

TONY V. SAWYER
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SPECIALIZATIONS

Subsurface Contamination Assessment
Soil and Groundwater Contamination Remediation
Groundwater Resource Assessment
Fractured Crystalline Rock Aquifer Analyses
Remote Sensing Data Acquisition, Enhancement and Interpretation
Numerical Modelling

REPRESENTATIVE EXPERIENCE

A diverse background in hydrogeology, geophysics and hazardous materials. Experienced with both geophysical and groundwater hydrology methods and their applications to hazardous materials investigations and remediation. Responsible for a wide variety of projects including groundwater and geophysical exploration projects, dewatering projects, contaminated soil and groundwater projects, and expert testimony. Representative project experience includes:

REGULATORY OVERSIGHT EXPERIENCE

- For more than thirteen years, I have been one of two hydrogeologists with the San Diego County Department of Environmental Health, Site Assessment and Mitigation Program (SAM). During that time, I have been responsible for the technical review and oversight of up to nine Environmental Health Specialists managing over 800 cases. These cases included the vertical and lateral assessment of the extent of contamination in soil and groundwater by both light non-aqueous phase liquids (LNAPLs), volatile hydrocarbons (benzene, toluene, ethylbenzene, xylenes, MTBE, etc.), dense non-aqueous phase liquids (DNAPLs) and chlorinated volatile organic compounds (TCE, PCE, etc.). Although the actual field work and report preparation was performed by consultants working directly for the Responsible Parties, it was my responsibility to ensure that the work was performed to an acceptable standard of care. Furthermore, it was my responsibility to review and approve any and all proposed additional assessment work, determine if there was a threat to public health or the environment, and, if so, direct the RP and consultant toward a remediation method that would mitigate that threat.

INDEPENDENT CONSULTING

For nine years prior to my employment with SAM, I was an independent consultant providing hydrogeologic services to other consulting firms, attorneys, and individual clients. This work has continued on a reduced basis while employed by SAM, provided that there were no conflicts. Below are some representative examples of the consulting services I have provided:

Contamination Investigations

- Managing a Remedial Investigation/Feasibility Study of a Petroleum, Oil and Liquid storage facility at Minot Air Force Base.
- Supervising and training personnel for a Remedial Investigation/Feasibility Study of missile launch facilities at Vandenberg Air Force Base.

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- Evaluating effects of surface application and subsurface injection of treated sewage on regional groundwater for the military and sanitation districts. Locations have included shallow alluvial basins overlying sedimentary and fractured crystalline rock formations.
- Fate and transport analysis of metals and organic compounds from a landfill in the Century City area of Los Angeles County.
- Designing the Basewide Groundwater Monitoring Program for March Air Force Base. Project including analysis of migration potential of numerous organic, inorganic, and metallic compounds through alluvial and fractured crystalline rock terrane toward municipal water supplies and the adequacy of ongoing and proposed remedial measures.
- Performing fracture pattern analyses in crystalline rock terrane to evaluate the probable migration pathways of contaminants from a site and to select new well locations for investigations and remediation programs.
- Investigation and modelling of multi-phase and multi-source contamination in a highly industrialized area of Huntington Park, California. Performing as an expert witness in Superior Court regarding the source of the contamination.

Groundwater Resource Assessment

- Hydrogeologic resource investigations on commercial and residential developments, several exceeding 2000 acres. This included performing step-drawdown and constant-rate discharge tests on production wells to evaluate long-term production capacity. Groundwater resources were limited by the fractured crystalline rock terrane and low rainfall in San Diego County.
- Performing fracture pattern analyses in crystalline rock terrane to select new well locations for production wells.

Expert Witness

- During litigation regarding the source of groundwater causing structural distress on residential properties.
- On behalf of the State Attorney General regarding the standard of care for geophysical investigations related to groundwater. Testimony critical in winning two Appellate Court rulings for the Board for Geologists and Geophysicists.
- During litigation on groundwater-induced landslides.
- Regarding the standard of care for hydrogeologic investigations in fractured rock terrane.
- Fate and transport analyses of petroleum contamination from underground storage tanks and the potential impact of different remediation methodologies on potable groundwater supplies along the San Diego River in Lakeside, California. This included testimony before the Regional Water Quality Control Board to successfully rescind a Cleanup and Abatement Order.
- Regarding drainage modifications and surface and subsurface transport of contamination in fractured crystalline rock terrane in Ramona, California.

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CONSULTING FIRM WORK

Prior to becoming an independent consultant, I worked in various positions and levels of responsibility for small to large firms. This gave me a broad exposure to all types of work in the geologic, hydrogeologic, and geotechnical fields. Listed below are some of the types of projects I performed.

