DEBORAH L. HATHAWAY

Hydrologist

AREAS OF EXPERTISE

- Regional Water Supply Assessment
- Groundwater Models for Problem-Solving
- Water Rights Evaluations
- Surface-Water/Groundwater Interaction
- Riparian Zone Hydrology
- Environmental Assessment, Remediation

SUMMARY OF QUALIFICATIONS

Ms. Hathaway manages and conducts hydrologic investigations involving groundwater, water-supply development, water rights, irrigation hydrology, riparian and in-stream flow conditions, contaminant transport, and groundwater remediation, including providing technical support on these issues for litigation. Her quantitative water-resource evaluations have involved groundwater modeling, regional and basin-scale water budget analysis, conjunctive use modeling, water supply alternatives analysis, probabilistic analysis of surface-water supplies; and field investigations design. Ms. Hathaway's remedial investigation, design, and construction projects have included evaluation of the source, extent, fate and transport, and potential receptors of environmental contamination; selection of remedial approach; assessment of soil and groundwater remedial options; oversight of remediation; and performance evaluation during system operation.

Ms. Hathaway has provided expert testimony regarding surface-water and groundwater issues. She has conducted QA/QC and peer reviews, has led stakeholder workshops, and has provided public presentations on water resource and water supply matters.

YEARS OF EXPERIENCE: 30+

EDUCATION

MS, Civil Engineering (Hydrology and Water Resources), Colorado State University,1982
MA, Secondary Education, Science University of New Mexico, 1977
BA, Spanish Literature, University of Colorado, 2009
BA, St. John's College, Santa Fe, 1974

REGISTRATIONS

Professional Engineer
Colorado No. 31578
New Mexico No. 10150
Certified Professional Hydrologist
American Institute of Hydrology, No. 966

PROFESSIONAL HISTORY

S.S. Papadopulos & Associates, Inc.
Vice President, 1994 to present
Senior Hydrologist, 1988–1994
University of Colorado
Instructor, Fall 2003, Geology 3030, Introduction to Hydrogeology
New Mexico State Engineer Office
Technical Division, 1984–1988
Water Rights Division, 1982–1984
U.S. Geological Survey
Water Resources Division, Hydrologic Field Assistant, 1979–1981

REPRESENTATIVE EXPERIENCE

S.S. Papadopulos & Associates, Inc., Boulder, CO

WATER-RESOURCE AND WATER-SUPPLY ANALYSIS, PLANNING, AND MANAGEMENT; LITIGATION SUPPORT

Hydrologic Support to the New Mexico Interstate Stream Commission (NMISC): For the NMISC, served as Program Manager for multiple surface-water and groundwater evaluations. Sample projects include: ▪ Served on the Upper Rio Grande Water Operations Review EIS Water Operations Team to evaluate the opportunities for optimizing operations of surface-water facilities to meet water supply, flood control and environmental needs. Reviewed methods and results associated with the application of the URGWOM planning model (*Riverware*) for alternatives analysis. ▪ Directed a comprehensive evaluation of the Middle Rio Grande Conservancy District's irrigation system efficiency and metering program. Reviewed historical supply-and-demand and system operations data and, in conjunction with agricultural engineers, evaluated opportunities for efficiency improvement.

Coalbed Methane Stream Depletion Studies, San Juan, Raton, and Piceance Basins — For the Colorado Oil and Gas Conservation Commission and the Colorado Division of Water Resources, assessed the potential for stream depletion as a result of removal of water by coalbed methane wells located in sedimentary rock formations. Findings from this study would be used for regulatory decision-making and would delineate "non-tributary" management areas.

Groundwater/Surface-Water Interaction Modeling to Support River Restoration Planning, San Joaquin River, California — For the U.S. Bureau of Reclamation, directed the development and application of multiple three-dimensional groundwater models of the riparian zone along a 150-mile reach of the San Joaquin River, incorporating river boundary conditions identified in HEC-2 model simulations. The models were developed for simulating groundwater/surface-water interactions and riparian conditions associated with stream restoration alternatives. In a subsequent work phase, used the models to address questions posed by the Friant Water User's Association during litigation. Following settlement of litigation, applied the models in a CEQA environmental impact analysis to address questions of river losses and bank seepage.

Fractured Bedrock Water Rights Evaluation, Leadville Water, Colorado — On behalf of an objector group including municipalities and water conservation districts, prepared an expert report and provided deposition testimony regarding a water rights application for appropriation of water and associated stream depletion impacts. Provided hydrologic and geochemical evaluations of the source of mine tunnel discharge, and provided calculations on stream depletion impacts relevant to applicant's request for a non-tributary determination in Water Court.

Basin-wide Groundwater Assessments for Tribal Water Rights Adjudication, Montana — For the Confederated Salish and Kootenai Tribes, evaluated groundwater resources for multiple regional groundwater basins within Reservation boundaries. Directed the development and calibration of three basin-scale groundwater models. Evaluated alternate water use scenarios and impacts of land and water use on groundwater storage and instream flows. Provided technical support to Tribe regarding groundwater/surface-water interaction as related to water rights negotiations.

REPRESENTATIVE EXPERIENCE in *GROUNDWATER REMEDIATION, MINING HYDROLOGY, CONTAMINANT TRANSPORT, LITIGATION SUPPORT*

Environmental Investigation and Groundwater Modeling of PCE and TCE, Massachusetts — At the Resolve Superfund Site, assessed geochemical and hydrogeologic data from fractured bedrock environment to identify the potential extent of PCE and TCE as DNAPL and dissolved-phase contaminants. Analyzed aquifer tests, and developed and calibrated a three-dimensional numerical groundwater-flow and particle-tracking model. Conducted capture-zone modeling analyses of alternate extraction-well scenarios, and designed an extraction-well system considering performance objectives, wetland issues, and risk of DNAPL remobilization. Served as Expert Committee member and prepared presentations for PRP steering committee and the U.S. Environmental Protection Agency's (USEPA) on remediation risks and goals at DNAPL sites.

Impacts of Hard-Rock Mining Activities on Water Quality, Berkeley Pit, Montana — Evaluated the impact of historic and recent hard-rock mining activities on pit-lake water levels and water quality. Conducted and directed field investigations, reviewed historical mining documents and maps, conducted hydrologic modeling, and integrated geochemical evaluations for technical support in litigation for allocation of liability between current and previous owners. Evaluated impacts of current mine operations on remedial options.

Environmental Investigation and Remedial Pre-Design for BTEX Contamination of Soil and Groundwater at Natural Gas Compressor Station Sites, Colorado — Designed and implemented an investigation to identify the extent of free product in soil and dissolved plumes in groundwater. Directed pre-design field programs to assess geochemical conditions and conducted pilot tests of remedial technologies. Supervised site project managers in the drilling of horizontal wells and the construction and start-up of soil vapor extraction and air-sparging remedial systems.

Former Manufactured Gas Facilities and Creosoting Operations, Utah and Idaho — Evaluated the origin, timing, extent, and impact of creosote and coal tar DNAPLs on groundwater quality. Provided expert report for use in litigation to recover remediation costs from insurance carriers.