STEVEN J. STRESKY

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EDUCATION AND CREDENTIALS

M.S. HYDROLOGY University of New Hampshire, 1990

B.S. GEOLOGY and GEOPHYSICS University of Wyoming, 1980

Licensed Professional Geologist, State of Wyoming
Licensed Geologist and Hydrogeologist, State of Washington
MSHA-certified and OSHA-trained (40-hour and supervisor)
Member National Groundwater Association, American Geophysical Union, and Wyoming Geological Association

EXPERIENCE

10/04 – Present **HYDROGEOLOGIST** Aqua Terra Consultants, Inc.

Project manager and lead hydrologist for mining projects. Coordinate turn-key mine permits for coal and non-coal clients, and manage ancillary permits and environmental baseline analyses required for state and local permits. Provide technical expertise in geologic and hydrologic analyses, including aquifer and surface-water characterization, quantitative data analysis, geologic mapping, and mine planning.

4/99 – 9/04 **HYDROGEOLOGIST** Aspect Consulting, LLC, Seattle, Washington

Project hydrogeologist for water-resources and environmental projects. Prepared proposals, cost estimates, and work plans, coordinated contractors, conducted field work, analyzed data, prepared reports, managed budgets, and interacted with clients and regulators. Projects included groundwater supply development for public, industrial, and agricultural uses, environmental assessment, and landfill investigations.

3/95 – 8/98 **HYDROGEOLOGIST** Handex Environmental, Inc., Marlboro, Massachusetts

Managed environmental assessment and remediation projects for hazardous-waste and contaminated retail/bulk petroleum sites. Prepared work scopes, managed and conducted field work, analyzed data, prepared reports, and interacted with clients and regulators. Projects included contamination assessment, human health risk assessment, remediation design/implementation, and site closure evaluation at commercial and industrial facilities. Contamination experience includes a broad range of petroleum, industrial process fluids, metals, and hazardous wastes.

10/92 – 7/93 **HYDROGEOLOGIST** Shevenell-Gallen and Associates, Inc., Portland, Maine
2/91 – 4/92 **HYDROGEOLOGIST** Shevenell-Gallen and Associates, Inc., Portsmouth, NH

Conducted Phase I/II environmental assessments and UST removal projects for commercial and residential sites. Performed background research, conducted subsurface investigations (drilling, test pits, and soil-vapor surveys), performed soil and groundwater sampling, and prepared reports.

3/81 – 4/88 **GEOPHYSICIST** Mobil Oil Corporation, Dallas, Texas

Processed and interpreted reflection seismic data for oil and gas exploration. Processing included 2D and 3D surveys in the Permian, Powder River, and Michigan basins, Gulf of Mexico, Gulf Coast, off-shore Alaska, off-shore Africa, North Sea, and Barents Sea.

SELECTED PROJECT SUMMARY

MINE PLANNING

CORDERO-ROJO MINE, Cloud Peak Energy, Eastern Powder River Basin

Project geologist and hydrologist for permitting a Lease by Application to expand mining operations. Implemented and conducted field programs to install groundwater monitoring wells, measure stream flow in the Belle Fourche River, and map the Alluvial Valley Floor (AVF). Obtained and analyzed stream-flow records to determine flood frequencies for diversion designs, and evaluated potential connections among the stream, the adjacent alluvium and the advancing mine pits. Prepared geologic cross sections and tied in groundwater hydrology to evaluate impacts from regional CBM development and mining. Assembled technical data and prepared all permitting elements associated with hydrologic and geologic baseline analyses, coordinated field tours with the DEQ, and finalized a successful outcome for the AVF determination, which was approved by DEQ for mining.

FREDERICK QUARRY, McMurry Ready Mix Company, Southeast Wyoming

Project manager and mine permit coordinator for a hard-rock quarry. Provided turn-key permitting services, including technical characterization of groundwater resources to evaluate potential impacts from mining and provide a mining water supply. Evaluated potential groundwater production in fractured rock and supervised the installation of a water supply well in an area difficult to obtain new water rights. Completed subsequent permitting with the SEO requiring analysis that demonstrated minimal potential impacts to the Platte River, located in a sensitive Groundwater Control Area. The mine is now in operation with all approved permits, and the water supply well continues to supply a viable mining operations resource.

