

CHARLES HOUSER, PG, CEG, CHG

Education

MS – Geological Sciences, San Diego State University, 1997

BS – Geological Sciences, San Diego State University, 1986

Professional Licenses

Certified Hydrogeologist – California (No. 945)

Certified Engineering Geologist – California (No. 2206)

Professional Geologist – California (No. 5781)



Specialty Certifications

OSHA 40-hour Hazardous Waste Operations and Emergency Response Training

Professional Experience

Mr. Houser has 34 years of experience in the earth science industry. He is a registered geologist, certified engineering geologist, and certified hydrogeologist with experience conducting investigations on lithological formations. His experience includes environmental site assessments (ESAs), groundwater monitoring, fault and landslide investigations, groundwater resource studies, geological mapping, and geotechnical investigations. He has assessed and remediated underground storage tanks (USTs) and obtained reimbursement for cleanup costs from the California Underground Storage Tank Cleanup Fund. Mr. Houser's understanding of geology and experience in the earth science industry enable him to prepare useful hydrogeological research, accurate environmental assessments, and appropriate remediation approaches. Notable projects that Mr. Houser has been involved in are described below.

Underground Storage Tanks

Former Gasoline Service Station, Pacific Beach, San Diego. Mr. Houser conducted Phase I/II assessment activities for a client with a restaurant/former gasoline service station site in Pacific Beach. As a result of his assessment, the County re-opened a leaking underground storage tank (LUST) case. The former station operator, a large petroleum company, assumed responsibility for the case and completed the assessment activities, eventually obtaining a closure letter from the agency. During redevelopment of the site to a mixed-use residential/retail development, site grading operations encountered petroleum hydrocarbon contamination within the construction excavation. Mr. Houser quickly characterized and profiled the impacted soil for disposal, and oversaw the excavation and disposal of approximately 1,300 tons of impacted soil, as well as confirmation sampling after removal of the impacted soil. During excavation activities, a previously unknown UST was discovered. Mr. Houser arranged for permitting and removal of this tank. The challenge with this project was to conduct the soil removal and tank removal activities as quickly as possible to minimize delays to the construction schedule. With discovery and removal of the previously unknown tank, the client may now qualify for reimbursement of assessment and cleanup costs from the state's LUST Cleanup Fund.

San Diego County UST Site Investigations. Under this contract, San Diego County Department of Public Works had six leaking UST cases located throughout the county. As Project Manager, Mr. Houser conducted site investigations that involved groundwater monitoring and sampling for phase-separated hydrocarbons, volatile organic compounds (VOCs), and other constituents of concern. Collected data were analyzed for quantitative trends in constituents of concern. Mr. Houser also prepared site conceptual models and hydrographs. Using hydrographs, he demonstrated that constituents of concern are generally stable or decreasing. By the completion of the term of the contract, all six leaking UST cases had received regulatory agency closure.

UST Releases at Havasu Landing, California. Two separate release cases are open at Havasu Landing, California. The larger of the two releases had a free product plume approximately 300 feet by 150 feet. Mr. Houser oversaw remediation activities, using high-vacuum dual-phase extraction (HVDPE). During a total of about 8 months of HVDPE, approximately 100,000 pounds of hydrocarbons have been removed, and the free product plume has been reduced to a much smaller area. Additional HVDPE will be done to complete remediation of the free product, and a Corrective Action Plan (CAP) is being prepared for additional remediation of dissolved-phase petroleum hydrocarbons.

The other release case is close to the marina at Havasu Landing. The regulatory agency requested additional assessment in the form of groundwater monitoring wells. Mr. Houser has conducted assessment activities to evaluate possible vapor migration to a nearby office building and residence, and conducted a soil and groundwater assessment to evaluate concentrations of petroleum hydrocarbons in the source area and vicinity of the release. With agency approval, additional groundwater monitoring wells have been installed and data from the wells was used to evaluate concentrations of petroleum hydrocarbons in groundwater in the source area, as well as to delineate the extent of the dissolved hydrocarbon plume and evaluate trends in hydrocarbon concentrations over time and potential risk to receptors in the vicinity.

Former Gasoline Service Station in La Mesa. Based on information obtained during a Phase I ESA conducted by SCS, the site was a gasoline service station from as early as the 1920s until sometime in the mid-1960s. Initially, Mr. Houser conducted a geophysical survey to assess whether USTs were still present at the Site. This survey indicated at least three USTs present, and the USTs were permitted for removal. Upon excavation and uncovering the tanks, a fourth UST was discovered which was also permitted and removed. A groundwater monitoring well was installed and sampled, and, based on assessment results, the case will likely be closed in the near future.

Former Jacumba Texaco Site Assessment and Remediation. Mr. Houser conducted assessment activities pertaining to a release from a UST at the Jacumba Texaco. Based on assessment results, he conducted a pilot test for remediation of petroleum hydrocarbons in the groundwater and completed a corrective action plan. Corrective action measures were implemented and after post remediation monitoring, the case was closed in January 2012.

