatt & Nichol is responsible for the design of a new off-ramp and on-ramp, which will provide access from the new San Francisco-Oakland Bay Bridge to Yerba Buena Island (YBI). The new ramp structures will require modifications to the bridge transition structures, previously designed by Moffatt & Nichol. Moffatt & Nichol has provided Advance Planning Studies, Type Selection, and Final Design. The structures for the westbound ramps at YBI are multi-span structures primarily of Cast-in-Place concrete box girder construction with one frame of the YBI westbound off-ramp structure being pre-stressed and a single structural steel box girder utilized for the transition structure widening at the off-ramp. The bents are typically single-pentagonal shaped columns founded on footings and supported by steel "H" piles. However, in some cases single CIDH piles are used with column

extensions. The structures must be visibly consistent with the adjacent YBI Transition Structures, which are partially constructed, and to be completed in the near future. This requirement essentially dictates structure depth, span lengths, column types and the exterior shape of the superstructure.

RIVERSIDE AVENUE GRADE SEPARATION – Riverside, California

Owner: City of Riverside

Moffatt & Nichol prepared the alternative study and obtained environmental clearance for this grade separation located in the City of Riverside. The existing at grade crossing at Riverside Avenue and UPRR tracks causes disruption to street traffic due to the freight traffic. This line eventually will feed into the Colton Grade Separation project adjacent to Valley Boulevard. The preferred alternative proposes to depress the roadway in this location. Some of the challenges include preservation or reconfiguration of residential access as well as minimizing right-of-way impacts. Moffatt & Nichol prepared a feasibility study with multiple alternatives for roadway cross section as well as the bridge structure.

Extensive coordination with UPRR is needed in order to accommodate future second track and to match the design with proposed adjacent grade separation projects. The UPRR track is on a curve within project limits and therefore required a geometrically challenging shoofly design which has been approved the by the railroad.

Moffatt & Nichol is currently preparing the PS&E package for this project. AASHTO and city of Riverside standards will be used for the roadway design and UPRR requirements will have to be satisfied for the structure design. The overall project schedule is aggressive in order to preserve funding obtained by the city of Riverside.

SIXTH STREET VIADUCT OVER THE LOS ANGELES RIVER – Los Angeles, California

Owner: The City of Los Angeles

Moffatt & Nichol served as part of a team to perform civil, roadway and utility work for this one-mile-long viaduct that crosses over the Union Pacific Railroad (UPRR) and Burlington Northern Santa Fe (BNSF) tracks and the Los Angeles River. Moffatt & Nichol will coordinate with the railroads, perform necessary hydrology and hydraulic work related to the Los Angeles River, and obtain necessary permits for the project.

In addition, Moffatt & Nichol 's role was expanded to include civil, roadway,, environmental, right-of-way, traffic, permitting, and railroad coordination for the environmental document and preliminary engineering phase of the project. The environmental support will be prepared in compliance with the NEPA and CEQA process. Moffatt & Nichol will also provide support in the preparation of the project report.

The project requires extensive coordination with Caltrans and will adhere to Caltrans standards.

HERITAGE ROAD BRIDGE – Chula Vista, California

Owner: City of Chula Vista

Moffatt & Nichol has been selected by the City of Chula Vista as the prime consultant for the replacement of the Heritage Road Bridge over the Otay River.

The existing crossing was constructed with FEMA emergency funding when the roadway washed out in the storms of 1993. It includes an 80 ft temporary bridge with a timber deck and approximately 400 ft of roadway approaches on fill within the river channel.

The new bridge will be designed as a permanent structure that can convey the 100 year flood and accommodate future traffic demands. The bridge will likely be a six-lane facility spanning 500 ft across the river channel.

The scope of work includes performing technical studies and preparing the environmental document for NEPA and CEQA, performing preliminary engineering in support of the environmental document, performing structure type selection, final design, developing plans, specifications and estimates and performing bid and construction support services.

As the prime consultant Moffatt & Nichol will provide the civil, roadway and bridge engineering services and manage a team of subconsultants to provide the environmental, survey, hydraulics, geotechnical and landscape services. The Moffatt & Nichol team will also explore funding opportunities through the FHWA Highway Bridge Program.

INTERSTATE 5/GILMAN BRIDGE – San Diego, California

Owner: UCSD Facilities, Design & Construction

Moffatt & Nichol has been selected by the University of California, San Diego to lead their Gilman Bridge project. This project includes a 360 ft long bridge over Interstate 5 which is a vital part of campus circulation and will unite the east and west sides of the La Jolla campus. To meet the budget constraints, the bridge will be constructed using conventional materials and techniques. However, aesthetics are very important to the campus. Thus, a special design is being planned. One concept that is being explored a three-span arch as shown in the visual simulation to the left.

SOUTH MILLIKEN AVENUE GRADE SEPARATION – Ontario, California

Owner: City of Ontario

Milliken Avenue is a major north–south corridor east of the Ontario International Airport that serves two major truck terminals and the major trans-loading and distribution center complex on the east side of the airport. The Milliken Avenue Cargo Corridor provides access to and from the airport for both passenger traffic and cargo-related uses and to Ontario's Foreign Trade Zone No. 50-1, an extension of the Port of Long Beach's FTZ No- 50. Because Milliken Avenue is parallel to I-15, it often serves as a bypass during traffic congestion on the interstate. Moffatt & Nichol was selected to determine the feasibility of creating a grade separation between South Milliken Avenue and Union Pacific Railroad tracks and then develop the design.

During Phase 1, Moffatt & Nichol performed alternatives analyses, prepared the preliminary engineering reports, and established the environmental clearance for a railroad at-grade crossing in the City of Ontario. This crossing intersects with Mission Boulevard, which is parallel and adjacent to the railroad right-of-way. The proximity of the railroad and Mission Boulevard required an innovative reconfiguration of the intersection's geometry. Moffatt & Nichol evaluated several reconfiguration alternatives, including both roadway and railroad overpass/underpass scenarios and partial raising/lowering of the roadway and railroad, all of which focused on reducing impacts to the railroad.

Moffatt & Nichol also performed extensive analyses for relocating utilities, a number of which were considered high-risk utilities. Utilities relocation, private property acquisition, and ingress/egress were just a few key elements that played an important part of selecting the preferred project: a highway overcrossing that minimizes impacts to railroad operations.

During Phase 2, Moffatt & Nichol will proceed with the final design phase of the Milliken Avenue grade separation. This is a follow-on phase and entails the preparation of construction documents for the highway overcrossing alternative.

HAMPTON ROADS HURRICANE RETROFIT STUDY – Hampton Roads, Virginia

Owner: Virginia Department of Transportation (VDOT)

Moffatt & Nichol evaluated Hampton Roads' primary bridge systems for their vulnerability to damage caused by hurricanes; the study included the James River Bridge, the Monitor-Merrimac Memorial Bridge-Tunnel, the Hampton Roads Bridge-Tunnel East-Bound Lane, the Hampton Roads Bridge-Tunnel West-Bound Lane, and the Willoughby Bay Bridge. Moffatt & Nichol assessed the design environmental conditions at the bridge sites and calculated the wave forces acting on the superstructure of the primary bridges. The environmental design parameters were calculated based on available information in the vicinity of the bridges, including flood elevations and design winds. The study followed the approaches discussed in the AASHTO Guide Specifications for Bridges Vulnerable to Coastal Storms and the FHWA Handbook of Retrofit Options for Bridges Vulnerable to Coastal Storms.

An initial Level I evaluation determined the potential vulnerability of the bridges. Based on these results a more detailed Level II investigation was deemed necessary to refine the coastal storm modeling, analyze the critical components at locations identified in Phase 1, and to make retrofit recommendations.

Phase 1 of the study provided a general investigation of the bridges' vulnerability to coastal storms. Phase 1 storm force loads were developed using a Level I analysis of tropical storms, 100-year storms, and Category 1 through Category 4 hurricanes. Phase 1 was expected to be conservative, and it provided insight into which bridges and which areas of the bridges required a more refined analysis. The Level I analysis also included a simple analytical hindcast.

During Phase 1, Moffatt & Nichol determined that a Category 2 hurricane is approximately a 500-year storm event, and structural analysis of the bridges was limited to the forces up to a Category 2 hurricane. The Willoughby Bay Bridge was determined to be free from significant wave force damage in storms up to and including Category 2 hurricanes, so a refined analysis was not recommended and it was largely excluded from Phase 2.

Phase 2 of the study provided a refined investigation of the bridges' vulnerability. Phase 2 storm force loads were developed using a Level II analysis of the storm events; the remaining service life of the bridges was considered to determine the design storm in accordance with the provisions in AASHTO Guide Specifications for Bridges Vulnerable to Coastal Storms.

The Level II analysis involved numerical modeling of waves and hence the refraction effects had a large impact in reducing the magnitude of wave crest elevations and resulting wave loading that could impact the structures. The wave loads were applied to each specific bridge to evaluate the general potential for damage due to various storm events that included a design storm, Category 1 hurricane, and a Category 2 hurricane.

Due to the unique bridge geometry and their geographic location, each structure experiences varying levels of performance in a given storm event. When compared with the Level I analysis, the Level II analysis yielded a significant reduction in the wave loading effect on these bridge structures. The Phase 2 results therefore indicate a reduced potential for damage as well.

STATE ROUTE 123 BRIDGES OVER OCCOQUAN RIVER – Prince William and Fairfax Counties, VA

Owner: Virginia Department of Transportation

Moffatt & Nichol was selected by VDOT to complete a Phase I feasibility study to investigate whether it would be more effective to repair and widen the State Route 123 bridges over the Occoquan River or replace them. As a result of the study, Moffatt & Nichol recommended structure replacement, and VDOT chose to pursue that alternative. Moffatt & Nichol provided concept development and final design services for the replacement bridges. Throughout the process, the firm worked extensively with the citizens of the historic town of Occoquan to address issues regarding aesthetics and bridge type selection.