YOUNGS CREEK MINE, Youngs Creek Mining Company, Northern Wyoming

Project geologist and hydrologist to manage mine permitting for geologic, hydrologic and AVF characterizations. Designed and implemented surface-water and groundwater monitoring programs in a sensitive hydrologic area where groundwater and surface water enter Wyoming from Montana, flow through the permit area, then re-enter Montana in the Tongue River Valley. Completed AVF mapping in four river valleys, designed and implemented field testing to characterize valley aquifers, and led a field tour with DEQ to review hydrologic and AVF elements of the mine permit area. Designed and constructed a comprehensive numerical groundwater model used to quantify the hydrologic balance and predict mining impacts to groundwater and stream flow. The permit, now in its final phases of regulatory review, is slated for approval.

T-CROSS-T RANCH PIT, McMurry Ready Mix Company, Northern Wyoming

Project manager and mine permit coordinator for a sand-and-gravel mine resource. Managed all permitting elements to develop a construction aggregate resource in a sensitive environmental area. Implemented a surface-water monitoring program in Piney and Little Piney creeks, and characterized connected groundwater in the valley bottom that recharges the creeks, supports wetlands and supplies local irrigation. Considered in data analyses were groundwater and surface water discharges from nearby Lake DeSmet, which affect both groundwater and surface water quality in the valley bottom. Worked with wildlife agencies to negotiate protection strategies for the valley bottom, stream flow and raptors. The operation now has all approved permits, and continued environmental monitoring indicates that there have been no impacts to surface water or wildlife.

CHUITNA MINE, Alaska

Project hydrologist assisting with mine permitting of a new Greenfield mining venture. Compiled and analyzed surface water and groundwater data to prepare permitting for mine discharges. Prepared all EPA NPDES permitting documents, and coordinated with client and regulatory staff to ensure a comprehensive characterization of potential discharges and impacts to water quality and stream flow. Assisted in reviewing plans and data for groundwater and surface water monitoring, and worked with other consultants to advise on environmental

monitoring in preparing EIS and mine permit documentation. Provided technical advice regarding complex glacial stratigraphy, shallow groundwater, variable rainfall distribution, and extensive peat deposits that presented unique challenges in hydrologic design.

EASTFORK RANCH PIT, McMurry Ready Mix Company, Southwest Wyoming

Project manager and mine permit coordinator for a sand-and-gravel mine resource in a sensitive environmental and agricultural area. Coordinated with DEQ staff in early phases of project to ensure consensus among permit elements for baseline analyses. Implemented a drilling program to monitor groundwater and characterize the extent of the aggregate resource. Coordinated subcontractors for wildlife, vegetation, soils and cultural resources studies, and negotiated mine and reclamation plans to include protection of sage-grouse within an established Core Area. The permit has been approved by DEQ, and is now in public review.

BIG HORN MINE, Big Horn Coal Company, Northern Wyoming

Project hydrogeologist to assist in technical evaluation of a mine pit reclaimed as a reservoir to reduce bond and permitting requirements. Developed conceptual mathematics and constructed a water-balance model to predict reservoir water quality with solute inputs from adjacent mine spoils, native bedrock, and river water designed to enter and exit the reservoir through gravel drains. Calibrated the model to match existing data, and utilized the model to demonstrate acceptable water quality at future equilibration. Presented the model to DEQ, which has since approved the bond reduction for permitting requirements.

QUARTER CIRCLE 41 RANCH PIT, Wyoming Construction Materials, Northern Wyoming

Project manager and mine permit coordinator for a construction aggregate resource. Currently coordinating subcontractors to complete permitting baseline elements for wildlife, vegetation, soils and cultural resources, as well as ancillary permitting for air quality and water rights. Completed initial resource evaluation through subsurface exploration, and mapped geologic elements to characterize prominent resource potential. The mining permit is currently in its early phases of development.

