

JAMES G. RITCHIE, PG, QSD

Education

MS – Geology, University of Colorado, 1985; Fulbright Scholar Candidate, 1984
 BA – Geology, University of California at Santa Barbara, 1980



Professional Licenses and Memberships

Professional Geologist, California (No. 4974)
 Registered Geologist, Washington (No. 1447)
 California Association for Local Economic Development (CALED) – Brownfield Land Revitalization Committee (BLRC)
 Non-Profit Housing (NPH) – Sponsorship and Technical Support
 Urban Land Institute – Sponsorship and Technical Support
 Center for Creative Land Recycling (CCLR) – Sponsorship and Technical Support
 American Bar Association (ABA) – Sponsorship

Specialty Certifications

Qualified Storm Water Pollution Prevention Plan (SWPPP) Developer (QSD), California (No. G04974)
 OSHA 24-Hour (40-Hour equivalent) Training and 8-Hour Refresher Courses
 OSHA 8-Hour Supervisory Training
 Loss Prevention System (LPS) Training
 OSHA 24-Hour Emergency Response Technician and OSHA 8-Hour Incident Commander Training
 Red Cross First Aid/CPR Training
 Security Clearance, SFO, Airfield Side, 2000

Professional Experience

Mr. Ritchie is a registered Professional Geologist in California and Washington with over 36 years of consulting and site environmental site investigation and restoration experience throughout the Western United States. He has led site investigation, remediation, and large-scale groundwater monitoring and reporting projects, and has overseen the application of remedial approaches to variety of site conditions, including supporting site closures. His experience includes performing Phase I Environmental Site Assessments (ESAs) and Phase II investigations; landfill and refinery investigations; comprehensive geologic and hydrogeologic studies, groundwater monitoring networks and programs; Conceptual Site Models (CSMs); risk assessment and vapor intrusion modeling; removal and disposal of non-hazardous and hazardous materials; evaluation, development, and implementation of on- and off-site remedial approaches for chemically affected soil vapor/indoor air, soil, and groundwater; water supply well and system siting and compliance; and Storm Water Pollution Prevention Plan (SWPPP) preparation and implementation.

He has led numerous Brownfields site assessment and redevelopment projects, including Environmental Protection Agency (EPA) Brownfields Grant work, under Voluntary Cleanup Agreements (VCAs) with the Department of Toxic Substances Control (DTSC) and the Regional Water Quality Control Board (RWQCB), as well as under California Land Reuse and Revitalization Act (CLRRRA). The Brownfields redevelopment projects have resulted successful revitalization of numerous chemically-impaired properties into commercial, mixed-use and residential developments.

He has developed and led multidisciplinary teams in accomplishing project objectives, and has worked with myriad local, state, and federal regulatory agencies, clients, and contractors to identify common goals and develop short- and long-term plans for achieving project solutions. He also has

extensive experience with fixed price costing, contractual indemnifications, and environmental insurance products resulting in guaranteed price risk transfer solutions for impaired property cleanup and redevelopment.

Mr. Richie leads the SCS Environmental Services Group for Northern California. He has established and grown offices for environmental consulting firms, and has performed business development, project acquisition, project funding, client management, staff hiring and mentoring, and technical, managerial, and profit and loss (P&L) duties in support of clients in the public and private sectors.

Representative Project Experience

Brownfields and Redevelopment

Project Manager/Director, Subsurface Assessment, Former Truck Repair Facility, Mercy Housing and City of West Sacramento California (Ongoing). On behalf of a municipal client and an affordable housing developer, SCS performed two phases of soil vapor sampling at a former truck repair facility. The site was previously closed under the low threat closure policy (LTCP) associated with investigation and remediation of a former vehicle repair facility impacted by petroleum hydrocarbons. The property is now under consideration for development as an affordable housing complex. The soil vapor surveys identified PCE in soil vapor at concentrations above applicable residential land use environmental screening level (ESL) values. SCS developed a Conceptual Plan which incorporated a vapor intrusion mitigation system into the building design. SCS and the Client presented the Conceptual Plan and a Site Risk Management Plan (RMP) to the Central Valley Regional Water Quality Control Board (CVRWQCB). The CVRWQCB is preparing an approval letter for the Conceptual Design which will allow Mercy to obtain project funding and move ahead with detailed project design.

Project Manager/Director, Subsurface Assessment, Former Hardware and Fueling Facility, Community Hosing Works, Sacramento, California (Ongoing). On behalf of a municipal client and an affordable housing developer, SCS performed due diligence including shallow soil and soil vapor sampling and analysis at the former lumber yard and fueling station. The site was previously closed under the low threat closure policy (LTCP) for petroleum hydrocarbons. The property is now under consideration for development as an affordable housing complex. The soil vapor surveys identified a limited distribution of elevated concentrations of lead in shallow soil and benzene in soil vapor at concentrations above applicable residential land use environmental screening level (ESL) values. SCS contacted the Sacramento County Environmental Management District (SCEMD) to develop a plan for addressing the residual benzene to allow safe site redevelopment. The proposed approach includes using a Soil Management Plan (SMP), possible additional limited data collection, and shallow soils re-grading to mitigate the residual benzene, enabling site redevelopment.

Project Manager/Director, Subsurface Assessment, Former Truck Repair Facility, BRIDGE Housing and Avalon Bay, San Francisco, California (Ongoing). SCS performed due diligence services at this on behalf of BRIDGE Housing, an affordable housing developer and Avalon Bay, a market rate housing developer. The project site was originally constructed as a reservoir, but was never used as such. SCS performed shallow soil and soil vapor sampling and analysis, and as required by the San Francisco Department of Public Health's (SFDPH) Maher Ordinance, prepared a Site Mitigation Plan (SMP) for consideration by the SFDPH. The SMP addresses soil, and as appropriate, groundwater management practices and procedures to follow during construction activities associated with the proposed site development, including earth-moving activities. The SMP provides measures to mitigate potential long-term environmental or health and safety risks (if any) to protect construction workers, nearby residents, workers, and/or pedestrians and also contains contingency plans to be implemented during soil excavation if unanticipated hazardous materials are encountered. Upon SFDPH approval of the SMP, SCS has subsequently initiated preparation of a dust control plan, and a

sampling plan to guide soils re-use during site development. The work will allow construction of over 1, 100 units of affordable and market rate housing and 4.2 acres of parks and open space and mixed-use retail space. Site preparation will raise grade in the central portion of the Site by several feet, using die Site perimeter embankment material (approximately 71,000 cubic yards or cy) as a fill source along with clean off-Site fill source material (approximately 177,000 cy).