For the chosen bridge type, Moffatt & Nichol completed Phase II design and plan preparation for twin seven-span, 360-meter-long bridges that consisted of modified prestressed concrete Bulb-T girders atop concrete post-and-beam piers utilizing either spread footings or concrete drilled shafts. Each bridge carries three traffic lanes with the southbound bridge carrying an additional pedestrian walkway separated from travel lanes by a concrete barrier.

Because the bridges cross a navigable waterway with active barge and recreational vessel traffic, Moffatt & Nichol provided hydrologic and hydraulic modeling, river and tidal mechanics, scour analysis, dredging plans, and phased construction with maintenance of traffic plans. For the hydrologic and hydraulic modeling, Moffatt & Nichol developed both a 1D river flow numerical model and a 2D tidal hydraulics model of the Occoquan River at its confluence with the Chesapeake Bay. Models were used to determine the relative effects of flood flows at the bridges' location. The results were used in Moffatt & Nichol's scour analysis to determine potential scour depths. Scour results served as input in the foundation design.

Because the bridges are located in an environmentally- and historically-sensitive area, they required innovative design to minimize impacts. Architectural treatments such as decorative rails, posts, lights, and pier facades that mimic brickwork were added to the bridge to make it more aesthetically pleasing.

STATE ROUTE 58 DRYDEN BYPASS OVER POWELL RIVER – Lee County, Virginia

Client: Virginia Department of Transportation

Moffatt & Nichol was responsible for preparing plans, specifications, and cost estimates for the proposed east and westbound lanes of State Route 58 Dryden Bypass over Powell River. Dual 126-meter-long three-span continuous structures were designed to VDOT and AASHTO criteria. These structures incorporated curved weathering steel plate girders with a symmetrical span arrangement of 35-56-35 meters. Shelf abutments and hammerhead piers support the superstructures. The locations of substructure units were carefully coordinated to reduce impact to the hydraulic opening and the environment.

The preliminary and final plans for these bridges were part of a package of 8 curved girder bridges that were provided by Moffatt & Nichol to VDOT on an accelerated 5-month design schedule.

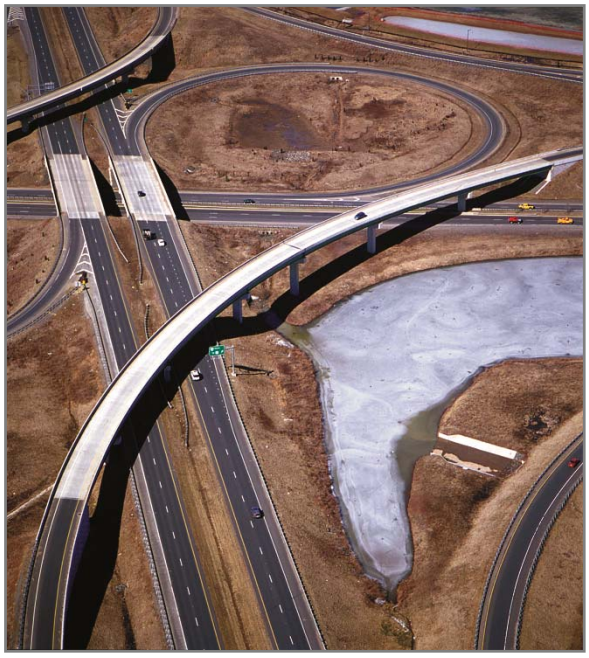
ROUTE 234 BRIDGES – Prince William County and Fairfax County, Virginia

Client: Virginia Department of Transportation

For the Route 234 bridges, Moffatt & Nichol designed twin structures to replace the existing two-lane bridge that was in poor condition. Originally, this bridge was scheduled for replacement at a later date as part of a larger VDOT project. Because it was found to be in poor condition, design and construction of a replacement bridge was accelerated. Moffatt & Nichol provided hydrology and hydraulic engineering, river mechanics and scour design, and bridge design and plan preparation for twin, 515-foot-long, continuous steel girder bridges across the Occoquan River.

MANASSAS BYPASS/NOKESVILLE ROAD INTERCHANGE FLYOVER BRIDGE – Prince William County, Virginia

Client: Virginia Department of Transportation



Moffatt & Nichol provided design and preparation of construction documents for the Connector 'A' Flyover Bridge over Route 234 (Manassas Bypass) and Route 28 (Nokesville Road). Connector 'A' is a seven-span, 998-foot-long, 31-foot-wide, one-lane structure composed of a curved steel plate girder superstructure on a compound curve alignment with a hammerhead bent substructure. The seven-span superstructure utilized a 3- span-continuous unit and 4-span-continuous unit of variable lengths (minimum length of 115 feet and maximum length of 173 feet). One hammerhead bent lies in the median of Route 28 and is highly-skewed. End units are pile-supported stub abutments behind mechanically stabilized earth walls. The structure was designed to Virginia Department of Transportation and AASHTO criteria. Stage I (preliminary) and Stage II (final plans) were completed on an accelerated schedule of six months.

MANASSAS BYPASS BRIDGES OVER GATEWAY BOULEVARD – Prince William County, Virginia

Client: Virginia Department of Transportation

Moffatt & Nichol was responsible for eight grade separation bridges on the Manassas Bypass (Route 234). Moffatt & Nichol provided planning, design, and plans for four structures and Quality Assurance/ Quality Control review for the four remaining structures completed by subconsultants. Planning involved development of structure alternatives including configuration and materials with preliminary opinions of probable costs. The Preliminary and Final Plans for all eight bridges were completed on an accelerated design schedule of six months. Structures were designed to VDOT and AASHTO criteria. Structures completed by Moffatt & Nichol were:

Westbound Route 234 and Ramp C over Gateway Boulevard: The existence of a highly skewed box culvert passing beneath Gateway Boulevard complicated the highway geometry and required trapezoidal span arrangements for both Westbound Route 234 and Ramp 'C', an eastbound merge to Route 234.

Eastbound Route 234 over Gateway Boulevard: This bridge was a 154-foot-long, simple span structure that utilized steel plate girders supported by integral abutments.

PACIFIC COAST HIGHWAY (SR-1) WIDENING AND SANTA ANA RIVER BRIDGE REPLACEMENT – Huntington Beach, California

Client: County of Orange, California

Moffatt & Nichol provided design and construction documents to widen a section of the Pacific Coast Highway (SR-1) which included two bridges – replacement of the Santa Ana River Bridge and a new Talbert Channel bridge. Moffatt & Nichol prepared permit applications, highway and bridge geometrics, final design, construction documents, and construction staging and traffic handling plans for both bridges as well as roadway widening from four to six lanes. In addition to the bridges and roadway widening, the project also included associated drainage systems, utility relocations, bicycle path, pedestrian walkway, retaining walls, soundwalls, signing, stripping and landscaping. Construction documents were prepared to Caltrans standards with reviews and approvals obtained from Caltrans, Districts 07 and 12 and the Division of Structures.

Santa Ana River Bridge: This replacement bridge was a five-span, 563-ftlong, six-lane, prestressed concrete I-girder superstructure atop four solid wall piers and seat-type end abutments. Because of the structure's proximity to the ocean, the superstructure girders utilized extra concrete cover over rebar to help prevent corrosion which made the girders wide. In addition to the six travel lanes, the bridge included a 12-ft-wide, separated bike lane along its ocean side.

COOK STREET/INTERSTATE 10 INTERCHANGE – Palm Desert, California

Client: City of Palm Desert

Moffatt & Nichol prepared planning studies, Project Report, final design and construction documents for the new Cook Street/I-10 Interchange in the Coachella Valley. The intersection is a diamond interchange with loop ramp to accommodate heavy traffic between Cook Street and Westbound I-10. The Eastbound I-10 entrance and exit ramps meet the Cook Street Overhead to form an elevated four-way interchange. This intersection was complicated because of the proximity of Southern Pacific Transportation Company (SPTC) railroad tracks parallel to and immediately adjacent to I-10. Three major structures were provided as part of the new interchange: Cook Street Overhead; and I-10 Eastbound Off-Ramp and Eastbound On-Ramp.

Architectural design standards were developed specifically for the project and were approved through an architectural review process with the City of Palm Desert. These included octagonal columns with one-way flares, as well as some unique enhancements such as the lizard and scorpion imprints used on the retaining walls. Moffatt & Nichol prepared the "order to construct" for submission to the P.U.C. to allow project construction. In addition, Moffatt & Nichol jointly prepared the Construction Maintenance Agreement between the SPTC (now Union Pacific Railroad), Caltrans, and the City.

BUCKMAN SPRINGS ROAD BRIDGE – San Diego County, Californi a

Owner: County of San Diego

Alternative 1

Alternative 2

Alternative 3

Moffatt & Nichol has been selected by the County of San Diego as the prime consultant for the replacement of the Buckman Springs Road Bridge over Cottonwood Creek.

The site is located in the eastern part of San Diego County approximately three miles south of the I-8 freeway, just east of Lake Morena. The existing bridge is a 450 ft long reinforced concrete T-beam that was constructed in 1950. This bridge has a sufficiency rating of 49.4 and has been classified as functionally obsolete. Thus, it is eligible for replacement through the FHWA Highway Bridge Program.

Buckman Springs Road is the main north-south thouroughfare between I-8 and SR-94 near the border. Thus, the roadway must remain open during construction.

