James M. Watrus

Southern Nevada Water Authority
100 City Parkway, Suite 700
Las Vegas, NV 89106
862-3400

Education
M.S. Geochemistry, New Mexico Institute of Mining and Technology, 1998
B.S. Geology, University of Idaho, 1994

Professional Experience

2007 to present — **Southern Nevada Water Authority** — Las Vegas, Nevada
SENIOR HYDROLOGIST
Employed as a Senior Hydrologist with SNWA supervising the Hydrologic Analysis and Modeling Section of the Water Resources Department. Responsibilities include directing a multi-disciplinary team on issues regarding water-resource acquisition and management as well as environmental compliance. This includes conducting water-resource investigations, water-related effects analyses, technical report preparation, water-rights analysis, expert witness testimony, and interacting with stakeholders.

2006 to 2007 — **Southern Nevada Water Authority** — Las Vegas, Nevada
HYDROLOGIST II
Employed as a Hydrologist II with SNWA within the Hydrologic Analysis Section for the Water Resources Department. Experience includes data analysis, data integration, GIS analysis, surface water sampling, water-level measurement, water quality sampling, database development, site characterization, and report preparation.

2004 to 2006 — **Parsons** — Las Vegas, Nevada
SR GEOLOGIST

Employed as a Sr. Geologist with Parsons on a groundwater resource contract for the Southern Nevada Water Authority. Experience is the same as that listed for the Hydrologist II position with SNWA.

2003 to 2004 — **INTERA, Inc.** — Las Vegas, Nevada
GEOLOGIST/GEOCHEMIST

Employed as a geologist/geochemist with INTERA, Inc. on a multi-contractor environmental team to assist the National Nuclear Security Administration in investigating the contamination resulting from the Underground Nuclear Tests conducted at the Nevada Test Site. Experience includes data analysis, data integration, web development, GIS analysis, groundwater sampling, well drilling activities, and report preparation.

1998-2003 — **Science Applications International Corporation,** — Las Vegas, Nevada
GEOLOGIST/GEOCHEMIST

Same contract as described above with INTERA, Inc.

1997-1998 **New Mexico Bureau of Mines and Mineral Resources,** Socorro, New Mexico
GEOGRAPHIC INFORMATION SYSTEMS TECHNICIAN

Worked for the Petroleum Department using the ArcView Geographic Information System to develop digital maps of the petroleum resources within the state of New Mexico. The results of the work were originally published on the New Mexico Bureau of Mines and Mineral Resources ArcIMS Petroleum Web Page. Also worked on a mineral resource assessment project for the McGregor Range located in southern New Mexico.

Project Management Summary

- Provided Expert Testimony before the Nevada State Engineer during water-rights hearings on Spring, Cave, Dry Lake, and Delamar valleys (2011)
- Provided Expert Testimony before the Nevada State Engineer during water-rights hearings on Cave, Dry Lake, and Delamar valleys (2009)
- Supervisor of the Hydrologic Analysis and Modeling Section within the Groundwater Resources Department of the Southern Nevada Water Authority.
- Development of Work Plans for the Hydrologic Analysis and Modeling Section.
- Managed Source Term Screening Project to develop a geodatabase to assist Lawrence Livermore National Laboratory in the categorization of underground nuclear tests on the Nevada Test Site.
- Prepared annual task plans for UGTA projects.

Technical Activity Work Summary

- Performed water-rights permit compliance and analysis activities
- Prepared databases for the central storage of well construction, hydrologic, geologic, and geochemical information.
- Performed data analysis tasks including compilation, qualification, and interpretation of various geologic, geochemical, and hydrologic data associated with a large-scale groundwater modeling program.
- Assisted in the preparation of technical reports.
- Implemented HTML front-end delivery system for Underground Test Area (UGTA) data analysis reports on CD-ROM and modeling web pages.
- Established a Borehole Index for the purpose of unifying well names and coordinates between the multiple contractors and organizations involved at the Nevada Test Site.
- Developed the UGTA Groundwater Modeling Web Site for the purpose of enhancing information exchange between UGTA data analysis and modeling participants.
- Assisted in the conversion of the UGTA Modeling Web from a collection of static pages to a dynamic database driven application that allows for more timely information exchange.
- Employed ArcGIS technology for the preparation of maps as well as data analysis activities.

Field Activity Work Summary

- Performed groundwater and surface water field investigations including water-level measurement, and stream and spring discharge measurements in remote Central Nevada locations.
- Participated as a team member and team leader on multi-contractor groundwater sampling events to establish regional and local groundwater chemistry.
- Performed initial well site water-quality monitoring.
- Collected geologic sample media during well drilling operations.
- Authored Site Specific Health and Safety Plans.
- Authored Technical Field Instructions and Work Packages for groundwater sampling events at the Nevada Test Site.
- Authored Letter's of Accomplishment for sampling activities and Completion Reports for well drilling activities.
- Participated in ITLV Sampler's Training to demonstrate proper sampling procedures to junior level staff.

