# JEFFREY HEGLIE, P.G., C.E.G., R.P.G.

## Education and Professional Development

- Graduate Studies, Hydrogeology, University of California Berkeley
- Graduate Studies, Hydrogeology, University of Nevada, Reno
- B.S., Geophysics, Massachusetts Institute of Technology
- Occupational Safety and Health Administration (OSHA) 40-Hour Hazardous Waste Operations and Emergency Response Training
- OSHA Health and Safety Training for Supervisors of Hazardous Waste Workers
- Loss Prevention System Training
- Conferences and seminars on environmental geophysics, environmental laboratory analysis, landfill remediation, and project management

## Registrations and Professional Affiliations

- Oregon Registered Professional Geologist #G1913
- California Certified Engineering Geologist #1882
- California Professional Geologist #5601
- Washington Licensed Geologist #2525
- Wyoming Professional Geologist #3958
- Association of Ground Water Scientists and Engineers
- American Geophysical Union

## Summary of Professional Experience

Mr. Heglie is a registered geologist in Oregon, California, and Washington and Certified Engineering Geologist in California with 29 years of experience in environmental consulting including industrial site investigation and remediation project management and hydrogeologic investigations. His areas of expertise include:

- Ground water flow and chemical transport modeling for remedial system design and risk characterization
- Litigation support for industrial clients, including ground water and vadose zone transport modeling
- Surface and borehole geophysical applications for remedial investigations

- Ground water monitoring and environmental data management

- Landfill investigation and remediation

**Representative Experience**

Industrial Site Investigation and Remediation Project Management

- Mr. Heglie served as Project Manager for investigation and remediation of methyl tertiary butyl ether and tertiary butyl alcohol contamination at retail gasoline service stations as part of a regional assessment of impacts to a major southern California well field. He directed remediation of a perched ground water zone at an operating service station using high-intensity targeted dual-phase extraction events and in-situ chemical oxidation. He provided oversight for the client of regional assessment activities, which included a detailed basin-wide transient-state ground water flow model, aquifer characterization, and permitting for drinking water treatment.

- Mr. Heglie served as Project Manager/Technical Lead for a fast-track remedial investigation for a 1,000-acre former ordnance facility slated for redevelopment. The remedial investigation addressed over 70 potential areas of concern across the facility and evaluated the potential presence of a variety of organic and inorganic compounds related to the manufacture of ordnance components. He directed the preparation of the work plan, supervised the initial phase of field investigation, negotiated with regulatory agencies, managed data reduction and validation, coordinated preparation of a baseline Human Health Risk Assessment and Ecological Risk Assessment, and performed senior review of final reports. The risk assessment work plan incorporated future commercial and residential land use.

- Mr. Heglie served as Project Manager for a pilot test of innovative steam injection/vapor extraction technology at McClellan Air Force Base. He completed initial treatability studies and field investigation for site characterization and coordinated efforts of the technology developer, United States Air Force, Environmental Protection Agency site program, and various regulatory agencies.

- Mr. Heglie has varied management and project experience in solid waste, underground fuel and solvent tanks, property assessments, environmental impact reports, and project oversight.

Site Assessment and Remedial Action

- Mr. Heglie served as Project Hydrogeologist for the investigation and remediation at a former petroleum distribution terminal in northern California. Investigation work has characterized the presence of petroleum constituents in soil, soil vapor, ground water, and surface water; it has included extensive monitoring and sampling of the storm drain system which is subject to tidal flow. Mr. Heglie also performed characterization of human health and ecological risks, and developed site-specific cleanup goals.

- Mr. Heglie served at Project Hydrogeologist for the remedial investigation at a large former lumber mill site on the northern California coast. To expedite site characterization work, he employed surface geophysical surveys and direct push sampling of soil and ground water. The investigation addressed the presence of petroleum constituents, solvents, metals, and other organic constituents in fill material, soil, ground water, pond sediments, and springs.

- Mr. Heglie served as Technical Lead for investigation of perchlorate and nitrosodimethylamine in ground water at a former ordnance facility in southern California. He completed initial modeling of fate and transport of perchlorate in the vadose zone and ground water to assist in planning remedial investigations and providing initial estimates of soil cleanup goals. He negotiated work plans with regulatory agencies, supervised monitoring well installation, and prepared reports on investigation results.

Ground Water Flow and Chemical Transport Modeling

- As Project Hydrogeologist for remediation at an active petroleum distribution terminal in Oregon, Mr. Heglie developed a three-dimensional transient-state ground water flow model for the evaluation of remedial alternatives. The MODFLOW model addressed interaction between ground water an adjacent river, and incorporated site features such as a slurry wall and a concrete revetment. The model was calibrated against transient monitoring data, historical river levels, and multiple aquifer tests.