Pine Valley Trailer Park. Mr. Houser conducted groundwater assessment and remediation at Pine Valley Trailer Park in eastern San Diego County. The assessment involved fractured rock aquifer conditions and free product recovery. After remediation was completed and a risk assessment had been conducted, several impediments to closure were brought forward by the San Diego County Department of Environmental Health (DEH). These impediments were addressed and the case was closed in January 2015.

Shuster Oil. At the Shuster Oil petroleum distribution facility in Escondido, CA, Mr. Houser has conducted groundwater assessment activities and remediation pilot testing, and prepared a corrective action plan that has been approved by the San Diego County Department of Environmental Health. He oversaw the implementation of the regulatory agency approved corrective action, and the case was closed in June 2015.

El Capitan Oil. El Capital Oil in Santee, CA, has impacted soil and groundwater. Mr. Houser completed on- and off-site assessment activities including a risk assessment address possible vapor migration into the Site building, conducted high-vacuum extraction pilot testing, and implemented interim remediation. The case was closed in May 2017.

Proposed Redevelopment Site on El Cajon Boulevard in San Diego. Mr. Houser oversaw the removal of four USTs, three at one location of the Site and one in another part of the Site. These were managed by the regulatory agency as two separate UST cases. For the portion of the Site with three USTs, upon removal of the USTs, Mr. Houser conducted post tank removal assessment and excavation of impacted soil in accordance with an approved workplan. Impacted soil was successfully removed and transported to a licensed facility for recycling, and the case received regulatory agency closure. For the single UST case at the site, after post tank removal assessment and excavation was conducted, additional assessment in the form of drilling and sampling soil borings successfully delineated the extent of the impacted soil and confirmed that the release had not impacted groundwater, and that case also received regulatory agency closure.

G Street Remediation. Pattern drilling was conducted to remove relatively deep contamination under the sidewalk at the site. Mr. Houser monitored the remediation, conducted geologic observation, and coordinated all field activities. Field activities involved regular (daily) scheduling of subcontractors for drilling, laboratory analysis, and backfill of borings.

Mission Boulevard and Pacific Beach Drive. The Mission Boulevard and Pacific Beach Drive case was opened for construction at a former gasoline station. The project included excavating and disposing impacted soil, groundwater assessment, a health risk assessment, and San Diego County Department of Environmental Health approval to mitigate the site using a vapor barrier. The case received regulatory agency closure and the site is now developed as a multi-story mixed-use commercial and residential development.

Environmental Site Assessments

Mr. Houser has completed Phase I ESAs and subsurface investigations for a large variety of land uses and conditions. The following is a representation of the types of properties and conditions for which Mr. Houser has completed ESAs:

Phase I ESAs:

- Redevelopment project in the North Park neighborhood in the City of San Diego.
- Caltrans Route 105 easement adjacent to Los Angeles International Airport and Hughes/Raytheon facilities.
- Numerous graded but undeveloped sites associated with the Parkway Business Centre in Poway, CA.
- El Centro Motors – Former dealership from 1920s with a long history of environmental issues.
- California Environmental Quality Act (CEQA) process on numerous projects in San Diego and Imperial Counties.
- Proposed school sites in the City of San Diego.

Subsurface Investigations:

- Caltrans maintenance stations in Boulevard and Torrance, CA.
- Numerous aerially-deposited lead investigations for Caltrans for proposed road and freeway improvements throughout the San Diego area and Los Angeles basin.
- Caltrans project along Route 57 in Brea, CA, with native petroleum hydrocarbon deposits along a cut slope.
- Assessment of groundwater conditions for proposed lowering of the freeway along Interstate-5 in Buena Park, CA.
- Assessment of residential development in San Diego, CA, with petroleum hydrocarbon-impacted soil/rock and methane in shallow soil vapor.
- Property in San Diego with thick (up to 8 feet) free product and water table elevations apparently influenced by faulting or similar subsurface structure.

Litigation Support

Northern San Diego County Diesel Fuel Spill. A public utility company caused a diesel spill that threatened a fresh water spring used as a drinking water source. The site is underlain by weathered and fractured granitic rock. In addition to reviewing data collected by the utility's consultant during assessment and cleanup of the diesel spill, Mr. Houser conducted an assessment of the nature and orientation of the fractures and potential fracture connectivity between the diesel release area and the spring. This assessment included review of available documents addressing geologic and groundwater conditions in the region of the site, field mapping of the locations and orientations of fractures in available exposures in the immediate proximity of the site, and development of a 3-dimensional model of the fracture system between the release site and the spring. The result of the assessment was to conclude that potential connectivity did exist between the diesel release and the spring.