Project Manager, Environmental Consulting Support, Feasibility Assessment, Midway Village, Daly City, CA, County of San Mateo Department of Housing. Assisting the County of San Mateo Department of Housing (County) by providing environmental consulting support in evaluating the feasibility of redevelopment of a contaminated, aging, and deed-restricted affordable housing complex in Daly City. The 150-unit complex was constructed over fill material containing Manufactured Gas Plant (MGP) residual materials. Consulting services include expert analysis of reports and documents and their effect on redevelopment options; preparing AAI and ASTM 1527-13 compliant Phase I ESA reports and feasibility study (FS) reports for site redevelopment; communication with multiple stakeholders, including County employees, the DTSC, other regulatory agencies, residents of Midway Village, and other interested parties; remediation analysis and costing; and assistance in evaluating developer proposals.

Project Manager, Riverfront Reuse Planning for Petroleum Contaminated Brownfield Sites EPA Brownfields Grant ID #BF 00T29301, Riverfront Area, Sacramento, CA. Supported the City of Sacramento (City) Economic Development Department by conducting a detailed Brownfields inventory of approximately 46 parcels of land located in the western part of the City along Sacramento River, immediately north and south of Highway 50 (Project Area). The work included a series of tasks designed to thoroughly inventory each parcel and identify obstacles to future cleanup and development under an aggressive schedule. SCS designed and completed individual information sheets for each parcel, developed an aerial map showing parcel boundaries, utilities, and easements, and summarized parcel-specific information in an Excel spreadsheet. SCS also conveyed the parcel and infrastructure information into a Geographic Information System (GIS) database, prepared a series of GIS-based maps showing parcel attributes, and is preparing a Summary Report for use by the City in evaluating possible redevelopment options and obstacles.

Project Manager, On-Call Services Brownfields Area Assessments and Redevelopment, West Sacramento, CA. Work in support of the City of West Sacramento in redevelopment of the Pioneer Bluff area, including strategic planning and consulting, oversight of site and area cleanup, and regulatory agency interaction and negotiation. Area is being deindustrialized and subject to infrastructure upgrades to facilitate mixed-use, water front redevelopment along the Sacramento River. Current and future development plans include affordable and market rate housing, along with commercial uses, with multi-modal transportation hub associated with construction of a new bridge linking West Sacramento and Sacramento. Provided technical support during joint meetings between West Sacramento and Sacramento as part of the Broadway Bridge planning efforts. Work is ongoing.

Project Manager, EPA Brownfields Grant, Site-Specific Assessment, Oroville, CA. Conducted under an EPA Site-Specific Brownfields Grant, including a Phase I ESA in accordance with the AAI standard and ASTM E1527-2013 Standards for Phase I Assessments, Phase II assessment work at a Former Lumber Mill Facility followed by development of a Human Health Risk Assessment and recommendations and plans for site remediation following the Analysis of Brownfields Cleanup Alternatives (ABCA) protocol. The work also includes Community Outreach, Brownfield Grant administration support (accessing and uploading reports and data to the EPA's Assessment, Cleanup, and Redevelopment Exchange System or ACRES database), working with the City to enhance their GIS database to include a comprehensive suite of data for all properties evaluated under the site-specific and Community Wide Grants, and using SCS's Central Desktop file and document sharing platform to facilitate information sharing among project stakeholders, including

the consultant selected to conduct Phase I ESA services for another project area. Work also included recommending a regulatory oversight agency.

Project Manager, EPA Brownfields Grant Phase I ESA Portfolio, West Sacramento, CA.

Assessments conducted for 19 parcel groups in accordance with the AAI and ASTM E1527-2013 Standards for Phase I Assessments in support of the City of West Sacramento as part of their Community-Wide EPA Brownfields Grant. The work also included providing assistance to the City of West Sacramento by accessing and uploading reports and data to the ACRES database, providing Grant management support services, and using Central Desktop as a data and document sharing tool with the City.

Technical Support, Phase I ESA Portfolio and Technical Support, West Sacramento Area Flood Control Agency (WSAFCA). Primary reviewer for Phase I ESAs prepared according to the AAI and ASTM E1527-2013 Standards in support of WSAFCA at more than 50 parcels as part of their levee relocation project.

Biotechnical Research Facility Decommissioning Oversight and Reporting, Palo Alto, CA. SCS provided third party oversight on behalf of a Property Manager/Master Leaseholder during facility decommissioning and closure of a biotechnical research facility. The 8.45 acre property is occupied by a 116,172 square foot building, used for approximately four years by the tenant. Upon lease expiration, the tenant was required to surrender the premises free of hazardous substances with applicable closure requirements satisfied and complete. SCS provided key third party technical support including document review (Hazardous Materials Business Plan or HMBP, Facility/ Site plans, Facility Closure Plan, permits, and Facility Closure documentation), site inspections and walk throughs prior to and following facility decommissioning, follow up contacts with oversight agencies to verify the adequacy of the decommissioning work, and preparation and submittal of a Tenant Decommissioning and Facility Closure Report.

Project Manager, Remediation and Monitoring, Former Wood Treating Facility and Redevelopment Site, Alameda, CA. Managing project for private industrial client in support of redevelopment of former wood treating facility property in Alameda along the Oakland Inner Harbor. Work includes revising an existing Remedial Action Workplan (RAW) for submittal to the DTSC to enable property redevelopment for commercial/industrial purposes. Work also includes performing groundwater monitoring and reporting, and design of a site-wide cap to prevent exposure to soils impacted by former wood-treating residual chemicals.

Project Manager, Soil Vapor, Soil, Groundwater and Indoor Air Assessment, Commercial Properties, Mountain View and Cupertino, CA. Work conducted on behalf of private commercial clients redeveloping former commercial/industrial properties. Work included assessment of shallow soil vapor and sub-slab vapor, indoor and ambient air, soil and groundwater affected by volatile organic compounds (VOCs), primarily tetrachloroethylene (PCE), trichloroethylene (TCE), and petroleum hydrocarbons, beneath 3-acre property occupied by two commercial buildings. Work was performed in collaboration with current property owner and the Santa Clara County Department of Environmental Health (SCCDEH) and the City of Mountain View, and included preparation of a CSM to confirm the site could be safely redeveloped.

Project Manager, Soil Characterization and Management – BRIDGE Housing Brownfields Site Redevelopment Project, MacArthur Transit Village, Oakland, CA. Characterization, segregation, handling and disposal of petroleum affected soil and reuse of non-affected soil following RWQCB reuse criteria as part of a large redevelopment project in Oakland. The redevelopment resulted in

conversion of a city block of deteriorating structures into mixed, commercial, and residential use, including affordable housing and a new BART Station and parking garage.