The existing bridge is only 24 ft wide and needs to be widened to 40 ft between the curbs to accommodate two lanes plus standard shoulders. This could be accomplished by widening and rehabilitating the existing bridge, or a complete replacement. Moffatt & Nichol has conducted preliminary studies and visual simulations of three alternatives as follows:

- Alternative 1 – Widen in Kind
- Alternative 2 – Replace using Staged Construction
- Alternative 3 – Replace using Temporary Detour

Since the existing bridge is already more than 60 years old, and near the end of its useful life, the most viable and cost effective option is to replace the bridge. A photo of the existing bridge and visual simulation of the proposed replacement are shown below.

As the prime consultant Moffatt & Nichol will perform the bridge design and will manage a team of subconsultants to provide the civil, hydraulics, and geotechnical services. Moffatt & Nichol will also provide preliminary engineering services in support of the environmental document.

EL TORO "Y" – INTERSTATE 5/INTERSTATE 405 INTERCHANGE – Irvine, California

Client: Orange County Transportation Authority and Caltrans

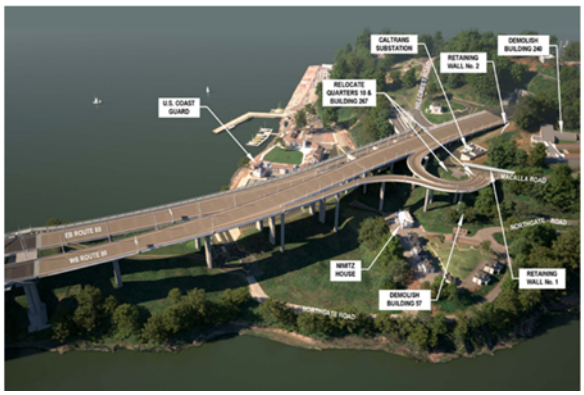
Moffatt & Nichol completed design and construction document preparation for the structural components of the freeway-to-freeway interchange between Interstate 5 and Interstate 405 in southern Orange County as well as the adjacent Bake Parkway Interchange, collector/distributor lanes and HOV connectors between Interstates 5 and 405. Known as the El Toro "Y," this interchange is one of the largest in the world. The interchange handles 300,000 vehicles per day and has a total of 26 lanes at its widest point.

The project involved increasing the capacity of the El Toro "Y" by reducing traffic merging/weaving conflicts and directing ingress/egress movements from adjacent interchanges. The Bake Parkway/I-5 Interchange provided disbursement of traffic to adjacent arterial roads relieving offramp/onramp congestion at a nearby existing interchange. The project included design of five major structures. Each structure utilized cast-in-place prestressed box girder superstructures and substructures comprised of reinforced concrete columns on cast-in-place footings supported by piles. Structures included: El Toro "Y" HOV Ramp Overcrossing; Bake Parkway Overcrossing; Irvine Center Drive Offramp Overcrossing; and Bake Parkway Offramp Overcrossing

Relevant Project Experience

WESTBOUND RAMPS AT YERBA BUENA ISLAND – San Francisco Bay, CA

Client: San Francisco Transportation Authority



Moffatt & Nichol provided advance planning, type selection, and final design for new on-ramp and off-ramp structures connecting the San Francisco–Oakland Bay Bridge to Yerba Buena Island (YBI), which required modifications to the bridge transition structures that Moffatt & Nichol had previously designed.

The structures for the westbound ramps at YBI are multi-span structures primarily of cast-in-place concrete box girder and steel box girder construction; one frame of the YBI westbound off-ramp structure is pre-stressed and a single structural steel box girder was utilized for the transition structure widening at off-ramp.

Construction work affected access and land use for a USCG facility on the site. Moffatt & Nichol worked closely with the Coast Guard to develop staging strategies and construction methods to reduce impacts on their operations.

COAST GUARD ISLAND BRIDGE REPLACEMENT – Alameda, CA

Client: United States Coast Guard

Moffatt & Nichol Engineers was retained by the U.S. Coast Guard to provide design assistance for a new bridge to replace the existing and substandard bridge to the Integrated Support Command (ISC) Alameda on Coast Guard Island. Services provided included: development of design criteria, hydrographic and topographic surveys. Geotechnical and hazardous materials investigations and reports, and schematic designs for the bridge, approaches, and some utilities.

The new structure is an 856-foot long by 38-foot wide eight-span precast prestressed "Bulb-T" girder bridge supported on 24-inch octagonal prestressed, precast concrete piles. The project was unique in that Moffatt & Nichol worked closely with the FD&CC staff in a support as well as guidance role. All bridge design work, bridge approach work, and some utility work were completed by Moffatt & Nichol Engineers.

The bridge was completed ahead of schedule and on budget. The utilities were smoothly shifted from the old bridge to the new, traffic flow was maintained throughout the project, and there were no disruptions to critical Coast Guard activities. Other measures of the overall success of the project included:

- The project met both design and construction schedules.
- Total construction costs were between 2% and 3% of the construction award.
- No disruption occurred to Coast Guard operations during project implementation.
- No significant impacts occurred during utility cutovers.
- Customers were satisfied both during and after construction.

About PACE

PACE is a 70-person civil engineering firm (corporation) formed in 1987 and headquartered in Fountain Valley, CA with a regional office in Scottsdale, AZ that specializes solely in environmental water resources through advanced technical analysis, design, and applied research. As a specialized civil engineering firm, PACE offers a wide range of engineering services in the watershed and floodplain management field with a team of specialists with a solid background in urban drainage facilities and natural river systems disciplines, including complex hydrology, advanced hydraulics, urban drainage facility planning, sediment transport, geomorphology, river floodplain and stability analysis, watershed characterization and response, storm water quality treatment facilities, hydrologic mitigation and computer modeling, hydrology analysis, statistical and predictive hydrology, design of new and innovative hydraulic facilities, and urban stormwater management systems. We offer a myriad of advanced tools for planning and analysis due to our comprehensive background in stormwater management.

Our continued research in the areas of hydrology and hydraulics provides PACE with a practical understanding of hydraulic processes in nature which allows us to focus our solutions on the cause rather than merely treating symptoms. We specialize in integrating natural sciences with water resource engineering to create long-term sustainable solutions for drainage and watershed systems.

Santa Clarita Watershed Expertise

The PACE team of water resource engineers and scientists have worked on several dozen projects within the Santa Clarita watershed over the past 20 years; many of these projects for Newhall Land and many for other landowners and public agencies (City of Santa Clarita, City of Fillmore, Los Angeles County Department of Public Works (LACDPW)). Further background of the PACE team is provided below.

Key Team Members

Mark Krebs, PE - Principal

Mark Krebs draws from more than 27 years of experience in engineering and construction with a specialized background in stormwater management, water supply, water treatment, river/wetland restoration and integrated infrastructure systems.

Mr. Krebs has played key roles on the water infrastructure development within several large scale (2,500 – 25,000 acre) master planned communities. He has developed significant cost-saving infrastructure solutions, and obtained difficult regulatory approvals with innovative and environmentally sensitive solutions. Accomplishments include earning patents for designs on environmentally sensitive river bank protection and cost effective wastewater recycling systems, recognition by the Water Resources Control Board of California for creative stormwater management and serving as part of the team that developed the self-sustaining water systems emulating all of Earth's climates for Biosphere II. Mr. Krebs led the effort to amend Los Angeles County Department of Public Works approved river stabilization methods to include soil cement as a sustainable and environmentally superior river bank stabilization method. He also co-authored the American Concrete Institute Report on Soil Cement (ACI 230.1R-09) while serving as Chair for the ACI Soil Cement Committee.

Mr. Krebs' passion lies in developing smart water infrastructure, blending function, beauty and value. His engineering philosophy follows the company's vision of developing solutions "in partnership with nature."

Andrew Ronnau, PE, PhD - Hydraulic and Hydrologic Modeling Specialist

Andrew Ronnau has over 20 years of experience working with numerical and mathematical models for engineering problems. Dr. Ronnau has a PhD in Civil Engineering, with an emphasis in numerical modeling. He has experience in analysis and design for stormwater management, including hydrology, hydraulics, open channels, culverts, detention and retention basins, flood routing, BMPs, WQMPs, and Master Drainage Plans. Dr. Ronnau is proficient with the HEC-1, HEC-HMS, HEC-RAS, HEC-GeoRAS, AES, FLO-2D, and XPSWMM software packages.

Jose Cruz, PE – Senior Project Engineer

Jose Cruz has more than 12 years of experience in flood control related projects. He has been involved with municipal and county flood control districts on several open channel/storm drain system design and debris basin design projects. He regularly performs construction cost estimates for drainage projects and is well versed in current storm drain facility construction practices. Mr. Cruz is actively involved in project coordination, preliminary design, preparation of construction documents, plan review/approval process, inspection during construction and as-built certification. He has prepared conditional letters of map revision (CLOMR) and letters of map revision (LOMR) on several projects. Mr. Cruz has conducted quality control and inspected testing operations during construction of soil cement bank protection for several projects.

Tony Howze – Senior Project Manager – GIS

Tony Howze has more than 20 years of GIS experience with public works, planning, and engineering. Mr. Howze has a Bachelor of Arts degree in Geography along with numerous certificates in the field of GIS: Hydrology and Hydraulics Analysis, Spatial Analysis, 3D Analysis, and Application Development. He has specialized skills in database management and high-end cartography. Mr. Howze has developed spatial models and applications for hydrologic model input, provided a mapping system to produce Atlas-book style maps for large hydrologic studies, and produced more efficient methods on creating detailed hydrologic / hydraulic statistics.