Assessment of Sedimentation Rates after the Rice Fire, Northern San Diego County. Following the 2007 Rice Fire in the Fallbrook/Rainbow area of northern San Diego County, several man-made ponds of an agricultural ranch filled with sediment and could no longer be maintained as ponds. The sediment that filled the ponds contained detectable concentrations of pesticides, limiting options for removal of the sediments and increasing substantially the cost of disposal of these sediments. Mr. Houser conducted an assessment designed to evaluate the quantity of sediment deposited after the Rice Fire. Analysis of soil core samples collected from a pond that experienced significant sedimentation after the fire revealed features in the soil consistent with rapid deposition above approximately 8 foot depth. At and below approximately 8 feet, features consistent with slow, normal deposition in a healthy pond environment were observed. These observations allowed the plaintiff to demonstrate that the fire did cause erosion leading to rapid sedimentation of the ponds and damage to the property.

Water Resources

San Marcos Creek Water Quality Study. SCS is conducting a study of the San Marcos Creek Valley to understand how the lake water levels, surface water flows, and groundwater are interacting and affecting water quality. Mr. Houser conducted long-term groundwater monitoring using submerged pressure transducers in groundwater wells. Groundwater samples from quarterly sampling events

were analyzed for nutrients, and hydraulic conductivity was calculated from data generated by performing pump tests on selected wells. The data, along with nutrient levels in the creek valley groundwater, were analyzed to determine how these water sources interact and affect overall water quality.

Major Golf Course Project. Mr. Houser conducted hydrogeological evaluation and fracture trace analysis at a large golf course underlain by fractured granitic rock in central San Diego County. The purpose of the evaluation was to assess if increasing groundwater usage could adversely affect neighboring groundwater usage. Mr. Houser prepared a hydrogeological assessment report, prepared annual groundwater reports pursuant to requirements of the local government entity, and conducted an aquifer test to evaluate the response of neighboring wells to pumping at the golf course.

Carmel Mountain Ranch Golf Course. Mr. Houser conducted hydrogeological evaluation and fracture trace analysis at the Carmel Mountain Ranch golf course near Poway, CA. The golf course is underlain by fractured granitic and volcanic rock. Based on the evaluation and analysis, a test boring was drilled at the golf course. Mr. Houser oversaw the drilling activities and reviewed boring logs. The test boring was converted to a groundwater supply well to diversify the course's water supply.

Seascape Golf Course. Mr. Houser designed and constructed a new supply well to replace an existing well that had been requiring greater and greater maintenance over time. After initial drilling of a pilot boring, it was logged to record lateral resistivity and spontaneous potential ("E-logging"). The E-log was used to determine the screened intervals for the well. The boring was overdrilled and a 12-inch diameter well casing and screen set per the design. The well yield surpassed the expectations of the golf course.

Jacumba Groundwater Resource Development. For groundwater resource development in Jacumba, CA, Mr. Houser conducted hydrogeological research; completed geological mapping of approximately 3 square miles; installed test wells at multiple sites; and oversaw the drilling and installation of two approximately 500-foot-deep municipal groundwater supply wells.

Summit Drive Drainage Improvement. The San Diego County Summit Drive Drainage Improvement Project requires dewatering. As Project Manager, Mr. Houser completed a dewatering sampling study to estimate the discharge that proposed construction dewatering would generate. He also assessed, in the course of the study, the potential impact that construction dewatering may have on the underlying aquifer.

Guatay Mutual Benefits Corporation. Guatay Mutual Benefits Corporation (GMBC) applied for a grant to develop and improve their groundwater resource in the community. To support the grant application, Mr. Houser conducted field and aerial photo research. He evaluated multiple potential well locations and existing groundwater production data for the community. Eventually, Mr. Houser drilled two test wells for GMBC. Both test wells have now been completed as municipal supply wells, and Mr. Houser is managing the construction of the water pipeline and pump houses, including a SCADA system, to convey water from these new wells into the community water supply system.

San Diego County Road Improvements. To support San Diego County road improvement projects, Mr. Houser has collected and analyzed soil and groundwater data to evaluate aquifer characteristics for estimation of potential discharge during dewatering operations; determined groundwater quality and compliance with the San Diego Regional Water Quality Control Board order for discharge to inland surface waters; and prepared a groundwater treatment plan to mitigate any groundwater impacts. A treatment system was designed based on the estimated discharge during dewatering to treat constituents exceeding the levels in the order.

Hydrogeological Investigation – Indian Reservation Water Resources Study. Mr. Houser was the principal investigator for a water resource study on a portion of an Indian reservation in northern San Diego County. The study involved evaluation of existing water resources and potential additional resources, and included data research, field mapping, and geophysical surveys of the field area. A principal challenge of the project was geologic structure in the area, which includes a major Southern California fault zone. Several favorable locations for exploratory test wells were identified for drilling.