CABALLO AND NORTH-ANTELOPE/ROCHELLE MINES, Peabody Energy, Eastern Powder River Basin

Project hydrogeologist to assist with technical permitting requirements for mine expansions. Recommended and implemented a groundwater modeling technique to predict groundwater impacts from mine expansion, incorporating multiple mine sequences. Compiled technical data and assembled turn-key permit materials for the client to incorporate into their regulatory submittal. The permit application materials are currently in the early phases of development and regulatory review.

WATER RESOURCES

CITY OF GOLDENDALE, Southern Washington

Lead hydrogeologist for a water-supply project to augment existing spring-water supplies prone to drought and provide additional supply for a new energy facility. Prepared bid specifications, coordinated drilling contractors and logged geology for three high-capacity wells in aquifers of the Columbia River Basalt Group and local near-vent volcanic deposits. Utilized outcrop and laboratory information to identify specific basalt flows, and designed and conducted pumping tests to evaluate potential yield from each basalt flow. Instrumented agricultural and private wells within the basin to determine baseline effects from agricultural withdrawals, interference effects among wells, and aquifer characteristics. Presented results as lead author at a hydrologic symposium to hypothesize water-quality variation across the basin.

SOBOBA INDIAN RESERVATION, Southern California

Project hydrogeologist for the development of supplemental water supplies from a faulted, river-valley aquifer. Coordinated and conducted field activities to install a high-capacity well originally designed for irrigation. Logged geology, coordinated geophysical logging, and utilized resulting information to determine production intervals and well design. Interfaced with federal, state, and tribal representatives to determine specific water-quality analytes appropriate for tribal agricultural and domestic needs, and collected samples for analyses. Coordinated and instrumented pumping tests to characterize the aquifer and determine interference effects among irrigation wells. Analyzed pumping-test data and water-quality results, and compiled final report. Based on well yield that substantially exceeded original expectations, the well is now utilized for both agricultural and domestic uses.

SAN MANUEL BAND OF MISSION INDIANS, Southern California

Field coordinator and hydrogeologist for a groundwater resources project related to spring-water bottling plant development and potential impacts on tribal water resources from nearby tunnel construction. Designed, installed, and maintained automated pressure and flow monitoring systems for horizontal wells and associated springs deriving water from fractured bedrock. Coordinated and conducted field meetings for tribal representatives and contractors. Instrumented and conducted single- and multi-well flow tests and analyzed resulting data to determine potential long-term well yield and inter-well interference. Results were used in the bottling plant design now with FDA approval and in successful operation.

LUMMI INDIAN RESERVATION, Northern Puget Sound, Washington

Field hydrogeologist for the installation and testing of water supply wells in glacial deposits prone to salt water intrusion. Provided coordination and oversight for drilling and logged geology to determine optimal producing zones, while monitoring chloride concentrations to minimize salt water impacts to water quality. Designed, instrumented, and conducted pumping tests to determine aquifer parameters and well yields. Data analyses included the combined interactions of tidal, barometric, and well-interference effects. Results were used in a comprehensive groundwater model to predict future salt water impacts and water-resource sustainability.

WASHINGTON NATIONAL PROJECT, King County, Washington

Project hydrogeologist for a groundwater monitoring program for a major development abutting salmon fisheries. Conducted oversight for monitoring well installations in a glacial-advance aquifer. Utilized subsequent groundwater quality data to statistically determine pre-construction background water quality, and assisted in the development of groundwater management and quality assurance plans for post-construction compliance monitoring.

STAPLES HEADQUARTERS, Eastern Massachusetts

Completed fracture analyses for a bedrock water-supply well field. Field-verified faults, joints, and foliation, and sited a test well near the intersection of two faults to maximize yield. Supervised drilling, conducted pumping tests, and analyzed data to determine well yield and aquifer characteristics. Well yield exceeded expectations, allowing the facility to utilize one water-supply well rather than several low-yielding wells as previously recommended.