Steve Howard

Senior Fisheries Biologist

EDUCATION

- B.S., Fisheries: Humboldt State University, Arcata, CA, 1999

- Years of Experience – 18
- Primary Work Location – Ventura, California

MEMBERSHIPS & REGISTRATIONS

- Certified Fisheries Professional, American Fisheries Society, since 2010
- American Fisheries Society, Oregon and Cal-Neva Chapters since 1998
- Desert Fishes Council since 2007
- American Institute of Fishery Research Biologists since 2015

PERMITS & TRAINING

- USFWS Project Permitted Tidewater Goby Biologist in Ventura and Santa Cruz Counties
- Theory and Application of the Physical Habitat Simulation System (PHABSIM), Utah State University, May 2002
- Sampling Theory and Design Workshop, Humboldt State University, March 2002
- SWAMP Bioassessment Workshop, CDFG, June 2010
- California Red-legged Frog Training, Elkhorn Slough Coastal Training Program, April 2012
- Federal 10(a)(1)(A) permit application submitted for Tidewater Goby, Unarmored Threespine Stickleback, Santa Ana Sucker, California Red-legged Frog and Arroyo Toad. Permits are anticipated to be approved by the end of 2016.

BIO

Mr. Howard is a certified fisheries professional with expertise in ESA consultations, aquatic studies including fishery and amphibian habitat assessment and population surveys, fish and amphibian species identification, fish passage assessment, instream flow studies, fish and aquatic invertebrate population analysis, water quality assessment, and wildlife population surveys. Mr. Howard has performed numerous projects in aquatic habitats ranging from high elevation lakes and streams to coastal estuaries. Mr. Howard has also conducted projects including subsurface soil and groundwater investigations, environmental impact studies, environmental monitoring, and site closure and remediation. Mr. Howard has been involved in permitting large power projects and smaller instream projects throughout California.

Mr. Howard has conducted numerous fish population studies throughout many of the western states including Chinook Salmon, steelhead and Bull Trout studies in northern California and Oregon, steelhead studies in central and southern California, various trout species studies in California, Oregon and Idaho, and native non-game fish studies in Oregon and southern California. Mr. Howard has also conducted fish population surveys in southern and central California estuaries for the endangered Tidewater Goby and has conducted surveys for Unarmored Threespine Stickleback in the Santa Clara River and Santa Ana Sucker surveys in various southern California drainages. Mr. Howard has performed California Red-legged Frog and Arroyo Toad surveys in southern and Central California.

Most recently before joining R2, Mr. Howard was the senior fisheries biologist for United Water Conservation District in Santa Paula, California. He developed a monitoring and research program to avoid or minimize impacts to the federally endangered southern steelhead, Pacific Lamprey, and other native aquatic species. Mr. Howard also was part of a team that developed instream flows for steelhead and Pacific lamprey in the Santa Clara River. Mr. Howard has extensive knowledge of the aquatic species and the hydrology and geomorphology of the Santa Clara River as well as other watersheds in southern California.

KEY SKILLS **Hydroelectric Project Licensing**	Mr. Howard has directed or conducted technical aquatic studies and helped prepare applications to relicense hydroelectric projects in the Sierra Nevada mountains and in southern California. Mr. Howard participated in numerous studies related to the BIG Creek alternative licensing process (ALP) in the San Juaquin River Watershed including water quality, macroinvertebrate studies, fish population surveys, geomorphic studies, and instream flow studies. Mr. Howard lead many of the aquatic studies related to the relicensing of Santa Felicia Dam on Piru Creek in Ventura County, California. Mr. Howard also participated in dispute resolution meetings during the relicensing process. The results of these meetings resolved disputed regarding data analysis and instream flow objectives. When employed at United Water Conservation District, Mr. Howard developed with assistance of consultants many of the studies required under the FERC license and biological opinion by the National Marine Fisheries Service. These studies were also developed in collaboration with NMFS.
ESA Consultations	Mr. Howard was part of a team that designed an effects analysis methodology for steelhead in the Ventura River. The analysis was a habitat based analysis related to effects from operations and maintenance activities throughout the watershed by multiple agencies. Mr. Howard was also part of a technical team that collaborated with federal resource agencies to develop a Multiple Species Habitat Conservation Plan for operations and maintenance activities of the Freeman Diversion on the Santa Clara River. Fish species covered under the plan include southern California steelhead, Pacific Lamprey, Santa Ana Sucker and Tidewater Goby. Mr. Howard worked with the staff hydrologist to evaluate effects downstream of the diversion based on a hydrologic model that used over 60 years of hydrologic and ground water data to evaluate effects to migrating steelhead and Pacific Lamprey migrating between the ocean and the diversion.
Habitat Assessments/Bioassessments	Mr. Howard has conducted habitat assessments for aquatic species from high mountain stream to coastal rivers and estuaries. Some of these habitats include habitats for resident salmonids, steelhead and Pacific Lamprey, Tidewater goby, Unarmored Threespine Stickleback, Arroyo Toad and California Red-legged Frog. Many of these assessments were related to FERC Relicensing projects, pre-construction surveys, and Habitat Conservation Plans. Mr. Howard worked with a team to design and conduct a bioassessment study in the Santa Clara River Estuary. The macroinvertebrate data where used to characterize population diversity and to develop relationships between species abundance, density, richness and microhabitat preferences (grain size, salinity tolerances, etc.) in support of defensible site-specific NPDES limits for treated wastewater discharge to the estuary. Mr. Howard has also conducted bioassessments in coastal rivers and high mountain streams in California utilizing SWAMP procedures.
Endangered/ Threatened/Sensitive Species Studies	Mr. Howard has worked with multiple federal and state listed species or species of special concern in California including southern California steelhead, Tidewater Goby, Santa Ana Sucker, Unarmored Threespine Stickleback, California Red-legged Frog, Arroyo Toad, Arroyo Chub, Pacific Lamprey, and Desert Tortoise. Some of these projects were conducted under project permits or under the supervision of a permitted biologist.
Water Quality	Mr. Howard designed and lead a water quality study of streams and reservoirs related to the Big Creek FERC relicensing of multiple dams and diversions within the San Joaquin River watershed. Mr. Howard also designed and lead a water quality monitoring program in Lake Piru, on a tributary of the Santa Clara River in Ventura County to better understand seasonal reservoir thermal and oxygen stratification. These data will eventually inform eradication and control measures for Quagga Mussels in Lake Piru.

SUPPORTING A SUSTAINABLE SOCIETY

Environment & Health

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CREATING VALUE

WORKING TOGETHER TO SOLVE THE MOST CHALLENGING ENVIRONMENTAL, HEALTH AND SOCIAL ISSUES, CREATE VALUE FOR OUR CLIENTS AND SUPPORT A SUSTAINABLE SOCIETY.

Science-first consulting
A premier global consultancy, Ramboll Environ is trusted by clients to manage their most challenging environmental, health and social issues.

We have earned a reputation for technical and scientific excellence, innovation and client service. Our independent science-first approach ensures that our strategic advice is objective and defensible. We apply integrated multidisciplinary services and tailor each solution to our client's specific needs and challenges.

Managing change
Advances in science and technology and evolving regulatory, legal and social pressures create increasingly complex challenges for our clients. We evolve to keep pace with these changes – by adding new services, contributing to scientific advances or expanding geographically.

We are dedicated to developing solutions to solve the local and global challenges caused by today's megatrends, such as urbanization, globalization, resource scarcity, climate change, demographic changes and environmental challenges.

AIR QUALITY MANAGEMENT

COMPLIANCE, STRATEGY AND TRANSACTION SERVICES
- Building Performance and Property Loss/Building Technology
- Due Diligence/M&A
- EHS Information Management
- EHS Management
- Expert Services
- Product Safety and Stewardship
- Sustainability

ECOLOGICAL SERVICES

HEALTH SCIENCES
- Applied Epidemiology
- Exposure Reconstruction
- Health Impact Assessment
- Occupational Health and Safety
- Toxicological Sciences

IMPACT ASSESSMENT (EIA/ESIA)

LABORATORY SERVICES

RESOURCE AND WASTE MANAGEMENT

SITE SOLUTIONS
- Site Investigation, Remediation and Restoration
- Decommissioning, Demolition and Redevelopment
- Sediment Management


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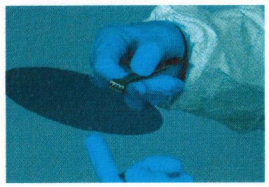
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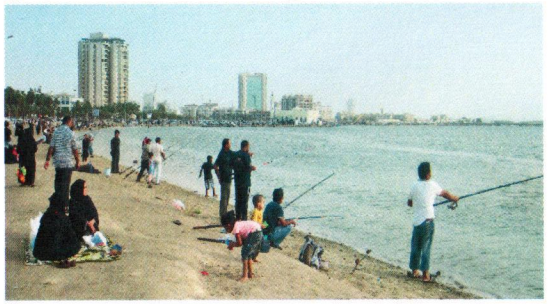
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GLOBAL REACH – LOCAL EXPERTISE
2,100 EMPLOYEES ACROSS 130 OFFICES IN 29 COUNTRIES
TOP 10 GLOBAL ENVIRONMENTAL CONSULTANCY

SOLUTIONS DELIVERED

We continually strive to be at the forefront of our fields: delivering innovative, inspiring and sustainable solutions that set new standards and make a genuine difference to our clients, the environment and society as a whole.

01 SCIENCE BENEFITS HOMES
Our scientists discovered the gases and chemical reactions causing odors and corrosive effects on copper and silver from Chinese drywall used in residential buildings, enabling the gases to be eliminated and repairs to be made to thousands of homes.