Project Manager, Phase I and II Site Investigations, Lead and Asbestos Survey, Redevelopment of Commercial to Mixed Use, Foster City, CA, Private Developer. Work included performing AAI-compliant Phase I ESAs, and shallow soil investigation to evaluate a property in Foster City for possible redevelopment for mixed use. Work also included performing a building materials lead and asbestos survey to help estimate structure abatement and demolition costs. Client is now completing redevelopment of the property from commercial office spaces to a mixed and high-density residential use.

Project Manager, Pre-Development Soil Sampling, Characterization, and Relocation, Former Agricultural Property, San Jose, CA, Private Developer. Designed and implemented a shallow soil sampling program to characterize and allow safe redevelopment of a 10-acre former agricultural property for residential and commercial use. Soils characterization allowed relocation of organochlorine pesticide (OCP) affected soils to a cell beneath the commercial portion of the site, and use of soils borrowed from the cell area as clean on-site backfill. Site has subsequently been developed with Townhomes and a commercial mall.

Project Manager, Site Assessment, Remediation and Closure, Brownfields Redevelopment, Former Maintenance Facility, Zephyr Gate, West Oakland, CA, Private Developer. Designed and implemented a shallow soil, groundwater and soil vapor sampling program to characterize subsurface VOC and petroleum impacts beneath and adjacent to a former vehicle maintenance facility. Following characterization, work included removal of VOC affected soils, installation of a 10 mil groundwater flow barrier, and injection of oxidants to effect in situ chemical oxidation (ISCO) of residual hydrocarbons and VOCs. Work included development of a Remedial Action Plan (RAP), community notifications and meetings, and use of CLRRRA to enable rapid inter-regulatory agency approval and Deed Restricted closure of the site to facilitate redevelopment into market rate and affordable Townhome complex. Following receipt of Certificate of Completion, client installed a passive vapor barrier beneath the building foundations as a secondary protective measure. Work performed as part of a larger Brownfields Mixed-Use Redevelopment project at former Union Pacific Rail Station.

Project Manager, Site Assessment, Remediation, and Closure, Brownfields Redevelopment Former Vehicle Maintenance Facility, San Jose, CA, Private Developer. Project consisted of characterizing impacts to soil and groundwater associated with a former Garbage Vehicle Maintenance Facility, followed by development and implementation of a RAP under RWQCB jurisdiction. Work resulted in removal and disposal inactive underground storage tanks (USTs) and soils affected by petroleum hydrocarbons, metals, 1,4-dioxane, and VOCs. Work also included well installation and quarterly monitoring and reporting to confirm attainment of low threat closure goals for groundwater. Following submittal of a Summary and Closure Report, RWQCB approved a Deed Restricted case closure, which facilitated site redevelopment for single-family residential project.

Project Manager, Phase I ESA, Phase II Investigation, Building Materials Survey, UST Case Closure and Vapor Barrier Installation, Redevelopment of Commercial Property to Mixed Use, Walnut Creek, CA, Private Developer. Work included an ASTM 1527-05 Phase I ESA, collection of shallow soil samples, performance of a soil vapor survey and building materials (lead and asbestos) survey, and design and installation of a vapor barrier beneath condominium development. The vapor barrier was installed to help mitigate the potential intrusion of benzene vapors into indoor air from an adjacent service station fuel leak. Work was performed under a VCA with the RWQCB.

Project Manager, Investigation, Remediation, and Closure, Former Steel Conduit Manufacturing Facility, Pittsburg, CA, for Residential Redevelopment, Private Industrial Client. Performed work at former conduit manufacturing site to address residual metals (zinc, lead, and copper) on behalf of a private industrial client. Performed site investigation, evaluation of risk to human health and the environment, evaluation, selection, design, and implementation of an appropriate remedial measure, and closure of the site with respect to regulatory agency requirements. Work resulted in removal of site from DTSC's California Bond Expenditure Plan (BEP) or state Superfund List, following Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) protocol. Site and adjoining property were subsequently redeveloped for single-family residences.

Project Manager, Due Diligence Assessment and Environmental Consulting Support, Treasure Island Brownfields Conveyance and Redevelopment, Private Developer, U.S. Navy, and City of San Francisco, CA. Performed comprehensive due diligence review of site investigation and remediation reports for chemical release sites on Treasure Island, followed by development of cost projections for cleanup and closure of each site. Developed a master report and spreadsheet to identify and track chemicals of concern, threatened receptors, and progress of work toward mitigating releases. Used report and spreadsheet to assist developer client in negotiating with U.S. Navy for pricing of conveyance of Treasure Island for private development of planned community (residential and commercial uses).

Project Manager and Director, Due Diligence Assessment, Remediation and Redevelopment of Chemically Affected Brownfields Properties, San Francisco Bay Area. Private and Non-Profit Developer Clients. On behalf of developer clients, performed due diligence assessment activities according to ASTM protocol to allow landowner protection under the AAI Standard at numerous industrial, commercial and agricultural Brownfields project sites ranging from less than 1 acre to more than 20 acres. Subsequent Phase II investigations incorporated collection and chemical analysis of soil vapor, soil and groundwater samples to guide mitigation measures, which enabled safe redevelopment of the properties for mixed use and/or residential use purposes. Chemicals of concern included metals, organochlorine pesticides, petroleum hydrocarbons, asbestos, VOCs, semi-volatile organic compounds (SVOCs), and polychlorinated biphenyls (PCBs). Work has been performed under jurisdiction of RWQCB, DTSC, and local health departments, using VCAs where needed.

Site Investigation and Remediation/Restoration

Project Manager, Bio-Reactor Pilot Test, Former Aerospace Facility, Northern California. SCS is providing environmental consulting support to private industrial client to address perchlorate- and VOC-affected groundwater at their Northern California facility. SCS is in the process of system startup which will be followed by steady state system operation to document the effectiveness of using a proprietary bioreactor to mitigate perchlorate in groundwater extracted from several on-site source areas. If effective, SCS will then design and implement a full scale system at the site to treat approximately 1,200 gallons per minute of affected groundwater for safe discharge under a National Pollutant Discharge Elimination System (NPDES) permit.

Project Director, Due Diligence, Environmental Compliance Audit, and Land Use Covenant Compliance Inspection and Reporting, Former Aerospace Facility, Southern California. SCS is providing environmental consulting support to a private client regarding their Southern California property which formerly housed an aerospace facility. The property is divided into two large parcels, each subject to Land Use Covenants (LUCs) under DTSC oversight. The properties are impacted primarily by VOCs and have each been subject to investigation, remediation and monitoring. To facilitate possible property sale, SCS performed an ASTM E1527-13 and AAI-compliant Phase I ESA, as well as Environmental Compliance Audits (ECAs) for each parcel. SCS also inspected each parcel

and conducted interviews with knowledgeable personnel and prepared Certification Letters for submittal by the client to DTSC.

