

Michael Jones
Principal Hydrologist
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Mr. Jones joined JSAI in 2007. He has been working as a hydrologist for 25 years, including 15 years of self-employment. Mr. Jones specializes in analysis and modeling of water systems including groundwater and surface water flow systems and their interactions with the atmosphere and human activity. He has developed groundwater and surface water flow and chemistry models for water-supply investigations, water management, environmental impact assessment, mine dewatering, and litigation. He has experience with a variety of conditions in many different locations in New Mexico and throughout the U.S. and in Canada, Mexico, Guatemala, Chile, Argentina, Pakistan, South Africa, Tanzania and Zambia.

EDUCATION

M.S., Hydrology, 1995
University of Arizona
Tucson, Arizona

B.S., Mathematics, 1988
Rice University
Houston, Texas

SUMMARY OF PROFESSIONAL EXPERIENCE

- Modeling of hydrologic and hydrogeologic systems: Projects in diverse parts of the world, reports and models that have endured high levels of review and professional criticism and have been accepted by regulators for the evaluation of the effects of water uses including groundwater pumping, surface-water diversions and other industrial, agricultural, and mining activities.
- Simulation of special conditions and environments including glaciers, wetlands, lakes and open pits, underground tunnels and other mine facilities, volcanic rock and karst systems. Modeling of high Andean and altiplano systems. Integrated groundwater-surface water-meteoric water modeling. Optimization of water management operations and costs.
- Hydrogeologic investigation, evaluation of hydrogeologic systems. Analysis of aquifer test results and other hydrogeologic data. Statistical analysis of hydrologic, meteorological, and geochemical data.
- Development of software for hydrologic analysis and modeling. Training of personnel in hydrologic modeling. Expert witness testimony. Experience with underground and high altitude conditions. Fluent in Spanish.

PROJECT EXPERIENCE

- *Balochistan, Pakistan:* Development of a groundwater-flow model to evaluate water supply availability for, and environmental effects of, a proposed mining project.
- *Penticton, British Columbia, Canada:* Development of a combined groundwater-surface water-flow model of the watersheds in the area of a closed mine, to evaluate options for closure of the tailings and waste rock facilities. Integration of model into a site water balance and water-quality model, to evaluate future water-quality and water-treatment plant requirements.
- *Cardwell, Montana, EEUU:* Development of a groundwater-flow and solute-transport model to evaluate the movement of contaminated water in the vicinity of closed tailings and waste rock facilities.
- *III Region (Atacama), Chile:* Development of a hydrologic model of a glaciated watershed to evaluate the effect of the removal of glacier ice. Support to permitting efforts and to the preparation of a glacier management plan as part of an environmental impact study.
- *Shinyanga Province, Tanzania:* Development of a hydrologic model to estimate inflow rates to an open mine pit and resulting groundwater drawdown, in support of design and permitting efforts.
- *IV Region (Coquimbo), Chile:* Development of a surface-water flow and chemistry model in support of mine closure planning.
- *Eureka, Nevada:* Development of a groundwater-flow model to project mine dewatering rates and to project the effects of groundwater pumping and post-mining pit lake development. Model and report used in support of mine planning and environmental impacts reporting.

- **Beatty, Nevada:** Development of a water balance model of a tailings facility in closure, to provide dewatering projections and assist with management of four interconnected tailings impoundments with supernatant pond, underdrains, dewatering wells, reclaim ponds, and sprinkler system.
- **San Juan Province, Argentina:** Development of a groundwater/surface-water-flow model to support design and permitting of mine facilities in the high Andes. Development of basin water balances, evaluation of water-supply potential, support for water rights application, evaluation of surface flows through diversion structures, support for design of a tailings facility, evaluation of potential for groundwater contamination and surface water depletion. Analysis of aquifer tests, evaluation of melt from alpine glaciers, analysis of surface flows, estimation of basin water budgets. Production of reports in English and Spanish used in multiple EIS.
- **Albuquerque, New Mexico:** Support for a protest to a municipal water rights application. Evaluation and critique of a groundwater-flow model for water rights adjudication. Participation in technical meetings to define details of proposed appropriation. Expert testimony at water rights hearing.
- **III Region (Atacama), Chile:** Development of a groundwater/surface-water-flow model (2000) to support design and permitting of a mine waste rock dump in the high Andes. Evaluation of water-supply potential, estimation of melt from alpine glaciers, estimation of flow through diversion structures. Evaluation of downstream water-quality effects. Analysis of aquifer tests, technical support for groundwater and surface-water monitoring network. Completion of update (2004) incorporating four more years of data. Presentation of model and results at public meetings and to government committees.
- **Santa Fe, New Mexico:** Development of a groundwater-flow model for water rights administration between the Santa Fe and Galisteo basins.
- **Cerrillos, New Mexico:** Development of a groundwater-flow and transport model to project the filling of a retired mine pit and the movement of groundwater near the pit. Projection of pit filling through surface water diversion into pit. Analysis of strategies to accomplish Reverse osmosis treatment of water in pit. Computation of sulfate concentration in the pit during filling and reverse osmosis treatment. Computer model used in preparation of mine closure plan submitted to state.
- **Elko, Nevada:** Ongoing (1992-2014) development and maintenance of a regional hydrogeologic model, used in (1) projecting pumping rates required for mine dewatering to different elevations. Computing of shared pumping and water management costs between different mines in the area, and (2) evaluation of environmental effects, including changes in regional groundwater levels, changes in basin water balances and formation of water bodies in open pits.
- **South Florida:** Development of software to simulate the reinjection of drain flow to a reservoir.
- **Sierra County, New Mexico:** Groundwater-flow modeling project used in Feasibility Study and permitting of a proposed copper mine.
- **Departamento de San Marcos, Guatemala:** Preparation of integrated groundwater-surface water model and tailings water balance to evaluate mine closure options involving open-pit backfilling and tailings facility closure. Assessment of underground dewatering requirements. Preparation of report assessing hydrologic effects of pit backfilling.
- **Connecticut:** Training of personnel in use of groundwater-flow modeling software. Customization of software for client requirements.
- **Lead, South Dakota:** Development of a water balance model of flow through a series of closed waste rock facilities with water collection systems.
- **Roswell, New Mexico:** Collection of literature and data on groundwater system. Study of system and analysis of data trends in preparation for water rights litigation in behalf of federal wildlife refuge. Documentation of the validity of refuge water rights by demonstration of past availability of surface flow. Verification of connection between groundwater and surface water at refuge, estimation of the effect of refuge impoundments on the hydrologic system.
- **Chihuahua, Mexico:** Assistance to agricultural interests in protection of water supply against municipal expansion. Inspection of agricultural area, water-level measurements, pumping tests. Meetings with municipal, state, and federal officials, research of government records and databases.