02 RECONSTRUCTING WORKPLACE EXPOSURES
For a global electronics industry client, we completed a rigorous, quantitative exposure reconstruction for workers who had developed certain diseases during their employment at several semiconductor facilities in Asia. Our exposure reconstruction confirmed findings by the occupational agencies that the diseases were unrelated to exposures at the client's facilities.

03 IMPROVING LIVEABILITY IN JEDDAH
We are developing an environment and social master plan to accommodate rapid urbanization in Jeddah. Our report provides a baseline of current air, water and waste conditions, and proposals for corrective actions to improve living conditions.

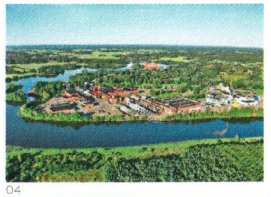
04 AWARD-WINNING EIA
Our EIA prepared for the proposed expansion of the Kemira Chemicals plant in Sastamala received an honorary award from the Finnish National EIA Association for exceptionally good assessment of risks and the potential environmental impacts of disturbances and emergency situations.

05 HONG KONG AIR QUALITY
In response to rapid urbanization and explosive economic growth in the Pearl River Delta region, the Hong Kong Environmental Protection Department (EPD) retained us to upgrade an air quality modeling system that allows EPD to study the complex relationships among factors that influence Hong Kong air quality.

06 THIRD-EVER REACH AUTHORIZATION
Roxel was granted the third-ever authorization under REACH in the EU for use of the phthalates DEHP and DBP for formulation and use of rocket propellant, based on our demonstrating safe use, preparing alternatives assessments and conducting a socio-economic evaluation of continued use.

07 ADAPTING TO CLIMATE CHANGE
We have worked with California's Port of San Diego to create and implement a climate action plan that will reduce greenhouse gas emissions across half a dozen targeted areas, and to develop climate change adaptation studies that address local vulnerabilities to climate change.

08 DELIVERING GAS TO EUROPE
Our early stage environmental planning and input to the construction design enabled the world's largest gas pipeline to be built without significant environmental impact. The Nord Stream pipeline transports up to 55 billion m^3 of gas per year from Russia to Germany through the Baltic Sea.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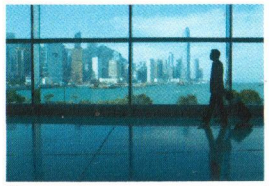
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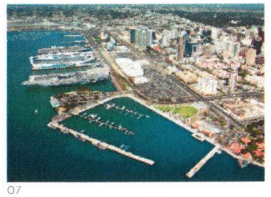
07

08

ERIC CHEN LU

Principal

Eric Lu has over 15 years of experience in air quality management and climate change issues. He has expertise with air permitting, air dispersion modeling, risk assessment, litigation support, greenhouse gas (GHG) emissions inventory and reporting and the California Environmental Quality Act (CEQA). His clients span a broad range of industries including, but not limited to, airports, oil and gas, manufacturing, landfills, commercial and residential land use development and renewable energy. He has provided litigation support on matters related to air emissions and air toxics risk assessment and has testified as an expert witness. He is an expert on indoor and ambient air sampling programs for particulates, metals and volatile organic compounds.

EDUCATION

1996-1999
MS, Chemical Engineering
University of California, Berkeley, Berkeley

1992-1996
BS, Chemical Engineering (Honors)
Brown University, Providence

COURSES/CERTIFICATIONS

Professional Engineer (Chemical) - California (CH6248), 2015
Certified Permitting Professional - South Coast Air Quality Management District (M6053), 2015
Accredited Greenhouse Gas Lead Verifier with sector specialty in Oil and Gas and Process Emissions (ARB Executive Order H-09-037), 2015

CONTACT INFORMATION

Eric Chen Lu

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+1 (949) 7983650

Ramboll Environ
18100 Von Karman Avenue
Suite 600
Irvine, CA 92612
United States of America

MIN HOU

Manager 8

Practicing in the air sciences group at Ramboll Environ, Min Hou has a wide range of experience including emissions estimations, meteorological data analysis, air dispersion modeling, GHG management, health risk assessment (HRA), Environmental Impact Analysis, and Geographical Information Systems (GIS). She has prepared GHG technical reports for Environmental Impact Reports (EIRs) for various mixed use developments. This included developing GHG inventories for all aspects of the development (i.e., construction, energy use of buildings, mobile sources, vegetation change, and municipal sources).

EDUCATION

2004-2006
MS, Environmental Engineering
Stanford University, Stanford, United States

1998-2002
BE, Environmental Engineering
Tsinghua University, Beijing, China

LANGUAGE SKILLS

Chinese (mother tongue), English

CONTACT INFORMATION

Min Hou

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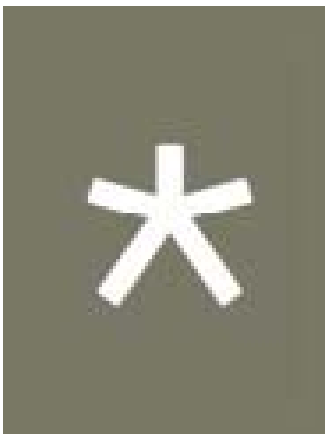
+1 (415) 7961948

Ramboll Environ
Jianwai Soho, Tower 9, Unit 2706
39 Middle Dongsanhuan Road, Chaoyang District
100022 Beijing
China

SHAENA ROCHEL BERLIN

Associate 6

Shaena R. Berlin is an Associate in the Air Sciences Practice, where she has worked on air dispersion modeling, health risk assessments, GHG emission inventory development, CEQA projects, and litigation support activities. Prior to joining ENVIRON, she performed research in atmospheric science and energy for the Massachusetts Institute of Technology, the National Oceanic and Atmospheric Administration (NOAA), and the US Department of Energy (DOE) Office of Energy Efficiency and Renewable Energy (EERE).



EDUCATION

2013-2014
MS
Massachusetts Institute of Technology, Cambridge, MA, United States

2009-2013
BS
Massachusetts Institute of Technology, Cambridge, MA, United States

COURSES/CERTIFICATIONS

40-Hour HAZWOPER Certification, 2014-2016
First Aid/CPR/AED Training, 2014-2016

LANGUAGE SKILLS

Spanish

CONTACT INFORMATION

Shaena Rochel Berlin

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201 California Street
Suite 1200
San Francisco, CA 94111
United States of America

SHARI B LIBICKI

Air Quality Practice Area Leader

Dr. Shari Beth Libicki, ENVIRON's global Air Quality Practice Area Leader, has over 25 years of chemical fate and transport experience, as applied to managing greenhouse gas (GHG) emissions and estimating air emissions and dispersion from chemical processes, landfills and new developments. Her experience includes providing technical expertise to entitlement and litigation teams, negotiating complex technical agreements and permits with agencies and assisting facilities with compliance programs. She is an expert on GHG evaluations for California Environmental Quality Act (CEQA) documents, and is at the forefront of developing regulations in California, having served on the Regional Targets Advisory Council. She has conducted extensive air quality regulatory assessments for New Source Review/Prevention of Significant Deterioration (NSR/PRD) permitting and compliance auditing. Shari has lectured widely on evaluating climate change impacts for new developments and estimating chemical exposure for risk assessments and carbon management. She currently serves as a lecturer in the Department of Chemical Engineering at Stanford University.

EDUCATION

1981-1985
PhD
Stanford University, Stanford, United States

1978-1981
MS
Stanford University, Stanford, United States

1975-1979
BSE
University of Michigan, Ann Arbor, United States

LANGUAGE SKILLS

English (mother tongue)

CONTACT INFORMATION

Shari B Libicki

slibicki@ramboll.com
+1 (415) 7961933

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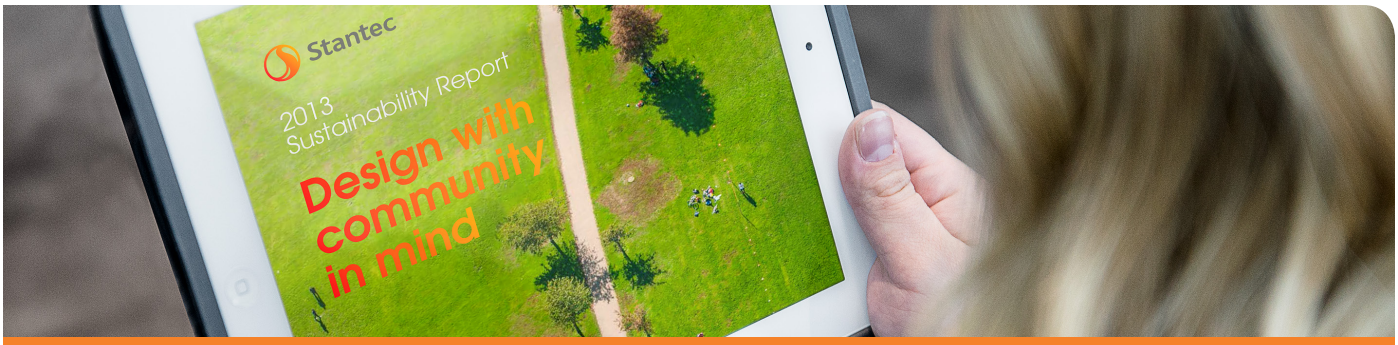
201 California Street
Suite 1200
San Francisco, CA 94111
United States of America



We are Stantec

We're active members of the communities we serve.
That's why at Stantec, we always *design with community in mind*.