- Designing and installing groundwater and vadose zone monitoring systems for cyanide heap-leach gold mining operations in fractured rock terrane.
- Evaluating remote sensing data and performing on-site hydrogeologic resource evaluation and testing for American manufacturing facilities located in fractured crystalline rock terrane in Mexico.
- Preparing plans and specifications for a vadose zone and groundwater monitoring system in preparation for closure of a municipal landfill in San Diego County.
- Preparation of a Focused Groundwater Environmental Impact Report evaluating the long-term potential for groundwater degradation from saltwater intrusion due to proposed pumping in the Ocotillo area of Imperial Valley.
- Executing over 100 surface geophysical surveys in order to evaluate subsurface geologic and hydrogeologic conditions in shallow alluvial basins and fractured crystalline rock terrane.
- Performing computer simulation studies of contamination transport, degradation and impacts on municipal water supplies. Localities have included alluvial basins overlying fractured crystalline rock.
- Managing subsurface investigation and remediation activities for major oil company, large industry and government clients.
- Performing over 80 subsurface investigations for hydrocarbon, solvent, heavy metal and PCB contamination of soil and groundwater. Designing and supervising remediation measures for hydrocarbon and solvent contaminated soil and groundwater.
- Performing over 50 geotechnical investigations to evaluate causes of structural damage, including inadequate fill compaction, expansive soils, and activation of ancient landslides. Worked with civil and geotechnical engineers to develop repair recommendations.

REGISTRATION AND CERTIFICATION

Geologist	R.G. 22591	Arizona	11/10/88	exp. 6/16
Geologist	R.G. 4345	California	8/31/87	exp. 5/16
Engineering Geologist	C.E.G. 1392	California	4/13/88	exp. 5/16
Hydrogeologist	C.H.G. 0040	California	7/12/95	exp. 5/16

Member of the Enforcement Oversight Committee to the California Board for Geologists and Geophysicists, 2006 to 2009
Chairman of the Technical Advisory Committee to the California Board for Geologists and Geophysicists, 2002 to 2006.
Vice-Chairman of the Technical Advisory Committee to the California Board for Geologists and Geophysicists, 2000-2002.
Designated a Subject Matter Expert in Hydrogeology by the California Board for Geologists and Geophysicists in 1998 and still serve in that capacity.

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PROFESSIONAL AFFILIATIONS

President of the Southern California Chapter of the California Groundwater Association, 1997 to 1999.
Served on both the Standards and Certification Committees of the California Groundwater Association, 1997 to 1999.
President of the San Diego Chapter of the Hazardous Waste Association of California, 1988 to 1992.
Served on the San Diego County Department of Environmental Health, Site Assessment and Mitigation (DEH/SAM) Technical Committee on Vapor Phase Migration, 1996 to 1997.
Chairman of the DEH/SAM Technical Committee on Soil Sampling Methodologies, 1994 to 1996.
Served on the DEH/SAM Technical Committee on Well Design and Construction, 1992 to 1994.
Chairman of the DEH/SAM Technical Committee on Soil Vapor Sampling Methodologies, 2000 to 2002.

EDUCATION

San Diego State University B.S., Geophysics, 1981, Thesis - "Determination of Fracture Porosity in Crystalline Rock Using Electrical Resistivity and Seismic Refraction Methods in the San Marcos Area of San Diego County".

San Diego State University Post-graduate Studies, Hydrogeology

Short Courses:

- 40-Hour Hazardous Waste Operations Training (plus required annual 8-hour refreshers)
- Corrective Action for Containing and Controlling Ground Water Contamination
- Underground Storage Tank Management
- How to Monitor and Sample the Vadose Zone
- Aquifer Remediation Using In Situ Bioreclamation
- Theory and Application of Vadose Zone Monitoring and Sampling
- Risk Assessment for the Ground Water Scientist
- Radon in Structures: Investigation and Mitigation
- Principles of Subsurface Fate and Transport Modelling
- Vadose Zone Monitoring and Remediation Techniques

EMPLOYMENT HISTORY

2000 to Present	Hydrogeologist, County of San Diego, Department of Environmental Health, Land and Water Quality Division, Site Assessment and Mitigation Program
1991 to Present	Principal Hydrogeologist, Tony V. Sawyer, Consulting Hydrogeologist
1990 to 1991	Manager of Environmental Services, San Diego Office of Kleinfelder, Inc.
1989 to 1990	Senior Hydrogeologist and Manager of Geosciences and Field Services Group, San Diego Office of Kleinfelder, Inc.
1988 to 1989	Project Hydrogeologist, Woodward-Clyde Consultants, Inc, San Diego, CA.
1984 to 1988	Project Hydrogeologist, Geotechnical Exploration, Inc., San Diego, CA.
1981 to 1984	Staff Geophysicist, Geotechnical Exploration, Inc., San Diego, CA.
1981	Staff Hydrogeologist, Advance Planning & Research, San Diego, CA.