Representative Chlorinated Volatile Organic Compounds Projects

Project Manager/Director, Subsurface and Indoor Air Assessment, Dry Cleaning Facility, Novato, CA (Ongoing). Work performed on behalf of shopping center developer to evaluate shallow groundwater, soil, soil vapor and sub-slab vapor, and indoor air quality at and near a dry cleaning facility in Novato. The site subsurface contains VOCs related to the on-site dry cleaning facility. Under SFRWQCB jurisdiction, work was conducted to characterize extent of VOCs in shallow groundwater using monitoring wells, followed by conducting soil vapor, sub-slab vapor and indoor air sampling over a four-year period to assess potential for migration of VOCs into indoor air. Most recent work included warm and cold weather soil vapor and indoor air sampling rounds to demonstrate indoor air conditions. SCS prepared and submitted case closure paperwork at the direction of the SFRWQCB, and we are now responding to agency requests for additional information based upon the advent of recently-revised soil vapor ESL values for TCE and PCE.

Project Manager/Director, Subsurface Assessment, Former Dry Cleaning Facility, San Carlos, CA (Ongoing). Work performed on behalf of a family trust to evaluate shallow groundwater, soil, soil vapor and sub-slab vapor at and near a building which formerly housed a dry cleaning facility. The work is being performed under GPP jurisdiction to evaluate the source(s) and distribution of PCE in soil vapor discovered on an adjacent parcel during due diligence work performed on behalf of the City of San Carlos. SCS prepared and implemented a subsurface investigation Work Plan. The work has included review of available records pertaining to dry cleaning operations in the Site vicinity, mapping of nearby infrastructure including sanitary sewer laterals and drains in the Site building, performance of a screening-level soil vapor survey using an on-site mobile laboratory, installation and sampling of semi-permanent soil vapor probes and sub-slab vapor pins, and preparation of a CSM and Summary Report for submittal to GPP.

Project Manager, Site Assessment, Human Health Risk Assessment, Conceptual Site Model, Vapor Intrusion Evaluation, Vapor and Groundwater Monitoring, Remedial System Evaluation, and Further Site Mitigation, Former Copperwood Cleaners, Sacramento, CA (Ongoing). This project is under the jurisdiction of the CVRWQCB and consists of the Copperwood outdoor shopping mall with two former dry cleaning tenants whose operations released chlorinated solvents to site soil vapor, soil and groundwater. The site has an extensive history of environmental activities beginning in the late 1980s with 14 groundwater monitoring wells and 2 monitoring/remediation wells sampled as many as 60 times since 2000. The CVRWQCB issued an Order to the client requesting further assessment of site conditions, the potential for vapor intrusion, an evaluation of the prior remediation system infrastructure and a Conceptual Site Model (CSM) to identify data gaps and next steps for the project. SCS' evaluation of the site conditions concluded a potential vapor intrusion risk exists in the upgradient portion of the site but negligibly at downgradient portion of the site as well as beneath nearby residential properties and other sensitive receptors. SCS is now preparing to implement an additional round of investigation and risk assessment to address identified data gaps and work with the CVRWQCB regarding technical strategies to bring the site to closure.

Project Manager, Soil Vapor, Soil and Groundwater Assessment, Groundwater Monitoring Well Installation, Monitoring, Reporting, and In situ Groundwater Treatment, Former Truck Maintenance Facility, Oakland, CA (Ongoing). Work included assessment of a variety of chemicals, primarily PCE and TCE in shallow soil vapor, soil and groundwater beneath 3-acre truck repair facility, SCS performed additional soil, groundwater, and soil vapor investigations to assess the lateral extent of possible sources for PCE, TCE, and petroleum hydrocarbons. Soil vapor investigations included on-Site analysis to facilitate rapid data interpretation and maximize field

effort. Soil vapor data were initially compared to RWQCB ESLs, followed-by Site specific modeling using the Johnson & Ettinger Model with standard or default assumptions, as well as Site-specific assumptions for Air Exchange Rate (AER) and retardation by subsurface soils to estimate indoor air concentrations. The work included installation of groundwater monitoring wells, initiation of monitoring and reporting program, and treatment of PCE-affected groundwater through in-situ injections of a mixture of carbon substrate, ferrous iron, and *Dehalococcoides sp* microbes.

The work was performed in collaboration with current property owner, former tenant, and business license holder under the jurisdiction of the SFRWQCB under a voluntary cleanup agreement (VCA) and included preparation of a Final Remediation Report, Fact Sheet, Site Management Plan (SMP), a CSM, and a Closure Summary invoking the Low Threat Closure criteria for Chlorinated Solvent sites. Case closure request is under review and consideration by the SFRWQCB.

Project Manager/Director, Petroleum and Chlorinated VOC Site Investigation, Remediation, Monitoring and Reporting, Daly City, CA (Ongoing). Provided environmental consulting support to private industrial client for former solvent storage facility in Daly City. Work has included assessment of soil, soil vapor, and shallow groundwater following removal of eight USTs from construction company headquarters. Under the jurisdiction of the San Mateo County Groundwater Protection Program (GPP), achieved case closure for petroleum-impacts, using UST Cleanup Fund (USTCF) as a reimbursement source. SCS personnel performed subsurface investigation, monitoring and reporting, and remediation to address a range of petroleum hydrocarbons (gasoline, mineral spirits, and diesel) and chlorinated VOC impacts. Subsurface investigations included the collection/analysis of soil, groundwater, and soil vapor samples. Work also included use of CPT-MIP to characterize subsurface. Data were initially compared to RWQCB ESLs – this was followed-up by Site specific modeling using the Johnson & Ettinger Model to estimate indoor air concentrations. The work also included use of a V-Leach model to estimate the potential for migration of VOCs to a deep, beneficially used aquifer. Subsequent focus has been to remediate VOC affected media using dual phase extraction (DPE), carbon treatment, and discharge of treated water to the City of Daly City sanitary sewer system, first under GPP jurisdiction, and now under SFRWQCB jurisdiction under a VCP agreement.

Subsequent work has included a series of soil vapor surveys to characterize the lateral and vertical extent of VOCs, primarily PCE, beneath and near the Site, and negotiation of DPE system shutdown with GPP. We have since submitted a Site Closure Checklist to the SFRWQCB, using the Low Threat Closure Criteria for Chlorinated Solvents guidance document and are now preparing a Work Plan to address data gaps to facilitate low threat closure for chlorinated VOCs in collaboration with the SFRWQCB. SCS personnel are working with the Bay Area Air Quality Management District (BAAQMD) and City of Daly City Department of Public Works to permit and resume operation of the Dual Phase Extraction (DPE) system in pulse mode. SCS is now in the process of preparing a Work Plan to address the remaining data gaps which will enable case closure by the SFBRWQCB and subsequent commercial site redevelopment by the client.