The Stantec community unites more than 15,000 employees working in over 250 locations. We collaborate across disciplines and industries to bring buildings, energy and resource, and infrastructure projects to life. Our work—professional consulting in planning, engineering, architecture, interior design, landscape architecture, surveying, environmental sciences, project management, and project economics—begins at the intersection of community, creativity, and client relationships

Founded: 1954 **Ownership:** Publicly Owned **Stock Exchange:** NYSE/TSX: STN **Gross Revenue:** CDN $2.5 Billion (2014)

Corporate Headquarters: 10160 – 112 Street, Edmonton, Alberta, Canada, T5K 2L6

Leadership:
Bob Gomes—President & CEO
Rich Allen—Executive Vice President & COO
Dan Lefaivre—Executive Vice President & CFO
Paul Allen—Executive Vice President
Carl Clayton—Executive Vice President
Tino DiManno—Executive Vice President
Steve Fleck—Executive Vice President
Gord Johnston—Executive Vice President
Kirk Morrison—Executive Vice President
Scott Murray—Executive Vice President
Eric Nielsen—Executive Vice President
Bob Seager—Executive Vice President
Stanis Smith—Executive Vice President

Rankings:
No. 1 Top 300 Architecture/Engineering Firms (BD+C, 2015)
No. 2 Top 130 Green Building Architecture Firms (BD+C, 2015)
No. 6 Top 100 Pure Designers (ENR, 2015)
No. 10 Top 89 International Architecture Firms (BD+C, 2014)
No. 17 Top 150 Global Design Firms (ENR, 2015)
No. 17 Top 100 Green Design Firms (ENR, 2015)
No. 18 Top 200 Environmental Firms (ENR, 2015)
No. 19 Top 500 Design Firms (ENR, 2015)
No. 19 Top 225 International Design Firms (ENR, 2015)
No. 44 Top 50 Program Management Firms (ENR, 2015)
No. 83 Top 100 Construction Management-for-Fee Firms (ENR, 2015)

One of Canada's Top Employers for Young People (2014)
One of Canada's Greenest Employers (2014)
One of Canada's Best 50 Corporate Citizens (2013)
Alberta's Top 65 Employers (2014)
No. 23 Top 31 Best Places to Work in Atlantic Canada (2014)

Sectors:
Airports
Attractions, Arts & Entertainment
Bridges
Commercial
Community Development
Community Facilities
Education
Federal Government
Healthcare
Industrial Buildings
Mining
Municipal Government
Oil and Gas
Power and Energy
Public Safety
Roadways
Science & Technology
Sports and Recreation
State/Provincial Government
Transit & Rail
Water

Regions:
Alberta Central & Territories
Alberta South
Alberta North
Americas
British Columbia
California South
Eurasia
Gulf
Manitoba
Mid-Atlantic
Midwest
New Brunswick & P.E.I.
New England
Nova Scotia & Newfoundland
Ontario GTA
Ontario North & East
Ontario Southwest
Pacific North
Quebec
Saskatchewan
Southeast
Southwest
Tri-State

Stantec

Daryl Zerfass PE, PTP

Principal, Transportation Planning & Traffic Engineering

Daryl is a California registered traffic engineer and a certified professional transportation planner with 25 years of experience in multiple aspects of traffic engineering and transportation planning. He has a proven record of managing large-scale traffic studies efficiently and effectively. His projects include traffic impact studies for large-scale development projects, freeway facility and interchange studies for PSRs and PRs, General Plan updates, areawide transportation studies, traffic model development, and land-use related circulation studies.

EDUCATION

BS, Civil Engineering, University of California, Irvine, California, 1990

REGISTRATIONS

Professional Engineer #TR1824 (Traffic), State of California

Professional Transportation Planner #454, Transportation Professional Certification Board Inc.

MEMBERSHIPS

Member, Orange County Traffic Engineers Council

Member, Institute of Transportation Engineers

Associate Member, American Society of Civil Engineers

PROJECT EXPERIENCE

Transportation Planning

City of Lake Forest Transportation Mitigation Program - 2014 Update, Lake Forest, California (Project Manager)

Daryl was project manager for this update to the City of Lake Forest's traffic fee program. The Lake Forest Transportation Mitigation (LFTM) program is utilized to fund roadway improvements throughout the City with costs allocated to development projects. For this update, the City's travel demand model was updated based on current development proposals, and an updated improvement program was developed based on the new traffic forecasts. Cost estimates for the identified improvements were utilized to develop traffic impact fees for various types of land development projects.

One Valley One Vision General Plan Traffic Study*, County of Los Angeles, California (Project Manager)

Daryl was project manager for the comprehensive traffic analysis used in the preparation of the One Valley One Vision (OVOV) County Area Plan and City of Santa Clarita General Plan update. The OVOV effort was undertaken by the County and the City to create a single vision and guidelines for the future growth of the Santa Clarita Valley and the preservation of natural resources. Together, these plans allow for a 93% increase in housing units and a 130% increase in jobs, substantially improving the area's jobs/housing balance. The strategy of each plan focuses growth in areas near existing job centers, transit and infrastructure. The study effort included an update to the joint County/City traffic demand model, which was used to determine modifications to the Highway Plan based on new trip patterns resulting from the more compact OVOV land use plan. The traffic study served as a resource document for the project's environmental documentation as well as the new County and City Circulation Elements. The OVOV project was awarded SCAG's 2013 Compass Blueprint Excellence Award for Visionary Planning for Sustainability.

John Wayne Airport EIR Traffic Impact Analysis*, Orange County, California (Project Engineer)

Daryl was the lead project engineer for the preparation of the EIR traffic impact analysis that evaluated the extension and modification of the settlement agreement pertaining to operations of John Wayne Airport (JWA) in Orange County, CA. Three project scenarios, plus two project alternatives were evaluated as part of the study. Each had different implications with respect to air passenger volumes at JWA, with passenger volumes ranging from 8.4 MAP to 13.9 MAP, and the resulting vehicular traffic impacts on the surrounding circulation system were evaluated. The study included a validation of JWA's vehicular trip generation rates by collecting multi-day traffic counts at each of the airports access locations.

Daryl Zerfass PE, PTP

Principal, Transportation Planning & Traffic Engineering

Bridge and Major Thoroughfare Construction Fee District Traffic Volume Forecasts*, Los Angeles County, California (Task Manager)

Daryl was responsible for updating the joint County/City travel demand model and for preparing traffic forecasts to be used for the development of traffic impact fees for multiple districts in unincorporated Los Angeles County and in the City of Santa Clarita. The Bridge and Major Thoroughfare Construction Fee Districts provide an equitable financing mechanism by which new development within an identified area will share the costs of providing full mitigation improvements. Daryl prepared long-range traffic forecasts based on the planned land development projects and determined roadway and intersection improvements that accommodate the significant amount of future traffic in this fast growing area of Los Angeles County.

Costa Mesa SOBECA/Westside General Plan Amendment*, Costa Mesa, California (Task Manager)

Daryl prepared the transportation analysis for two urban plan areas that were the subject of a General Plan Amendment by the City of Costa Mesa. The South on Bristol Entertainment Culture Arts (SOBECA) District and the Westside Plan Area were developed to provide for mixed-use zoning opportunities to supplement and enhance existing development. Our role on the project was to coordinate with City staff and the multi-discipline project team and prepare a traffic analysis in support of the City's General Plan Amendment.

Newhall Ranch Master-Planned Community*, Santa Clarita Valley, California (Project Manager)

Daryl was the project manager for the planning of the transportation system of this master-planned community in Los Angeles County, California. In total, the Newhall Ranch Specific Plan area and the adjacent planned communities consisted of over 27,000 residential dwelling units and over eight million square feet of commercial development. Various types of analysis have been prepared in support of the planning and entitlement process. These include the development of an overall phasing plan for on-site roadways, large scale impact studies that satisfy CEQA and NEPA requirements, traffic impact studies of individual development area, operational analysis of local circulation, and the development of fair-share nexus calculations for off-site impacts.

Traffic Operations

State Route 241 Tesoro Extension Regional Benefits and Independent Utility Analysis, Orange County, California (Project Manager)

Daryl was project manager for this traffic study to demonstrate the regional benefits and the independent utility of the proposed SR-241 Tesoro Extension (toll road) project. The Orange County Transportation Analysis Model (OCTAM) and a specially prepared focused sub-area model were used to forecast travel time and mileage information. VHT and VMT comparisons were utilized to show the benefits of the project.

Interstate 5/El Toro Road Interchange (PSR) Traffic Study, Orange County, California (Traffic Task Manager)

Daryl was the traffic engineering manager for the PSR traffic studies and the Traffic Engineering Performance Assessment (TEPA) prepared for the proposed reconstruction of the I-5/El Toro Road interchange. The study effort included the development of multiple interchange concepts that were evaluated using a microsimulation model. Design year traffic forecasts were derived using the Orange County Transportation Analysis Model (OCTAM) and the local sub-area models of the Cities of Lake Forest and Laguna Hills.

State Route 126 Feasibility Study Traffic Study, Los Angeles County (Project Manager)

Daryl was project manager for the traffic study that addressed the feasibility of enhancing the SR-126 corridor between Commerce Center Drive and the Ventura County line in the north Los Angeles County area. Improvements such as the addition of intersection turn pockets, installation of traffic signals, and adding additional travel lanes where needed were evaluated and a recommended corridor plan was developed. The enhancements will occur over time based on traffic capacity needs and a phasing plan for the improvements was determined based on land use growth projections. The study involved traffic operations analysis of the highway, signalized and unsignalized cross-street intersections, and the preparation of comprehensive traffic study reports.

Interstate 5 HOV Lane Access Conversion Project from State Route 57 to State Route 39 (PSR/PR) Traffic Study, California (Project Manager)

Daryl is project manager for the PSR (PR) traffic study that address the design of a "continuous access" feature that will convert the existing buffer separated and limited access HOV facilities to provide continuous access for I-5 between SR-57 and SR-39 (Beach Boulevard).

