

SADLER SUPP_7

SADLER SUPP_7



Dwight L. Smith, P.E., P.G. Principal Hydrogeologist

Education

M.S. - Hydrogeology, University of Nevada, Reno, 1996
B.S. - Geological Engineering, Colorado School of Mines, 1988

Professional Registration

P.E. - Professional Geological Engineer in Nevada, PE No. 11906
H.G. - Certified Hydrogeologist in California, HG No. 194
P.G. – Professional / Registered Geologist in California and Arizona, PG No. 5974 and 28482
W.R.S. -Water Right Surveyor in Nevada, WRS No. 1045
Formerly Registered as a C.E.M. (Certified Environmental Manager) in Nevada

Employment Summary

2002-Present: Principal Hydrogeologist, InterFlow Hydrology, Inc., Truckee, CA
2001-2002: Senior Associate, Kennedy/Jenks Consultants, Reno, Nevada
1998-2001: Associate Hydrogeologist, Stantec Consulting, Inc., Reno, Nevada
1995-1998: Senior Hydrogeologist, Stantec Consulting, Inc. (formerly SEA, Inc.)
1990-1995: Hydrogeologist, SEA, Inc, Reno, Nevada
1988-1990: Hydrogeologist, Ron Barto & Associates, Big Bear Lake, CA

Professional Summary

Mr. Smith has 25 years of experience as a consulting hydrogeologist, specializing in groundwater and surface water resource evaluations in the Western U.S., primarily in Nevada and California.

His professional experience includes: water resources development feasibility, water resources management, regional and watershed scale hydrogeologic assessments, groundwater recharge and sustainability evaluations, well design and aquifer pumping assessments, water rights surveying and research, design of dewatering systems, geochemical evaluations to assess sources of water, computer-aided groundwater and surface water flow modeling, stream flow gaging, stream and groundwater interaction studies, spring evaluations, water quality management plans, and environmental impact evaluations.

Mr. Smith has consulted to a wide range of clients, including municipalities; city, county, state and federal agencies; regional water authorities; private industries including power, mining and manufacturing; resort and recreational developments; commercial and residential establishments; private land trusts; and to other civil, geotechnical, and environmental engineering firms.

Professional Affiliations

- **International Association of Hydrogeologists**
- **National Groundwater Association – Association of Groundwater Scientists and Engineers**
- **Geological Society of America**
- **American Water Works Association**
- **Association of Engineering Geologists** – *former National Board of Directors, Section Board of Directors, and Great Basin Section Chair.*
- **Nevada Water Resources Association** – *Annual Conference Committees, and former Well Construction Seminar Chairman.*
- **Consulting Engineers Council of Nevada** – *Former Participant and Environmental Subcommittee Chair.*

Professional Experience

A representative portion of Mr. Smith's professional experience is presented below.

Basin and Regional Scale Hydrogeologic Studies

- Hydrogeologic review of sources and occurrence of arsenic in the groundwater of **Ralston Valley, Nye County, Nevada** in review of possible alternative blending sources to the existing Tonopah Public Utilities municipal system. Interflow Hydrology compiled and collected additional data on the distribution and potential sources of arsenic to groundwater, including development of a conceptual flow and sources model, exploration drilling to assess vertical distribution of arsenic in the existing Rye Patch well field, and test well drilling to assess aquifer conditions and water quality in an alternative source area further up-gradient in the regional flow system. The work successfully identified an alternative source for blending for Tonopah Public Utilities, displacing the need to construct and operate an arsenic treatment facility.
- Regional-scale and local-scale hydrogeologic evaluations in support mining water supply development, including work presented in a water rights hearing and for an EIS, within the **Diamond Valley Regional Flow System** and adjacent basins, including **Kobeh Valley, Antelope Valley, Pine Valley, and Diamond Valley, Eureka County, Nevada**. Major work tasks included examination of water budgets and perennial yield, well field exploration and test well drilling programs, aquifer testing, pit area drilling and hydrogeologic data collection, stream flow gaging, basin-line hydrologic data collection efforts, assistance with long-term monitoring plan development, and agency and stakeholder presentations – General Moly, Inc.
- Hydrogeologic Evaluations of **Muddy Springs and Regional Carbonate Aquifer in southern and eastern Nevada**, including examination of spring flow sources and explanations for seasonal and long-term variability in water levels and spring discharges, and evaluations in support of the multi-year aquifer testing of the MX-5 well - Southern Nevada Water Authority
- Hydrogeologic data collection for a comprehensive evaluation of basin-scale flow system, water budgets and perennial yield for **Dixie Valley, Churchill and Pershing Counties, Nevada**, including valley-floor and mountain-block spring reconnaissance and data collection, assistance with installation and operation of a 9-gage high-altitude precipitation network, and installation and operation of a 23-gage stream flow and playa run-on network, conducted in corporation with the

USGS as part of corparative studies funded by the Bureau of Reclamation. Interflow Hydrology is undertaking the development and calibration of a regional numeric flow model for the study - BOR & Churchill County.