Project Manager Chlorinated VOC Site Investigation, Remediation, Monitoring and Reporting, Skyline Plaza Cleaners, Daly City, CA Project Manager for assessment and remediation of a dry cleaning facility located in a shopping center in Daly City overlying a beneficially used aquifer. Due diligence activities identified VOCs in shallow soil and soil vapor near the on-site dry cleaning facility. SCS personnel subsequently performed a series of soil vapor surveys advancing more than 100 points, using an on-site mobile lab to evaluate the collected vapor samples, advancing soil borings depths of 100 to 150 feet below grade, installing multiple depth wells to allow monitoring of perched water and for soil vapor extraction. A camera survey of the sanitary sewer lines was performed to evaluate the lines for potential compromise and VOC release locations, and an evaluation of the heating, ventilation, and air conditioning (HVAC) system was conducted.

Following completion of site assessment, SCS personnel performed a pilot test to evaluate the viability of soil vapor extraction in removing residual TCE and PCE from the subsurface. The pilot test results were subsequently used to design an SVE system consisting of five multiple depth extraction wells, plumbed via underground piping to a reinforced masonry treatment compound where a 300-cubic-foot-per-minute (cfm) blower routed the extracted vapor through two in-series GAC vessels. The SVE system has operated since 2008, removing more than 8,000 pounds of VOCs from the Site subsurface. Recently, the system operation was modified to a pulsed mode, due to declining VOC removal. The site is now under consideration for closure with a deed restriction to limit property use to commercial purposes.

Project Manager, Site Assessment, Remediation and Closure, Brownfields Redevelopment, Former Maintenance Facility, Zephyr Gate, West Oakland, CA (Closed) Designed and implemented a shallow

soil, groundwater and soil vapor sampling program to characterize subsurface VOC and petroleum impacts beneath and adjacent to a former vehicle maintenance facility. Following characterization, work included removal of VOC affected soils, installation of a 10 mil groundwater flow barrier, and injection of oxidants to effect in situ chemical oxidation (ISCO) of residual hydrocarbons and VOCs. Work included development of a Remedial Action Plan (RAP), community notifications and meetings, and use of CLRRRA to enable rapid inter-regulatory agency approval and Deed Restricted closure of the site to facilitate redevelopment into market rate and affordable Townhome complex. Following receipt of Certificate of Completion, client installed a passive vapor barrier beneath the building foundations as a secondary protective measure. Work performed as part of a larger Brownfields Mixed-Use Redevelopment project at former Union Pacific Rail Station.

Project Director, Investigation, Remediation, Monitoring, Reporting, and Closure, VOC-Affected Sites, Northern and Central California. Provided environmental consulting support to private industrial and regulatory agency clients at sites in Northern and Central California affected by the release of VOCs, primarily PCE and TCE, as the result of releases from dry cleaning and semi-conductor facilities. Work scopes have included development and implementation of Work Plans to assess affected media, evaluation of potential risks to human health and the environment, implementation of measures to mitigate identified risks, performance of groundwater and/or soil vapor monitoring, sub-slab and indoor air sampling, and, in select cases, site closure with respect to regulatory agency requirements. Remedial approaches have included soils removal and disposal, soil vapor extraction, dual phase extraction, in situ chemical oxidation, enhanced in situ bioremediation, and use of engineering controls to reduce or eliminate potential migration of VOC-containing vapors.

Representative Petroleum Hydrocarbon Projects

Project Manager, Remedial Action Plan Implementation, Former Time Oil Bulk Storage facility, West Sacramento Area Flood Control Agency, West Sacramento, CA SCS has supported WSAFCA since 2012 regarding work to meet newly established levee standards via the Sacramento River Southport Early Implementation Project (SRSEIP) to improve the City of West Sacramento's (City's) flood protection system. SCS was selected to implement the Central Valley Water Board-approved RAP to remove petroleum-affected soils at the former Time Oil Company (TOC) bulk petroleum storage facility located along Sacramento River. The field work was limited to a very narrow window of time, due to habitat protection and levee replacement schedule limitations. The excavations removed overburden material, underlying affected material, and seepage berm-levee material to the maximum extent possible. Soils excavation from the RAP-prescribed footprint for the northern and southern areas and from the northeastern excavation extension resulted in the removal of 4,400 tons of overburden material and 2,450 tons of petroleum affected soils. The overburden soils were segregated, tested, and re-used as backfill. The petroleum impacted soils were disposed as Class II, non-hazardous material. Confirmation sampling data suggest the excavation work removed much of the petroleum-affected soils, with an estimated 575 cy or 920 tons of residually-affected soils remaining in place beneath the levee due to the inaccessibility of the soils, with concurrence from the CVRWQCB. SCS is in the process of implementing a post-excavation groundwater monitoring program to demonstrate the condition of groundwater beneath the Site, adjacent to Sacramento River. SCS was also able to successfully obtain over \$700,000 in grant funding for WSAFCA from the SCAP fund, enabling West Sacramento to preserve much needed City funds.

Project Manager, Revised Remedial Action Plan Implementation, Former Chevron Service Station, 192 El Camino Real, South San Francisco, CA SCS implemented a Revised RAP under the jurisdiction of San Mateo County Groundwater Protection Program (GPP) as part of property redevelopment. SCS removed overburden material and underlying petroleum affected soil from the RAP-prescribed footprint using a sloped, un-shored excavation. The work removed 4,220 cy or

5,200 tons of material, 600 cy of which was tested and re-used as backfill. The petroleum impacted soils were disposed as Class II, non-hazardous material. Confirmation sampling data suggest the excavation work removed much of the petroleum-affected soils, with a limited volume of residually affected soils left in place due to the presence of utilities running along nearby El Camino Real. SCS is now in the process of implementing a post-excavation soil vapor monitoring program to confirm the Site meets Low Threat Closure Policy (LTCP) criteria, enabling subsequent commercial redevelopment of the Site.

Project Director, Pre-Refinance Subsurface Assessment, Former Service Station Facility, Danville, CA. Work performed on behalf of commercial property owner prior to refinancing property for potential future redevelopment. Client purchased former service station property which was then developed with commercial building. Work included shallow soil, groundwater and soil vapor sampling to document subsurface conditions. Work conducted under permit from Contra Costa County Environmental Health Services. Results of work were provided to RWQCB and enabled property refinancing and possible future redevelopment.