Maria A. Manalili AICP, PTP

Transportation Planner

Maria has been involved in Transportation Planning for more than eight years, with experience in short and long-range planning, and EIR preparation. As part of her transportation planning work, she has assisted in various traffic studies in support of development projects and major highway improvement projects.

EDUCATION

BA, Environmental Analysis and Design, UC Irvine, California, 2007

REGISTRATIONS

Certified Planner, American Institute of Certified Planners

Professional Transportation Planner #419, Transportation Professional Certification Board Inc.

MEMBERSHIPS

Member, American Planning Association

Member, Young Professionals in Transportation

President - Local Club Dialogue by Design, Irvine CA, Toastmasters International

Member, Orange County Traffic Engineers Council

PROJECT EXPERIENCE

Traffic Impact Assessments

Anaheim Rapid Connection (ARC), Anaheim, California (Transportation Planner)

Maria is preparing the traffic analysis for the ARC streetcar project. The streetcar is proposed to provide service to a 3.2-mile-long corridor within the Anaheim Resort, Convention Center, and Platinum Triangle areas, and will connect with regional rail systems such as Metrolink, Amtrak, and future High Speed Rail at the Anaheim Regional Transportation Intermodal Center (ARTIC). The project's traffic analysis provides the resource material needed for the project's EIR and NEPA documentation by addressing traffic performance changes to the local street system as a result of traffic lanes and intersections being shared with the ARC fixed rail vehicles. The traffic study includes operational analysis for the roadways and intersections along the streetcar route, an assessment of construction related impacts, and a special events analysis due to the area's unique characteristics as a resort and sporting event destination.

Tejon Mountain Village Specific Plan, Kern County, California (Transportation Planner)

Maria analyzed the transportation system for this master-planned community. At nearly 270,000 acres, and with 422 square miles, it is the largest contiguous expanse of private land in California and has goals to carry out a vision of conservation, continued ranching and farming, and the creation of high-quality, environmentally sensitive communities on a small portion of its land. The report analyzed all on-site circulation, along with 16 off-site intersections, and more than 30 roadway segments.

Centennial Master-Planned Community, Northern Los Angeles County, California (Transportation Planner)

As the Transportation Planner, Maria was the lead technical manager for the planning of the transportation system of this master-planned community for northern Los Angeles County, California. Centennial, a balanced community founded on smart-growth principals, has been designed with the proper mix of housing, jobs, retail, medical facilities, educational institutions, and recreational services for a new town planned for over 60,000 residents. Maria supported the Project Manager is preparing the technical document in support of the Centennial Environmental Impact Report. Work included existing conditions analysis, circulation analysis, land use analysis, traffic demand modeling, GIS database development, future forecasts analysis and Transportation Demand Management application.

Northlake Traffic Impact Study, Castaic, California (Transportation Planner)

Maria was the Transportation Planner for the preparation of a traffic studies in support of this project site in the Castaic area north of the City of Santa Clarita. A Specific Plan allowing for the development of 3,600 homes was approved in 1992. Maria supported the Project Manager and has provided assistance in due diligence efforts, alternatives analysis, and is working with the Project Manager in the preparation of a traffic impact analysis in support of the project's first vesting tentative tract map.

Maria A. Manalili PTP

Transportation Planner

The Masters College Master Plan Study, Santa Clarita, California (Transportation Planner)

Maria is helping plan the transportation system of this college campus that was founded in 1927 and consists of approximately 1,200 students. The campus consists of eight on-site residence halls in addition to the campus facilities. Maria is currently helping prepare an alternative and phasing analysis for multiple access scenarios.

Legacy Village EIR Traffic Impact Analysis, Los Angeles, California (Transportation Planner)

As the Transportation Planner, Maria was responsible for supporting the Project Manager with the preparation of the traffic impact analysis that evaluated the Legacy Village (VTTM 061996) project located in an incorporated portion of the Santa Clarita Valley. A project consisting of over 3,457 residential units and approximately 186,000 square feet of commercial uses, 316 square feet of office use and 32.8 acres of developed park, the study provided the traffic and circulation material for the project's EIR. The EIR traffic study included the evaluation of multiple project phases, incorporated a master roadway infrastructure phasing plan, and included a detailed design evaluation for the on-site roadway system.

Entrada North EIR Impact Analysis, Los Angeles, California (Transportation Planner)

As the Transportation Planner, Maria was responsible for supporting the Project Manager with the preparation of the traffic impact analysis that evaluated the Legacy Village (VTTM 071377) project located in an incorporated portion of the Santa Clarita Valley. A project consisting of over 1,150 residential units and approximately 1.45 million square feet of commercial uses, 917,000 square feet of office use, a Sherriff Station and a 270-room Hotel, the study provided the traffic and circulation material for the project's EIR. The EIR traffic study included the evaluation of multiple project phases, incorporated a master roadway infrastructure phasing plan, and included a detailed design evaluation for the on-site roadway system.

Planning Area 39 - Orchard Hills, Irvine, California (Project Planner)

Maria worked for the PA 39 VTTM 17759 project is a tract map traffic study conducted for 1,950 apartment homes, an elementary school, a day care facility, and a community facility in the southern half of City of Irvine Planning Area 39.

Planning Area 1 - Orchard Hills, Irvine, California (Project Planner)

Maria worked on the a program tract map traffic study conducted for 626 single family homes and 374 condominiums in the eastern portion of City of Irvine Planning Area 1 (Orchard Hills).

Potrero Village EIR Traffic Impact Analysis, Los Angeles, California (Transportation Planner)

As the Transportation Planner, Maria was responsible for supporting the Project Manager with the preparation of the traffic impact analysis that evaluated the Legacy Village (VTTM 061911) project located in an incorporated portion of the Santa Clarita Valley. A project consisting of over 4,385 residential units and approximately 250,000 square feet of commercial uses, an elementary school, a fire station and approximately 189.6 acres of park, the study provided the traffic and circulation material for the project's EIR. The EIR traffic study included the evaluation of multiple project phases, incorporated a master roadway infrastructure phasing plan, and included a detailed design evaluation for the on-site roadway system.

Villa Park*, CA (Transportation Planner)

Maria was the transportation planner for a traffic analysis of the Katella Avenue/Villa Park Road/Santiago Canyon Road Corridor. The work included traffic forecasting, level of service analysis, and a traffic operations analysis for the corridor.

I-5 Freeway Widening Studies, CA (Transportation Planner)

Maria was the transportation planner for the traffic studies carried out for several south Orange County freeway widening studies. These have involved traffic operations analyses of the freeway and adjacent surface streets, with the results being documented for inclusion in the PSR.

Interstate 5 HOV Continuous Access, Orange County, California (Project Analyst)

Maria is working on the traffic portion for a project to design a "continuous access" feature along two segments on the I-5 freeway that will convert the existing buffer separated and limited access HOV facilities to provide continuous access. The two segments consist of 17 miles between Oso Creek in south Orange County to Grand Avenue in north Orange County and 8 miles between the SR-57 freeway and the SR-91 freeway.

** denotes projects completed with other firms*

Ulla Hester, AICP / Planning Lead

URBANTRANS NORTH AMERICA

EDUCATION

Master of City Planning; Massachusetts Institute of Technology, Cambridge

Bachelor of Science, Business Administration; University of Redlands, Redlands

SPECIALTIES

- Bicycle planning
- TDM planning
- TDM Program Evaluation
- GIS mapping and analysis
- Institutional planning

PROFESSIONAL AFFILIATIONS

American Institute of Certified Planners (AICP)

American Planning Association

Association of Bicycle and Pedestrian Professionals

Women's Transportation Seminar

LEED AP

Ulla Hester joined UrbanTrans in 2015 after moving to Colorado from Massachusetts, where she most recently spent more than six years on district-wide planning and implementation of transportation, sustainability and other projects in the Longwood Medical and Academic Area. Her broad experience includes transportation demand management planning and program evaluation, planning and implementing active transportation facilities and programs, analyzing transit agency budgets, fare policy and performance measures, and providing analysis for shuttle rerouting and consolidation projects.

Because of her interdisciplinary experience within and outside of the planning profession - Ms. Hester spent several years in purchasing, marketing and sales in the high-tech industry and has worked in Germany and Austria - she brings a unique perspective to her projects. Her work is driven by her strong commitment to sustainability and her passion to improve people's quality of life through planning.

REPRESENTATIVE PROJECT EXPERIENCE

PCIDs Construction Mitigation TDM Plan; Atlanta, GA. Led the development of a comprehensive TDM plan to mitigate the impacts of the I-285/GA-400 interchange construction project on one of the largest employment centers in the southeast. Modeled trip and VMT reduction impacts of proposed strategies and prepared implementation strategies and cost estimates. Recommendations included financial subsidies and incentives to shift commuters to alternative modes or off-peak travel times, the creation of fixed vanpool routes in key corridors, personalized travel planning, and innovative approaches to promoting the TDM measures.

North Vaughan TMP; Vaughan, ON. Developing high-level TDM strategies and policies and active transportation recommendations for inclusion in the North Vaughan Transportation Master Plan. Spanning a predominantly rural part of the city, the plan has a particular focus on several blocks identified for residential and commercial development to accommodate a growing population.

Boulder Access Management and Parking Strategy; Boulder, CO. Assisting the city of Boulder with the creation of a developer focused TDM program that accomplishes trip reductions aligned with the city's transportation master plan and greenhouse gas emissions goals. Supporting a parking cash out pilot program by researching case studies of successful programs and developing a step-by-step parking cash out guide for employers.