- Hydrogeologic evaluations of **Tikaboo and Three Lakes Valleys** and the Ash Meadows portion of the **Death Valley Regional Flow System, Nye, Clark and Lincoln Counties, Nevada** in support of proposed groundwater development and a water right hearing - Southern Nevada Water Authority
- Comprehensive groundwater and surface water resource evaluations in **Smoke Creek Desert, Washoe County, Nevada** – including exploration drilling programs, regional aquifer testing, defining basin water balance and perennial yield, aqueous chemistry to evaluation sources of aquifer recharge and define the flow system, and numeric glow modeling of the flow systems, including work with the Desert Research Institute for groundwater discharge and evapotranspiration evaluations, and USGS for regional scale geophysical evaluations – Sempra Power Generation
- Review of hydrogeologic conditions and potential impacts to **Ash Meadows and Devils Hole** from proposed shifts in pumping distributions in western **Amargosa Desert, Nye County, Nevada**, including water right hearing participation and development of an approach with the Nevada Sate Engineer for off-setting impacts associates with water right transfers – Ponderosa Dairy
- Shallow and surfacing groundwater evaluations, regional monitoring well network, and aqueous geochemistry assessments to define sources and occurrence of regional shallow water table conditions in an urbanized portion of **Las Vegas Valley** – City of Henderson, Nevada
- Hydrogeologic evaluations of **Coyote Spring Valley** and associated **Regional Carbonate Aquifer Interpretations, Clark and Lincoln Counties, Nevada**, in support of a water rights hearing - Coyote Springs Investments
- Hydrogeologic and review of wells and farming in **Smith Valley, Lyon County, Nevada**, including review of Walker River issues and perennial yield of groundwater to support the farms, done as part of a due diligence review for farm acquisition – Confidential Client
- Hydrogeologic evaluations of **Warm Springs Valley, Washoe County, Nevada**, including review of basin perennial yield, numeric flow modeling of a proposed artificial recharge-storage-recovery project, monitoring well construction, and establishment and operation of a stream and spring flow gaging network – Intermountain Land and Cattle
- Hydrogeologic investigation of **Granite Springs and Kumiva Valleys, Churchill and Pershing Counties, Nevada**, including defining the flow system and providing estimates of basin recharge and discharge and perennial yield – ATS & C-Punch Ranch in cooperation with Churchill County
- Basin-fill and regional potentiometric water-level database development, mapping, and assessment for over 30 Hydrographic Basins in **Eastern and Central Nevada and Western Utah** - Southern Nevada Water Authority
- Hydrogeology, well and aquifer testing, water rights review, and consumptive water uses evaluation for the **Tracy Segment of the Truckee River, Washoe and Storey Counties, Nevada** – Grand Slam Enterprises
- **Martis Valley** groundwater recharge and perennial yield assessment, **Placer and Nevada Counties, California**, conducted as part of the Martis Valley regional planning effort – Martis Valley Property Owners Trust
- Hydrogeologic evaluations of the **Dry Valley and Bedell Flat, Washoe County, Nevada**, including estimates of water budgets and perennial yield, testing well drilling program, aquifer testing, and

numeric flow modeling, in support of water rights permits and EIS impact analyses – Intermountain Water Supply

- Hydrogeology of the **Cabazon Basin, Riverside County, California** including defining groundwater conditions and basin water budget.
- Multi-basin water supply feasibility review, **Northeastern Nevada** - Coastal Power Company
- Potential for land subsidence from water level declines, **Wickenburg, Maricopa County, Arizona** - Toyota Testing Facility
- Hydrogeologic evaluations, sustainable yield estimates, test well drilling program and aquifer testing at the **Hamilton Ranch, Big Bear Lake, San Bernardino County, California**