Project Director, Treatment System and Monitoring Well Decommissioning and Case Closure, Morgan Hill Corporation Yard. After performing an extensive subsurface assessment, groundwater monitoring program, and remedial system installation, operation, and system shutdown, the SCCDEH approved SCS's Updated Corrective Action Plan and Request for Case Closure report to request for low threat case closure of a petroleum and methyl tertiary butyl ether (MTBE) release case in Morgan Hill. SCS obtained permits to destroy groundwater monitoring wells and treatment system extraction wells associated with the City of Morgan Hill Corporation Yard project. SCS and subcontractor proceeded with destruction of 42 monitoring and treatment system wells, groundwater conveyance and discharge piping, and removal of the groundwater extraction and treatment system elements, including granular activated carbon vessels, system controls, and the extraction system blower. The SCCDEH approved the subsequent System Decommissioning Report and the case has been closed.

Project Manager, Investigation and Participation in Responsible Party Group Meetings and Negotiations, Cleanup and Closure of Former Bulk Fuel Storage Plant, Napa River. Supported major oil company by investigating subsurface of former bulk fuel terminal along Napa River leading up to river restoration/levee removal project involving five bulk terminals, the City of Napa, the Napa Flood Control District, the RWQCB, the U.S. Army Corps of Engineers (USACE), and the U.S. Fish and Wildlife Service (USFW). Work included performing sample collection and analysis, and development of a hydrostratigraphic model to explain fate and transport of residual hydrocarbons and free product beneath the bulk plants. Work resulted in a no further action determination for client, and allocation of responsibility to other terminal operators.

Project Manager, Cleanup and Closure of Historic Fuel Storage Tanks, Alcatraz Island, National Parks Service. Cleanup and closure of historic above ground fuel tanks on Alcatraz Island, including overwater transport of hazardous and non-hazardous waste for disposal. Project also included treatment and discharge of tank rinsate water to San Francisco Bay under National Pollutant Discharge Elimination System (NPDES) Permit from the RWQCB. Coordinated work with numerous regulatory agencies having overlapping jurisdictions, including the RWQCB, the United States Coast Guard, the Department of Fish and Game, the USACE, the California State Lands Commission, the Bay Area Air Quality Management District, and the National Park Service.

Program Manager/Technical Coordinator, Major Petroleum Company UST Site Portfolios, Northern California, Oregon, and Washington. Led environmental consulting support services for major petroleum clients at portfolios of UST sites across the Pacific Northwest. Oversight of multi-disciplinary teams to address petroleum releases from USTs at retail distribution facilities, typically as part of term contracts for portfolios of 50 to 200 sites. Work performed under the jurisdiction of

Local Oversight Programs (LOPs) or the RWQCB with work consisting of development and implementation of Work Plans to assess affected media, evaluation of potential risks to human health and the environment, implementation of measures to mitigate identified risks, performance of groundwater and/or soil vapor monitoring, and site closure with respect to regulatory agency requirements. Project work performed according to contract terms with client, using quarterly to annual budgets and portfolio metrics to track and evaluate the success of work performed as part of the contract.

Project Manager, State Water Resource Control Board UST EAR Fund Sites, Northern California.

Project Manager for a portfolio of UST release cases under the oversight of RWQCB case workers as part of the State Water Resources Control Board (SWRCB) Emergency, Abandoned and Recalcitrant (EAR) Fund administered by the Department of General Services (DGS). Term contract work included developing work scopes and budgets in collaboration with RWQCB staff for approval by SWRCB EAR Fund and UST Fund personnel, and contractual approval by DGS at 10 sites in Northern California. Work included oversight of multi-disciplinary team to address petroleum releases from USTs at abandoned properties, with work consisting of development and implementation of Work Plans to assess affected media, evaluation of potential risks to human health and the environment, implementation of measures to mitigate identified risks, performance of groundwater and/or soil vapor monitoring, and site closure with respect to regulatory agency requirements.

Project Manager/Director, UST Site Investigation, Remediation, Monitoring and Reporting, and Closure, Private San Francisco Bay Area Sites. Provided environmental consulting support to private industrial clients at sites across Northern to address petroleum and/or mixed chemical releases from USTs. Work performed under the jurisdiction of LOPs with work consisting of development and implementation of Work Plans to assess affected media, evaluation of potential risks to human health and the environment, implementation of measures to mitigate identified risks, performance of groundwater and/or soil vapor monitoring, and site closure with respect to regulatory agency requirements. The majority of the projects performed according to the SWRCB USTCF guidelines to facilitate cost reimbursement. Remedial approaches have included soils removal and disposal, soil vapor extraction, dual phase extraction, in situ chemical oxidation, enhanced in situ bioremediation, and use of engineering controls to reduce or eliminate potential migration of VOC-containing vapors.

Managed/Conducted Investigation of Process and Treatment Impoundments and Fuel Storage and Conveyance Facilities, San Francisco Bay Area Refineries. Worked on behalf of several major petroleum refining companies to assess the condition of process and waste water treatment impoundments and fuel storage and conveyance facilities at San Francisco Bay Area refineries under the Toxic Pits Cleanup Act (TPCA). Work included chemical characterization of contained wastes, waste volumes, distribution and extent of released constituents, if applicable, and physical condition of impoundment liners and levees, as well as installation of groundwater monitoring wells, and collection and analysis of soil and groundwater samples. Results used to assess the need for impoundment modifications or mitigation of residual chemicals as part of TPCAs, as well as Hydrogeologic Assessment Reports (HARs) demonstrating the nature and extent of petroleum plumes, and hydrogeologic conditions present beneath refinery operating units. Work performed under the oversight of the RWQCB.

Representative On-Call Contract Projects

Project Manager, On-Call Services Contracts, City of Milpitas, Sacramento, San Pablo and Yolo County, CA. Work includes providing on-call investigation and remediation support to the cities of Milpitas, Sacramento, and San Pablo and Yolo County on an as-needed basis to support Capital Improvement Projects and Brownfields redevelopment projects. Work scopes range from soil

characterization prior to construction and disposal, to site investigations, remedy design and implementation, yearly inspection and reporting related to a remedial cap, industrial hygiene services and building materials surveys.

Project Manager, On-Call Environmental Services, Capital Improvement Projects, Milpitas, CA.

Project Manager for on-call services contract to City of Milpitas for environmental services in support of Capital Improvement Projects (CIP) and redevelopment work in the City for a 3-year term. Contract has been ongoing with SCS since 2005 and has included testing of soils, water, building materials, and construction and demolition materials for VOCs, petroleum, metals, asbestos, SVOCs, and PCBs to enable CIP project planning and implementation.

Water Supply

Project Director, Compliance Order Technical Support, Twin Valley Water Company, Morgan Hill, CA.