MassRIDES TDM Program Evaluation; Boston, MA. Researched and prepared case studies on how regional and statewide entities measure and evaluate the impact of their TDM programs. Estimated MassRIDES program impacts using three different methodologies: the TRIMMS model, an analysis of data

collected via the regional trip tracking tool, and an analysis of a database survey. Currently working on an assessment of economic impacts of the program. A comparison of the different methodologies will inform a recommendation on how the program should be evaluated moving forward.

Greater Golden Horseshoe Multi-Modal Transportation Planning Study, ON. Assisting with TDM and active transportation aspects of this long-range planning effort in the Greater Golden Horseshoe region.

Club Ride Program Evaluation; Las Vegas, NV. Performing annual program evaluation activities for the Regional Transportation Commission of Southern Nevada's commuter services program. This includes conducting and analyzing a commuter survey, a transportation coordinator survey, and employer specific surveys to identify commute trends, program impacts, and opportunities to enhance the overall program and employer specific offerings.

MASCO Bicycle Facilities Planning and Implementation; Boston, MA. Led all bicycle planning efforts in the Longwood Medical and Academic Area, including the planning, outreach, implementation, and evaluation of the district's first on-street bicycle lane. Provided assistance with siting bike parking and bike share stations in a space-constrained environment. Facilitated discussions to help shape and gain consensus on the city of Boston's Bicycle Network Plan.

MASCO Shuttle Planning; Boston, MA. Supported a shuttle consolidation of four existing shuttles into one district-wide shuttle route with research, planning support, mapping, and cost/benefits assessment. Assisted with planning and implementing the reversal of a shuttle route aimed at achieving faster travel times and better schedule adherence by avoiding congested road segments and minimizing left turn movements.

Vantage Property Investors TDM Plan; Los Angeles, CA. Led the creation of a TDM plan for an office development. Development of the plan included an analysis of surrounding transportation services and infrastructure, review of Census data, estimation of future employee characteristics and commute behavior and review of developer and city goals. Recommendations and implementation strategies were designed to assist the client with obtaining development approvals and achieving trip reduction goals. Recommended strategies included pedestrian and bicycle improvements at the development site, strategies to promote car- and vanpooling, employer and employee welcome kits, and alternative commute incentives.

MassRIDES Developer TDM Toolkit; Boston, MA. Created a toolkit to educate developers and encourage them to implement TDM programs. The toolkit was developed to help MassRIDES, Massachusetts' state-wide TDM program, encourage broader implementation of TDM strategies. The toolkit educates developers and helps them understand what TDM is and its benefits. Information on numerous TDM strategies is provided along with recommendations regarding the land uses to which the strategies are applicable. Additionally, the guide assists developers with the creation of TDM programs that may be required as part of the creation of environmental impact reports and/or LEED certification.

PeopleForBikes Analysis of Bicycle Network Plans for All Ages and Abilities; Boulder, CO. Reviewed and analyzed 13 recent bicycle network plans across the United States and Canada that were designed for people of all ages and abilities. The resulting matrix and report are used to inform the organization's advocacy focus going forward and to provide a resource to communities interested in engaging in bicycle planning for all users.

Town of Jackson/Teton County TDM Plan; Jackson, WY. Created a Transportation Demand Management Plan as part of the Teton County/Town of Jackson Integrated Transportation Plan. Recommended TDM strategies target not only large employers, but also schools and the strong local tourism industry.

MASCO Pedestrian Wayfinding Program; Boston, MA. Assisted with the final siting plan of a district-wide pedestrian sign program.

Matthew Kaufman, AICP / Director of Planning Services — URBANTRANS NORTH AMERICA

EDUCATION

Master of Urban Planning; University of Kansas, Lawrence

Bachelor of Science, Civil Engineering; University of Colorado, Boulder

SPECIALTIES

- TDM data and program analysis
- TDM program development
- Stakeholder input collection/analysis
- GIS analysis

PROFESSIONAL AFFILIATIONS

American Planning Association
Member since 2001

American Institute of Certified Planners (AICP)

TRB TDM Committee
Friend of the committee

Matthew Kaufman is the Director of Planning Services and has 13 years of experience in transportation planning. He specializes in the development and evaluation of multi-modal transportation programs and focuses his work on data-driven recommendations. He has extensive experience in the collection of stakeholder input through surveys, focus groups and community events. He also has experience gathering and analyzing large quantities of demographic, travel behavior, land use and other data for planning purposes.

Mr. Kaufman has used his technical skills to develop sustainable transportation plans and programs for major redevelopment sites, shopping centers, urban corridors, office developments, cities, counties and regions. He has been involved in demand management as it pertains to environmental assessments and impact statements, redevelopment applications and congestion mitigation programs.

REPRESENTATIVE PROJECT EXPERIENCE

Great Park Neighborhoods TMA Plan; Irvine, CA. Assisted Five Point Communities with the identification of a successful organizational model for the delivery of TDM services to commercial and income-restricted land uses at the Great Park Neighborhoods, a major redevelopment site in Irvine, CA. The study recommended a non-profit TMA to be financed through the collection of deeded fees. Now leading the development of a three-year business plan to guide the initial delivery of TDM services and the creation of a TMA.

Capital One Redevelopment Plan; Fairfax County, VA. Developed a TDM program for a multi-use development that will include approximately 3 million square feet of commercial space, 1,200 dwelling units and a 600 room hotel. The plan was developed as part of the development review process for the redevelopment of the Capital One Tysons Corner campus in Fairfax County, VA. The plan identified TDM programs applicable to the site that can be implemented to decrease the use of automobiles by future residents and employees. The plan included long-term budget information, required staffing levels and a process for monitoring TDM program success. Creation of the plan required careful negotiation with county staff to identify appropriate TDM-related impact fees and a long-term compliance plan that was acceptable to both the county and Capital One. Fairfax County will use the plan as a model for future developments within the Tysons Corner area.

Downtown Syracuse TDM Plan; Syracuse, NY. Worked with key stakeholders to develop TDM recommendations for downtown Syracuse. Activities included public outreach with downtown employers, property owners and managers, business groups, parking management firms and government agencies. Outreach efforts included development and analysis of a community survey, interviews with stakeholders and public meetings. Developed TDM program recommendations based on community and government input, review of best practices, analysis of transportation system data and available funding. Worked with community groups and government agencies to develop an implementation plan and identify an agency willing to oversee TDM efforts.

SAIC Redevelopment Plan; Fairfax County, VA. Developed a TDM program for a multi-use, transit-oriented development that will include approximately 2.5 million square feet of commercial space, 2,000 dwelling units, a 400 room hotel and 35,000 square feet of retail space. The plan was created as part of Fairfax County's development review process for the redevelopment of the SAIC campus in Tysons Corner. The plan identified TDM programs that are applicable to the site's land use mix and density and available transportation services and infrastructure. The plan included a budget and staffing levels for implementation of the program recommendations. Development of the plan required careful coordination with county staff to assure that required impact fees and long-term program reporting and penalty requirements were acceptable to both the county and SAIC.

Atlanta Regional Commission On-Call Services; Atlanta, GA. Have provided on-call planning assistance to ARC under two contracts. Conducted a study to identify TDM strategies that can be used to mitigate impacts associated with major construction projects. The study effort involved a review of best practices, the identification of Atlanta region projects that could benefit from TDM mitigation efforts, planning and facilitation of a stakeholder workshop, and the development of recommendations and next steps to advance the use of TDM as a construction mitigation strategy. Also assisted ARC with the analysis and reporting of a region-wide survey designed to obtain input from residents regarding future transportation and job growth. Developed a report format that significantly reduced complexity compared to past survey reports and presented information in a graphical format that is easy for residents and decision makers to digest. The final report will be shared with planning stakeholders throughout the region and used to guide planning recommendations and goals.

Halton Region Developer TDM Guidelines: Halton Region, ON. Led a study to identify a process through which developers can be encouraged or mandated to implement TDM programs and install TDM-supportive infrastructure. The study process included a review of development review processes throughout North America that mandate developer participation in TDM. Significant emphasis was being placed on involvement from Region staff and local municipalities within the region. Outreach efforts included interviews, workshops and a survey. Recommendations were developed based on best practices, stakeholder input, available resources, current processes and development realities. The final recommendations outline a process through which developers can be encouraged to implement TDM strategies and/or TDM-supportive infrastructure, identify TDM programs and supportive infrastructure that are applicable to new developments and identify tools that can be used to assure developers' long-term commitment to TDM.

Boulder Access Management and Parking Strategy, Boulder, CO. Assisting the city of Boulder with a review of its TDM policies as they relate to land use development. Assistance includes a broad review of developer-focused TDM regulations and policies throughout North America and the subsequent identification of best practices that are applicable to Boulder. Additional efforts include coordination with stakeholders to update existing TDM policies to encourage developers to participate in TDM programs and development of tools to encourage employers to adopt parking cash-out policies. The project's final outcomes will include the identification of appropriate policies and tools to further advance TDM in Boulder, which has been an international leader in the implementation of successful TDM strategies to reduce vehicle travel.

Intuit TDM Plan; Mountain View, CA. Assisted with the development of a TDM plan for Intuit's Mountain View campus, which was experiencing significant growth and needed to reduce vehicle trips in order to secure additional development rights. Work included design and analysis of an employee survey, review of current conditions, a peer program review, identification of TDM strategies, creation of an action plan, and program monitoring recommendations.

Downtown Wichita Parking Plan; Wichita, KS. Developed TDM program recommendations to reduce parking demand in Downtown Wichita. Program recommendations focused on trips associated with the new INTRUST Bank Arena and nearby convention center. Study activities included an analysis of successful event-based TDM programs in North America, an existing conditions review, a community survey, analysis of employee and event attendee travel behavior, stakeholder meetings and the development of short- and long-term TDM program recommendations and suggested marketing materials.