Publications

Rowley, P.D., Dixon, G.L., **Watrus, J.M**., Burns, A.G., Mankinen, E.A., McKee, E.H., Pari, K.T., Ekren, E.B., Patrick, W.G., 2016, Geology, selected geophysics, and hydrogeology of the White River and parts of the Great Salt Lake Desert regional groundwater flow systems, Utah and Nevada, in Comer, J.B., Inkenbrandt, P.C., Krahulec, K.A., and Pinnell, M.L., editors, Resources and Geology of Utah's West Desert: Utah Geological Association Publication 45, p. 167-200.

Southern Nevada Water Authority, 2012, Addendum to the simulation of groundwater development scenarios using the transient numerical model of groundwater flow for the Central Carbonate-Rock Province—Clark, Lincoln, and White Pine Counties Groundwater Development Project: Southern Nevada Water Authority, Las Vegas, Nevada, 49 p.

Southern Nevada Water Authority, 2010, Addendum to the groundwater flow model for the Central Carbonate-Rock Province—Clark, Lincoln, and White Pine Counties Groundwater Development Project: Southern Nevada Water Authority, Las Vegas, Nevada, 48 p.

Southern Nevada Water Authority, 2010, Simulation of groundwater development scenarios using the transient numerical model of groundwater flow for the Central Carbonate-Rock Province—Clark, Lincoln, and White Pine Counties Groundwater Development Project: Southern Nevada Water Authority, Las Vegas, Nevada, 96 p.

Southern Nevada Water Authority, 2009, Conceptual model of groundwater flow for the Central Carbonate-Rock Province—Clark, Lincoln, and White Pine Counties Groundwater Development Project: Southern Nevada Water Authority, Las Vegas, Nevada, 416 p.

Southern Nevada Water Authority, 2009, Transient numerical model of groundwater flow for the Central Carbonate-rock Province—Clark, Lincoln, and White Pine Counties Groundwater Development Project: Southern Nevada Water Authority, Las Vegas, Nevada, 394 p.

Southern Nevada Water Authority, 2009, Water resource plan 09: Southern Nevada Water Authority, Las Vegas, Nevada, 64 p.

Acheampong, S.Y., I.M. Farnham, and J.M. **Watrus**, 2009, Geochemical characterization of groundwater and surface water of Snake Valley and the surrounding areas in Utah, in Tripp, B.T., Krahulec, K., and Jordan, J.L., eds., Geology and geologic resources and issues of western Utah: Utah Geological Association Publication 38, p. 325-344.

Southern Nevada Water Authority, 2008, Baseline characterization report for Clark, Lincoln, and White Pine Counties Groundwater Development Project: Southern Nevada Water Authority, Las Vegas, Nevada, 1146 p.

Southern Nevada Water Authority, 2007, Water-Resources Assessment and Hydrogeologic Report for Cave, Dry Lake, and Delamar Valleys, Presentation to the Office of the Nevada State Engineer, Las Vegas, NV.

Dixon, G.L., P.D. Rowley, A.G. Burns, **J.M. Watrus**, D.J. Donovan, and E.B. Ekren. 2007. Geology of White Pine Counties and Adjacent Areas, Nevada and Utah: The Geologic Framework of Regional Groundwater Flow Systems, Las Vegas, NV.

Rehfeldt, K., W. Drici, D. Sloop, **J. Watrus**, T. Beard, M. Sully, C. Benedict, A. Wolfsbergand, P. Reimus. 2003. Contaminant Transport Parameters for the Groundwater Flow and Contaminant Transport Model of Corrective Action Units 101 and 102: Central and Western Pahute Mesa, Nye County, Nevada, Shaw/13052-201, Rev. 0. Las Vegas, NV: Shaw Environmental, Inc.

Rehfeldt, K., W. Drici, B. Lester, D. Sloop**, J. Watrus**, T. Beard, M. Sully, W. Fryer, and C. Benedict. 2003. Hydrologic Data for the Groundwater Flow and Contaminant Transport Model of Corrective Action Units 101 and 102: Central and Western Pahute Mesa, Nye County, Nevada, Rev.0, Shaw/13052,-204. Las Vegas, NV: Shaw Environmental, Inc.

Read, A., R. Broadhead, A. Lopez, E. Fleming, and **J. Watrus**. 2000. New Mexico Oil and Gas Pools. New Mexico Bureau of Geology and Mineral Resources Circular 209. Soccoro, NM.

Southern Nevada Water Authority, 2006. Aquifer-Properties Data Compilation and Evaluation. Las Vegas, NV.

Watrus, J. 1999. A Regional Geochemical Atlas for Part of Soccoro County, New Mexico. New Mexico Bureau of Geology and Mineral Resources Open File Report 445. Soccoro, NM.