Numeric Groundwater and Surface Water Flow Modeling

- Development of the Conceptual Model and on-going development of a Numeric Flow Model using MODFLOW for the Dixie Valley flow system, Churchill and Pershing Counties, Nevada - U.S. Bureau of Reclamation & Churchill County
- Regional Numeric Flow Modeling using MODFLOW-SURFACT of a portion of the Diamond Valley Flow System, including Kobeh, Antelope, Pine and Diamond Valleys, Eureka County, Nevada – General Moly
- MODFLOW2000 Numeric Flow Modeling of the Lower Virgin River Aquifer System - Southern Nevada and Northwestern Arizona – Southern Nevada Water Authority
- MODFLOW2000 Numeric Flow Modeling of the Smoke Creek Desert, Washoe County, Nevada – Sempra Power Generation
- MODFLOW2000 Numeric Ground-Water Flow Modeling of Bedell Flat for an EIS, Washoe County, Nevada - Intermountain Water Supply
- MODFLOW2000 Numeric Flow Modeling of Dry Valley for an EIS, Washoe County, Nevada - Intermountain Water Supply
- MODFLOW Numeric Modeling and Design of Temporary Barrow Pit Dewatering Facilities, Pioneer Meadows, Sparks, Nevada
- Herlong Utility Coop, Honey Lake Valley, California - Professional Peer Review of a MODFLOW Groundwater Model
- MODFLOW Simulation of the Effects of Artificial Recharge in Warm Springs Valley, Washoe County, Nevada, Intermountain Water Supply
- Hassayampa Wash Sub-Basin, Arizona, Professional Peer Review of a MODFLOW Model
- MODFLOW Aggregate Pit Dewatering Model, Lower Truckee River, Washoe County, Nevada
- Stampmill Estates MODFLOW Modeling for Water Quality (Nitrate) Management, Wadsworth, Nevada
- Steamboat Creek Drop Structure Seepage and Hydrostatic Uplift Analysis (SEEP2D) - Washoe County Regional Transportation Commission

Surface Water Studies

- Walker River flow system evaluations, including quantification of flows through the Walker River Paiute Tribe Reservation, hydrologic effects of Weber Reservoir, and technical evaluations of options to account and manage conveyance of water rights through the Lower Walker River, Nevada.
- Walker River evaluations of flows and decreed/permitted water rights on the system, in support of water right litigation settlement discussions, California and Nevada.
- Warm Spring Creek, Spring and Stream Flow Gaging Network operation and management, and technical evaluations of the feasibility of proposed artificial recharge of stream flows, Washoe County, Nevada.
- Martis Valley Surface Water & Groundwater Interaction Study for tributaries to the Upper Truckee River, primarily in Martis Valley, including seepage run stream flow measurements, chemistry data collection, and historic gage data interpretations, Placer and Nevada Counties, California.
- Dixie Valley stream flow gaging network - operation of a 22 gage network to collect data on runoff and stream flows in Dixie Valley, Churchill and Pershing Counties, Nevada.
- Kobeh, Pine and Antelope Valley Regional Stream and Spring Flow Monitoring - assisted with installation of stream gages, conducted miscellaneous stream and spring discharge monitoring for regional baseline data collection, conducted a comprehensive inventory of spring and stream flows in Kobeh Valley for submittal to the Nevada Division of Water Resources, Eureka and Lander Counties, Nevada.
- Galena Creek Surface Water Diversion – Infiltration Collector, Montreux Development, Washoe County, Nevada.
- Infiltration Gallery Assessment near the Truckee River, Kal Kan Foods, Storey County, Nevada.
- Duck Lake Valley, Reconnaissance Surface Water Resources Assessment, Washoe County, Nevada.
- Ophir Lake Project, Surface Water Resources and Potential for Artificial Recharge, Washoe Valley, Nevada.
- Hamilton Canyon Dam Feasibility, Sonoma County, California.

Watershed Scale Hydrogeologic Studies

- Groundwater sources and occurrence in the West Martis Creek watershed and at a localized development area with shallow and surfacing groundwater concerns, Placer County, California
- Geothermal well and Truckee River interaction investigation at the River Inn property, Washoe County, Nevada.
- Well performance and hydrogeologic evaluation for new well locations for the Gold Mountain Community Service District, Plumas County, CA.
- Hydrogeologic evaluation for the Meadow Ranch Project EIS near Calpine, including surface water and groundwater resources, Sierra County, CA.
- Appraisal of groundwater development potential near the Great Basin Ready Mix Plant, Mustang, Washoe County, Nevada.
- Hydrogeologic evaluation of Alpine Meadows for new horizontal and/or vertical well development, Placer County, CA.