Supported small, private water company in Morgan Hill with respect to Compliance Orders issued by the State Water Resources Control Board (the Board), Division of Drinking Water (DDW). The work included preparing a Corrective Action Plan (CAP) describing the necessary steps to comply with the DDW Orders for the Water System. In particular, SCS evaluated alternatives to ensure delivery of water of sufficient quantity and quality to meet the current and projected demands of the Water System customers. SCS prepared a Source Capacity Planning Study, evaluated and recommended pilot test alternatives to address nitrate-impacted groundwater, provided siting and funding support for possible additional supply well locations, and prepared technical reports for submittal to the DDW to maintain compliance with the Orders.

Project Director and Technical Support, Supply Well Siting and Installation, Golf Course Management Client, Northern California.

Supported Golf Course Management Client by providing technical support with respect to additional water supply for two golf courses in Northern California. Work included conducting background research on hydrogeology at and near the courses, identifying potential additional supply well locations and well yields, and in one case, providing technical oversight during well installation and development prior to connection to the course irrigation system.

Principal Hydrogeologist, Source Vulnerability Assessment, Major Beverage Manufacturer, United States and Canada.

Evaluated the reliability of water supply for a major beverage manufacturer at their bottling plants in United States and Canada. Work involved a comprehensive review and analysis of the factors potentially affecting water supplies to each bottling plant. Considered elements included annual rainfall/precipitation, term, volume and duration of water contracts, water quality, demands upon the water supply, watershed uses, environmental, seismic, and infrastructure conditions, and redundancy of water supply in the event of disruption to primary water supply. Work also included an evaluation of political, economic and other potential disruptions to water supply. Work presented in the form of a Source Vulnerability Report and as a power point presentation to corporate and bottling plant management staff to facilitate better management of identified vulnerabilities or risks.

Storm Water

Project Director, Storm Water Pollution Prevention Plan (SWPPP) Support, Craft Brewing Facilities, Wineries, and School Bus Maintenance Facility, Northern California.

Provided technical support to numerous clients in Northern California in complying with the requirements set forth in the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Associated with Industrial Activities (Order NPDES No. CAS000001) (Industrial General Permit or IGP). The IGP became effective on July 1, 2015, and required certain industrial clients (according to

Facility Standard Industrial Classification or SIC code), to achieve permit compliance. SCS therefore visited each client facility and assessed potential industrial pollutant sources, corresponding Best Management Practices (BMPs), identified drain areas and discharge locations, and confirmed whether storm water and/or non-storm water discharges were likely to occur at each facility. On this basis, SCS then either worked with the clients to prepare a site-specific SWPPP or No Exposure Certification (NEC). SCS then assisted each client in delivering the SWPPP or NEC to the Storm Water Multiple Application and Report Tracking System (SMARTS) database. In select cases, SCS has provided subsequent training for facility personnel and Storm Water monitoring and reporting services.

Litigation Support

Litigation Support, Private Industrial Client, Former Wood Treating Facility, Sonoma County, CA.

Supported private industrial client in pre-trial litigation support by performing three primary tasks with respect to a former wood treating facility property impacted by SVOCs and hexavalent chromium. The work included accessing, indexing, and reviewing all readily available documents pertaining to the site. The subsequent work consisted of evaluating the available data to assess whether and to what extent operations in other areas may have contributed constituents of concern to site. The evaluation included use of data collected coincident with the records evaluation. The results of this evaluation were used to develop an allocation of costs associated with mitigation of conditions attributable to the clients' historic operations and those attributable to other Responsible Parties. The evaluation and cost allocation were used to inform an expert report provided to the Clients' legal counsel.

Litigation Support, Major Petroleum Client, Former Bulk Fuel Storage, Transfer, and Distribution Facilities, San Francisco International Airport, CA.

Provided technical review of investigation and soils mitigation efforts, as well as associated allocation of costs prepared by representatives of fuel consortium at San Francisco International Airport. Attended mediation and assisted during settlement discussions regarding allocation of responsibility and cost. Dispute successfully settled within desired budget constraints of client.

Litigation Support, Major Petroleum Client, Multiple Party Projects in Northern California.

Supported major petroleum client at two former bulk fuel storage facilities along waterways in Northern California. Work included review of historic documents, evaluation of work performed by third party neutral consultant, and preparation of soil volume estimates and associated cost estimates for various proposed remedial approaches. Assisted during mediation of dispute among major petroleum companies and joint county and federal agencies as part of water course restoration projects. Disputes were settled by parties within desired budget constraints of client.

Technical and Mediation Support, Former Retail Petroleum Distribution Facility, San Jose, CA.

Supported major oil client by reviewing technical data, developing approach to refuting technical argument by claimant regarding likely timing and volume of petroleum release. Property was previously a retail service station, which was subsequently redeveloped as a restaurant. Presented case in mediation, with subsequent settlement by parties within desired settlement budget constraints of client.

Litigation Support, Dry Cleaning Operator, Northern California. As a client advocate, identified data gaps, written a position paper to the overseeing regulatory agency, and provided oversight of the selected third party consulting company. Technical and cost allocation support during mediation with a successful dispute resolution.

Litigation Support for Printing Company, Multiple Party Dispute, Lodi, CA. Participated in mediation meetings and presentations, provided technical support, and oversight of the selected third party consulting company. Technical and cost allocation support during mediation. Successful dispute resolution.

Environmental Risk Management

Technical and Fiscal Review and Evaluation of Applications for Environmental Insurance, United States. On behalf of major insurance company, reviewed and evaluated technical and cost proposals for remedial work at chemically affected sites across the United States. Evaluated the technical and fiscal feasibility of approaches proposed by consulting companies prior to issuance of insurance policies by the insurer. Developed potential best case, reasonable case and reasonable worst case technical work scopes and attendant costs for use in evaluating approaches proposed by consultants. Performed work at a range of affected commercial and industrial facilities impacted by metals, OCPs, petroleum hydrocarbons, asbestos, VOCs, SVOCs, and PCBs.

Project Director, Guaranteed Fixed Price Contract, VOC-Impacted Property, San Mateo County, CA. Developed a Guaranteed Fixed Price remedial approach for VOC-affected property in Menlo Park, CA. Work included development and implementation of a technical approach to mitigate TCE-affected soil vapor, soil and groundwater resulting from releases by prior site use for semi-conductor development purposes. Reached contractual agreement with property owner to address TCE release for a fixed price.

Project Director, Guaranteed Fixed Price Contract, Dry Cleaner VOC Releases, Livermore, CA. Developed a Guaranteed Fixed Price program and contract for multiple responsible party group to address VOC-affected soil vapor, soil and groundwater resulting from PCE releases from two dry cleaners (Livermore Arcade Shopping Center and Millers' Outpost Shopping Center or LASC/MOSC) in Livermore. Contract is being administered by a Third Party Consultant on behalf of RP Trust Group, with the objective of mitigating and closing the VOC release cases under RWQCB jurisdiction.