Drinking Water Source Assessment, San Marcos. Public water supply wells must be licensed by the State of California. As part of the licensing process, and assessment of possible contamination sources that might impact the water source well must be performed. In the case of the San Marcos well site, Mr. Houser conducted the assessment in accordance with the State requirements. Several potentially contaminating sources were identified and addressed during the assessment, and a recommendation for the installation and monitoring of “sentry” wells was made. Sentry wells serve as an “early warning” system if groundwater contamination exists and is moving toward a drinking water supply well.

Landfills

Class I Waste Disposal Facility RCRA Facility Investigation. Mr. Houser participated in an RCRA Facility Investigation at a Class I waste disposal facility in Martinez, CA. This project involved complex well construction and drilling in Level B protection (airline and cascade air system). He was responsible for coordination of all field activities and geological logging of drilled wells.

Los Coyotes Indian Reservation Burn Dump Site. At the Los Coyotes Indian Reservation in San Diego County, CA, Mr. Houser characterized contaminants of concern at the open burn dump site.

San Diego County Landfill Sites – Feasibility Studies. To plan for proposed landfill sites, Mr. Houser conducted research and field work for feasibility studies at six proposed sites. Fieldwork included excavation of exploratory trenches for the purpose of assessing soil and rock conditions, and installation and sampling of shallow (up to 30 feet deep) and deep (up to 500 feet deep) groundwater monitoring wells for the purpose of assessing baseline groundwater conditions.

Pala Landfill Facility Assessments. For the Pala Landfill Facility on the Pala Indian Reservation in San Diego County, CA, Mr. Houser assessed the fill cells and possible groundwater impacts.

Otay, Sycamore Canyon, Ramona, and Borrego Landfills. Mr. Houser has participated in the drilling and construction of landfill gas recovery wells and/or landfill gas monitoring probes at these landfills around San Diego County.

Solid Waste Water Quality Assessment Test (SWAT), Arizona Street Landfill. Mr. Houser was the principal investigator and report writer for a SWAT conducted for the Arizona Street Landfill in San Diego.

Fault Investigations

Master’s Thesis, Old Woman Springs Fault. Mr. Houser completed his Master’s thesis studying the tectonic geomorphology and Quaternary history of the Old Woman Springs fault in the western Mojave Desert near the town of Landers, CA. The project involved mapping the fault and assessing the timing of past earthquakes.

La Nacion Fault Zone, Nye School Site. Mr. Houser completed an assessment of the La Nacion Fault Zone at the Nye School site to identify the location and age of faulting.

Murrieta Creek Fault Zone. For a development project near Murrieta, CA, Mr. Houser completed an assessment of the location and age of faulting.

San Andreas Fault Zone. Near Palm Springs in the Coachella Valley, Mr. Houser participated in assessment of fault locations and characterization based on relationship to various ages of alluvial fan deposits cut by the faults. The work was completed for a new development project.

Rose Canyon Fault Zone – Fault Strand Investigation. In downtown San Diego, Mr. Houser investigated a fault strand within Rose Canyon Fault Zone. The investigation included assessment of the age of faulting for the purpose of characterizing the fault for proposed development.

Additional Project Experience

Navy Clean and Department of Defense. Mr. Houser managed logistics and executed projects for the Department of Defense's Navy CLEAN program and other Department of Defense projects. The facilities for which he provided services included:

- Marine Corp Base, Camp Pendleton
- Naval Air Station, North Island
- Naval Training Center, San Diego
- Naval Station, San Diego
- Naval Submarine Base, San Diego
- Naval Amphibious Base, Coronado
- Naval Air Field, El Centro
- Naval Auxiliary Landing Field, San Clemente Island
- Mather Air Force Base
- George Air Force Base

Borrego Springs State Park Site Research and Reconnaissance. Mr. Houser conducted research and site reconnaissance to monitor off-highway vehicle damage in proposed California State Park lands east of Borrego Springs in Imperial County, CA. The site was flown to obtain aerial photos of approximately 23 square miles. The research, aerial photo, and resulting report were used to support an interim management plan to be implemented by the State of California Department of Parks and Recreation in the project area and, ultimately, the addition of approximately 13 square miles to Anza-Borrego Desert State Park.

Anza Borrego Desert State Park Investigation. A bulldozer trespassed into the Anza Borrego Desert State Park. To investigate the incident, Mr. Houser conducted research and field mapping, and prepared an investigation report for a 2.5-mile trail left by the bulldozer.

Harbor Drive Pedestrian Bridge. Mr. Houser implemented the Hazardous Materials Management Plan during the Harbor Drive Pedestrian Bridge construction in San Diego, including verification that hazardous materials excavated at the site were properly profiled, transported, and disposed, and in situ sampling for directly loading soil, thus enhancing the construction schedule and provided cost savings to the Centre City Development Corporation.