



Resume

Dr. William M. Schafer



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P O S I T I O N D E S C R I P T I O N

CURRENT POSITION: 2001 TO PRESENT

Dr. Schafer formed Schafer Limited LLC in 2001 to work as an independent environmental consultant, provide expert testimony and forensic evaluations, and conduct mediation and arbitration of environmental disputes.

SHEPHERD MILLER INC: 1999 AND 2000

Schafer & Associates merged their professional staff in Bozeman, Montana and Golden, Colorado with Shepherd Miller Inc in July 1999. Dr. Schafer served as Vice President of the Earth Sciences business unit for Shepherd Miller from August 1999 until December, 2000.

SCHAFFER & ASSOCIATES: 1985 TO 1999

Founded by Dr. Schafer in 1985, Schafer & Associates provided environmental, engineering, and ecological services to a variety of Federal, State and private clients in mining and other industries. With a staff of 40 professionals, Schafer & Associates maintained offices in Montana, Colorado, and Arizona.

MONTANA STATE UNIVERSITY: 1976 TO 1985

Dr. Schafer was a research soil scientist specializing in land reclamation research on coal-mined lands in the Northern Great Plains from 1976 to 1980. From 1980 to 1985, he was a state soil scientist with the Montana Agricultural Experiment Station and the Extension Service. He provided expertise to Montana agriculture in the areas of irrigation water quality, improvement of saline and sodic soils, and soil fertility.

P R O F E S S I O N A L E X P E R I E N C E

Mining Services: Dr. Schafer served as project manager or technical director for over 200 projects involving the environmental aspects of mining. His projects have included prediction, prevention, and control of acid rock drainage (ARD); mine closure including reclamation of waste rock, tailings, and spent ore piles; decommissioning of leach pads; prediction of pit lake chemistry; baseline studies in support of permit applications; and groundwater and vadose zone monitoring programs. He has extensive regulatory experience in the western US including Nevada, Montana, South Dakota, Colorado, New Mexico, Idaho, Utah, Washington and Arizona.

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Professional Resume



Petroleum Development – Coalbed Natural Gas (CBNG): Dr. Schafer worked closely with the Montana Coalbed Natural Gas Alliance during development of numeric water quality standards for electrical conductivity (EC) and sodium adsorption ratio (SAR) by the Montana Department of Environmental Quality. He has helped develop permits for discharge of CBNG production water, and helped evaluate other water management alternatives. Additionally, Dr. Schafer has served as an expert witness in litigation regarding alleged soil and water impacts associated with CBNG water.

Expert Testimony: Dr. Schafer served as an expert witness for several cases involving the Clean Water Act (especially Citizen's Suits) and environmental effects of mining; coalbed natural gas development, confined animal feeding operations, and alleged contamination of surface water or groundwater with acid rock drainage, metals, salinity, nutrients and organic compounds. He also provided expert reports, sworn testimony, and depositions in various administrative hearings in addition to litigation support.

Services to State and Federal Clients: Dr. Schafer has worked for numerous State and Federal agencies including the US Forest Service, Bureau of Land Management, Fish and Wildlife Service and Bureau of Mines. He has also contracted with State natural resource agencies in Montana, South Dakota, Arizona, Washington, Idaho, and other States.

Solid and Hazardous Waste: Managed or directed numerous CERCLA (Superfund) investigations including RI/FS (remedial investigation and feasibility study) activities at several mining sites. He developed and implemented numerous work plans and planning documents to support site characterization, treatability studies, and risk assessments and was responsible for development and evaluation of the performance of in-situ remediation techniques for inorganic mine waste at CERCLA sites. Dr. Schafer conducted fate and transport analyses of contaminant migration from a variety of sources. These analyses required numerous field investigations that employed a variety of field screening techniques including soil gas surveys and X-ray fluorescence determination of soil lead, arsenic, copper, zinc, and chromium levels.

Soil Investigations: Conducted a number of soil survey investigations in support of mine permitting and planning, major facility siting, irrigation development, basin-wide erosion prediction and control, and salinity control. Numerous small-scale soil investigations have been performed for on-site waste treatment system siting and design; for land application/ treatment of liquid and solid wastes; litigation support for industrial damage claims; and in support of archaeological investigations.

Project Management: Successfully managed over 300 projects in the environmental sciences concerning hazardous waste (under CERCLA, SARA, and RCRA); solid waste landfills; disturbed land reclamation; baseline studies for mine and facility permitting (NEPA); reclamation of abandoned mines (SMCRA); surface water, groundwater and vadose zone monitoring; soil investigations; contract R&D; delivery of educational short-courses; and services in support of litigation.

Professional Education and Instruction: While on faculty at Montana State University, Dr. Schafer's responsibilities included instruction of students and adults through on-campus teaching, and extension. Additionally, he has developed and delivered a number of professional short courses on mine closure, acid rock drainage prediction and control, vadose zone monitoring, cyanide heap leaching, groundwater



impacts of petroleum exploration, control of dryland salinity, fertilization of small grains and forages, and salinity and sodium control under irrigation.

E D U C A T I O N

Montana State University 1976 to 1979

Bozeman, Montana

PH.D. IN SOIL SCIENCE

Dissertation Topic: Completed an evaluation of the land capability of soils on reclaimed surface coal-mined areas throughout the Northern Great Plains.

University of California at Davis 1974 to 1975

Davis, California

M.S. IN SOIL SCIENCE

Thesis Topic: Developed a technique to measure the shrink-swell potential of soils in the Central Valley of California, and to predict the hazard for construction.

Colorado State University 1971 to 1974

Fort Collins, Colorado

B.S. IN WATERSHED SCIENCE

C O N T I N U I N G E D U C A T I O N

- Mediation of Public Policy Disputes: 24-hour short course taught by CDR Associates in Boulder, Colorado.
- Introduction to Mediation 40-hour short course taught by CDR Associates.
- Clean Water Act and NPDES Permits 24 hour short course involving all aspects of water permits
- Groundwater Modeling 40 hour course in groundwater modeling taught by Dr. Robert Cleary and faculty from Princeton University

O R G A N I Z A T I O N S

Professional improvement maintained through active involvement in professional societies (Acid Drainage Technology Initiative, Society of Mining Engineers, and Soil Science Society of America). More than 100 articles, papers, short courses and book chapters have been authored in professional publications, and in symposia proceedings.