Emergency Response Management

Program Manager, Rapid Emergency Response Program, Petrochemical Clients and Major Insurance Company, Western United States. Developed and managed program consisting of a 24-hour on-call network of geographically distributed; trained responders available to mobilize to incident locations and act as client representative. Program included oversight of more than 20 responses in Arizona, California, Oregon, and Washington, including protection of river bank and salmon breeding waterway on Native American lands in Oregon, and mitigation of home heating oil tank overfills various locations in Pacific Northwest.

Solid Waste Landfills

Project Manager, Environmental Consulting Support, Redevelopment of Former Burn Dump, South San Francisco, CA, SMPO ELS. SCS was chosen to help SMPO ELS (Memphis, TN) develop the westerly portion of a 7.5-acre site in South San Francisco, a portion of which contains fill soils mixed with residual burn ash material. The burn ash is overlain by clean soils. The property is also directly east of a closed municipal solid waste landfill owned by others. The development plan includes a 20,000-square-foot office building with associated parking and landscaping. SCS prepared an SCP/PCCMP outlining remedial measures to allow development in light of RECs. The plans were prepared in accordance with local land use and regulatory requirements, and were readily approved by oversight agencies. SCS also prepared an ASTM E 1527-13 and AAI-compliant Phase I ESA in support of the client's initial study activities required by the City of South San Francisco.

SCS will also provide the engineering, planning, permitting, design, construction oversight and closeout services required to meet environmental regulatory requirements for the development of the site, including working directly with regulatory agencies, assessing and resolving any environmental issues, and designing and engineering soil gas and groundwater protection and monitoring systems. The work is ongoing.

Project Manager, Environmental Consulting Support, Redevelopment of Former Municipal Solid Waste Landfill, Northern CA, Private Client. SCS was chosen to help a private developer client evaluate environmental, civil, geotechnical and regulatory issues associated with purchase and redevelopment of a portion of a former municipal solid waste landfill in Northern California. The proposed site redevelopment will include construction of commercial office buildings which will require penetration of the existing landfill cap and contained waste, including an area with documented free phase petroleum product. To date, SCS has reviewed, evaluated and provided recommendations regarding technical documents associated with the site, provided cost estimates for potential future assessment and mitigation measures, provided input regarding contractual and technical discussions with the current owner and municipality, and participated in stakeholder meetings and conference calls.

Project Manager, Environmental Consulting Support, Redevelopment of Former Landfill, Northern CA, Private Client. SCS was chosen to provide environmental, real estate consulting, and engineering and contracting services to a private client with respect to potential redevelopment of a former 16-acre landfill in Northern California. SCS was chosen to provide three primary services including (1) managing O&M of the site; (2) preparing a remedial plan and cost estimates for off-hauling wastes and debris contained in the landfill to allow mixed-use residential/office/transit parking development; and (3) preparing preliminary design and cost estimates for constructing a parking lot on top of the landfill.

The landfill is located within a key portion of a redevelopment area in a downtown transportation district, and redevelopment considerations include leaving the landfill as is and constructing a parking lot, or removing/relocating contained waste, including metal slag that may or may not have residual value or reuse potential. SCS's services will include performing O&M inspection and reporting, annual groundwater monitoring and reporting, technical, real estate, cost and regulatory analysis of potential site "clean closure," preparation of conceptual and various levels of design documents for redevelopment, based upon an iterative analytical process performed in conjunction with the client, and providing design-build services for the selected option. SCS's services are ongoing.

Project Manager, Waste Discharge Requirement (WDR) Response, L and D Landfill, Sacramento, CA. Project Geologist responsible for reviewing and preparing a response to Central Valley Water Board (CVRWQCB) Draft WDR for the landfill. The response provided technical responses and approaches to areas of concern identified by the CVRWQCB regarding the separation of landfilled waste and underlying groundwater, the effectiveness of an existing groundwater extraction and treatment system (GWETS) and associated piezometers in capturing dissolved phase constituents and in accurately monitoring the potentiometric surface created by the GWETS, investigation of possible off-Site migration of dissolved constituents, and revising the Site Monitoring and Reporting Program. The CVRWQCB is in the process of finalizing the WDRs and SCS will assist L and D with subsequent WDR compliance work.

Project Manager, Solid Waste Assessment Test (SWAT) Investigation, Sanitary Landfill, Central Valley, CA. Manager of project to evaluate the potential presence of residual constituents released from sanitary landfill in the Central Valley of California. Work included collection of soil, groundwater,

and vadose zone pore water samples to assess chemical conditions and physical conditions beneath and surrounding the landfill for possible further assessment, mitigation and/or monitoring.

Project Geologist, Hydrogeologic Investigation, Bonzi Landfill, Modesto, CA. Conducted field work to evaluate the thickness of landfilled material, chemical and physical composition of underlying native/liner materials, and the chemical condition of groundwater beneath and adjacent to the landfill. Work also included installation of monitoring and extraction wells, and piezometers to allow water level measurements. Work was performed to facilitate modeling of water bearing horizons beneath and adjacent the landfill and assess the potential fate and transport of chemicals released from the landfill. Work performed under the jurisdiction of the RWQCB.

Project Geologist, Hydrogeologic and Stratigraphic Investigation, Hazardous Waste Landfill in North Central Oregon. Evaluated the stratigraphy beneath and adjacent to a hazardous waste landfill in north central Oregon, using geophysical logs and soil boring logs to map distinct low permeability and high permeability horizons in three dimensions. Prepared a site-wide fence diagram to depict the distribution of the fine-grained, low-permeability zones and allow identification of areas requiring further assessment and/or mitigation to address potential migration of VOCs in the subsurface.

Project Geologist, Field Investigation and SWAT Report Preparation, Santa Clara Valley Landfill, California. Conducted field work to evaluate the potential presence of residual constituents released from sanitary landfill in the Santa Clara Valley of California. Work included collection of soil, groundwater, and vadose zone pore water samples to assess chemical conditions and physical conditions beneath and surrounding the landfill for possible further assessment, mitigation and/or monitoring.

Petroleum and Geothermal Exploration

- Project Manager, Performed Basin Analysis Studies for petroleum potential and exploration, Muddy Formation and Forbes Formation studies for RPI Colorado and RPI Pacific.
- Exploration Geologist, Anadarko, D-J, Williston, and San Juan Basins, GADSCO and R.R. Wilhour, Inc.
- Well Site Geologist/Mudlogger, Geysers area Geothermal Fields in California.