- Mr. Heglie served as Project Hydrogeologist for litigation support involving impacts to a high-rise building dewatering system from ground water contaminated with petroleum constituents and chlorinated solvents. He completed ground water flow modeling to evaluate the effectiveness of alternative dewatering systems for a multi-level parking garage beneath the high-rise office building. The ground water flow model addressed three-dimensional ground water flow into alternative dewatering systems, ground water flow beneath several former retail service stations, and a source of chlorinated solvent contamination.

- Mr. Heglie performed two dimensional analytical element modeling for ground water extraction system design for petroleum distribution terminals in California and Washington.

- Mr. Heglie has experience with ground water flow modeling and analysis software including MODFLOW/ MODPATH, TWODAN, and AQTESOLV, along with chemical transport analysis software such as BIOSCREEN, SESOIL, versions of the Johnson and Ettinger vapor intrusion model, and other analytical models.

Litigation Support

- Mr. Heglie served as Project Hydrogeologist for litigation support involving manufacturing facilities. He completed ground water and vadose zone modeling studies of fate and transport of chlorinated solvents to explain the source of the chemicals and/or evaluate potential future impacts and the necessity for remediation. He demonstrated that contaminant sources at several sites did not present a significant risk.

- Mr. Heglie served as Project Hydrogeologist for litigation support involving a retail gasoline service station. He completed ground water modeling studies of fate and transport of gasoline constituents for estimation of the probable date of release and evaluation of general cleanup scenarios. He was responsible for soil and ground water sampling, aquifer testing, data analysis, and interpretation of the nature, extent, and potential source(s) of subsurface petroleum contamination.

- Mr. Heglie served as Project Hydrogeologist for litigation support involving petroleum distribution terminals and electronics manufacturing facilities. He characterized the nature, extent, and source of ground water contamination and used equilibrium partitioning models to explain the observed distribution of contaminants in ground water, soil, and soil vapor. He reviewed and interpreted results of detailed petroleum fuel fingerprinting analyses, which included identification of the 100 largest components of the fuel mixture by gas chromatography/mass spectrometry.

- Mr. Heglie served as Project Hydrogeologist for litigation support for a major petroleum industry client. He provided recommendations for additional investigation and the most appropriate remedial alternatives for six facilities. He developed cost estimates for site investigation, remediation, monitoring, and site closure for a 6-year period.

Surface and Borehole Geophysical Applications

- Mr. Heglie expedited the investigation of numerous large areas of concern at a 1,000-acre former ordnance facility by applying surface geophysical and soil vapor surveys. Surface geophysical techniques included electromagnetic ground conductivity (EM) and magnetometer surveys over landfills and other former disposal sites.

- As Project Hydrogeologist for investigation work at a former petroleum distribution terminal, Mr. Heglie managed a program of ground penetrating radar surveys to characterize the presence of subsurface voids associated with the storm drain system beneath the site.

- Mr. Heglie has conducted EM and magnetometer geophysical surveys at manufacturing and commercial sites, and has applied borehole geophysical methods to numerous site investigations to characterize subsurface stratigraphy.

Groundwater Monitoring and Environmental Data Management

- Mr. Heglie implemented low-flow and passive sampling for more efficient and improved water quality characterization at multiple ground water monitoring sites.

- Mr. Heglie established programs for AME for management of analytical data using databases and electronic data deliverables from laboratories. Mr. Heglie designed relation databases for management, quality assurance, and reporting of analytical and geological data. He coordinated the implementation of geographical information systems with linked databases in ACCESS and gINT.

- Mr. Heglie instituted data validation programs for projects consistent with EPA guidance for analytical data review.

Landfill Investigation and Remediation

- Mr. Heglie served as Project Hydrogeologist for development of Article 5 water quality monitoring and Corrective Action Plans for two solid waste landfills. He evaluated historic data, provided hydrogeologic interpretation, identified constituents of concern, and specified points of compliance and monitoring parameters.

- Mr. Heglie served as Project Hydrogeologist for closure design for a hazardous waste landfill. He was responsible for the numerical modeling of leachate and ground water flow at the 125-acre landfill for the technical evaluation of leachate extraction alternatives. The numerical model accounted for infiltration, subsurface outflow, surface springs, inflow from consolidation of underlying Bay mud, barrier walls, and effects of leachate collection and extraction alternatives. Mr. Heglie designed subsurface components of a leachate collection and removal system.

- Mr. Heglie served as Project Hydrogeologist for a Solid Waste Assessment Test investigation and leachate management plan development for a large municipal landfill.

**Publications and Presentations**

Heglie, J., Bray, T., Bostrom, D., Wolff, G. 1990. "Planning for Leachate Management at a Closed South Bay Landfill." *Proceedings of the Water Pollution Control Federation Conference on Solid Waste Landfills*. Chicago, IL. July.

Fanelli, E., Lawson, P., Howard, B., Heglie, J. 1990. "Analysis of Groundwater Flow for Closure of a Municipal Landfill in Contra Costa County, California." *Proceedings of the Water Pollution Control Federation Conference on Solid Waste Landfills*. Chicago, IL. July.