ENVIRONMENTAL

LANDFILL INVESTIGATIONS, Puget Sound, Washington

Project hydrogeologist for hydrogeologic and landfill efficacy evaluations at five Puget Sound landfills. Projects included subsurface investigations to develop conceptual geologic models, monitoring well and gas probe installations for groundwater contamination and landfill gas delineation, slug and pumping tests to determine aquifer characteristics, evaluation of existing leachate and gas collection systems, and field data collection to

determine a site water balance for phytoremediation. Performed all phases of field work, contractor coordination, client/regulatory interaction, data analysis, and reporting.

LANDFILL CRITICAL SITING, Cedar Hills Regional Landfill, Southeast Puget Sound, Washington

Project hydrogeologist for a metropolitan landfill cell evaluation to determine detailed glacial and inter-glacial stratigraphy, delineate perched groundwater systems, estimate vertical head distribution of the regional aquifer, and discern sources of existing and potential groundwater contamination. Utilized continuous coring to obtain detailed samples for stratigraphic delineation, and used carbon dating to define glacial and interglacial horizons. Used drilling results and engineering laboratory data to conceptualize how low-permeability layers might influence leachate migration and impact the regional aquifer, and for design of a shallow perched water interception system. Routinely interfaced with landfill, regulatory, and health-department personnel. The investigation was approved by the agencies, and the landfill cell has successfully been constructed and utilized.

RISK-BASED SITE ASSESSMENT, Gasoline Service Stations, Willamette Valley, Oregon

Reviewed environmental history for several sites with problematic contamination issues. Determined data needs and collected additional soil and groundwater data to evaluate sites for potential regulatory closure. Utilized state risk assessment protocols to determine risk to human health for anticipated site uses. Successfully negotiated three sites to closure by recommending liberal approaches to evaluating site risk from soil and groundwater contamination.

GASOLINE SERVICE STATION ASSESSMENT AND REMEDIATION, Central and Eastern Massachusetts

Managed more than 50 contaminated retail-petroleum sites for a major-oil client. Work scopes ranged from groundwater and soil assessment to active remediation involving excavation, NAPL recovery, pump-and-treat, sparging, and SVE in sensitive environmental and drinking-water areas. Successfully managed 15 sites to post-remediation closure using risk-based protocol, including EPA/ASTM risk assessment methodologies.

FISHERVILLE MILL, South-Central Massachusetts

Conducted extensive contamination and remediation assessment of a historical mill complex and related canal. Designed and coordinated geophysical surveys, monitoring well installations, and soil sampling. Delineated DNAPL source area related to steel processing and heating-oil NAPL up to 22 feet in thickness. Utilized network of 60 monitoring wells to evaluate horizontal and vertical groundwater flow patterns and contamination distribution in a glacial river-valley aquifer in the contributing area of a public water-supply well field. Assisted in the development of remedial options, and participated in a televised panel at a public meeting to present field results. Provided oversight for the installation of extraction wells for CVOC recovery and containment. Designed, conducted, and analyzed pumping tests to determine aquifer parameters and evaluate aquifer boundaries.

FORNIER-GEMME LAGOON, Central Massachusetts

Implemented a field program for an extensive soil excavation at a hazardous-waste lagoon that produced NAPL and CVOC contamination in soil, groundwater, surface water, and nearby wetland sediment. Permitted and maintained a NAPL recovery and carbon treatment system for excavation dewatering. Utilized TPH field-extraction analyses to determine excavation extent and evaluate post-excavation soil quality. Coordinated site restoration and post-excavation groundwater monitoring program. Conducted aerial-photo and outcrop fracture analyses, and used resulting data to evaluate potential preferential pathways and anisotropy in the underlying bedrock aquifer, and to site down-gradient bedrock compliance monitoring wells. Supervised bedrock coring, designed bedrock couplets, and utilized fracture analysis data to determine bedrock groundwater flow patterns. The excavation proved successful enough to preclude previously-recommended remediation options, saving substantial project costs. The site was successfully negotiated to temporary closure pending evaluation of future site use.