- Hydrogeologic evaluation of a portion of Hungry Valley for a proposed industrial facility, Washoe County, Nevada.
- Sierra Highlands water resources development and hydrogeologic evaluation for an EIS, Portola, California

Water Rights Management and Evaluations

- Abstracting of active surface water rights and spring rights in the Walker River tributary watershed, California and Nevada
- Comprehensive research of Water Rights in 10 Hydrographic Basins in Eastern Nevada and Western Utah - Southern Nevada Water Authority
- Detailed Water Rights Research and Committed Water Rights Assessment for Spring Valley – Southern Nevada Water Authority
- Research and Committed Water Rights Assessment for the Tracy Segment Hydrographic Area – Gland Slam Enterprises
- Truckee River Water Rights Availability Assessment - Washoe County Regional Water Planning Commission
- Truckee River Water Rights Recovery Program - Truckee Meadows Water Authority
- University of Nevada, Reno, Main Station Farm and Valley Road Farm Water Rights Consulting
- Kiley Ranch, Reno, Water Rights Research, Surveying and TMWA Banking
- MGM Resorts International, Las Vegas - Water Rights Development, Management, and Proofs for all MGM properties in Las Vegas Valley, including Shadow Creek Golf Course and Bellagio Casino
- Operating Engineers JAC, Wadsworth, Nevada - Water Rights Management and Proofs
- Midas Joint Venture, Water Rights Research, Northern Nevada
- Marshall Ranch, Washoe County, Nevada, Water Rights Appropriations, Vested Claims, Artificial Recharge, and Proof of Beneficial Use

Well Drilling, Design and Aquifer Testing

- Shipley Hot Spring exploration, test well drilling, and high capacity production well design for an augmentation source of geothermal water, Eureka County, Nevada
- Tonopah Public Utilities exploration and test wells drilling, aquifer testing, and new municipal wells design and construction supervision, for development of a low arsenic content water source in Ralston Valley, Nye County, Nevada
- Mt Hope Project well field exploration, test wells, and aquifer testing program in Kobeh Valley for a mining and milling water supply, Eureka County, Nevada
- Royal Gorge Ski Area Exploration and Test Wells Program for new water supply development, Placer and Nevada Counties, California
- Big Chief Lodge well tests for dependable water supply analyses, Placer County, California
- Squaw Valley Mutual Water Company well rehabilitation, Placer County, California
- Duraflex International Corporation well rehabilitation, Washoe County, Nevada

- Dry Valley Test Wells Program, Washoe County, Nevada
- Smoke Creek Desert Exploration Drilling and Test Wells Program including long-term aquifer tests, Washoe County, Nevada
- Mt. Rose Ski Area Well Development Program, Lake Tahoe, Nevada
- Alpine Springs County Water District, Performance Evaluation of Horizontal Wells, Placer County, California
- Pine Ridge Exploration and Production Wells Drilling and Testing, Portola, California
- Gold Mountain Well Performance Evaluations and New Well Construction, Portola, California
- Incline Village General Improvement District, Exploration Wells Program, Lake Tahoe, Nevada
- Community of Coto de Caza, California, Groundwater Development, Well Fields and Aquifer Testing
- Kaiser Micromill Well Construction and Aquifer Testing, Storey County, Nevada
- Kal Kan Dry Food Well Construction and Aquifer Testing, Washoe County, Nevada
- City of Fallon, Nevada, Municipal Well No. 4 Design, Construction Supervision and Testing
- Ancil Hoffman Golf Course Water Supply - Sacramento County Parks & Recreation
- Deule Vocation Facility Well Performance Evaluation - California Department of Corrections
- Shadow Creek Golf Course Well Field Development, Las Vegas, Nevada
- Bellagio Resort and Casino Production Wells, Las Vegas, Nevada
- Las Vegas Water Pollution Control Facility Dewatering Well System – Clark County Sanitation District
- Washoe Lake Wetlands Test and Production Wells, Washoe County, Nevada – Nevada Department of Transportation
- Glenshire Mutual Water Company Well Designs and Standard Specifications, Truckee, California
- City of Corona, California, Municipal Well Design, Construction Supervision, and Testing
- City of Simi Valley, California, Municipal Well Construction Supervision
- Community of Imlay, Nevada, Groundwater Development Evaluation and New Municipal Wells
- Pyramid Lake Paiute Tribe, Nevada, High School New Irrigation - Quasi-municipal Well
- University of Nevada, Carlin Fire Training Academy Facility and Training Water Supply Wells

Environmental-Contaminant Evaluations

- High Salinity Agricultural Irrigation Evaluation as a Groundwater Mitigation Alternative - Buffalo Valley & Lower Reese River, Nevada
- Warm Springs Valley Groundwater Quality Management Plan, Washoe County, Nevada
- Mining Site Soil and Groundwater Contamination Characterization and Monitoring Network - Northeastern Nevada

- Environmental Characterization of Soil and Groundwater Contamination at the Mountain Warfare Training Center, California – US Department of Defense
- Environmental Remediation of Fuel Contaminants in Soil and Groundwater - Lassen Union High School, Susanville, California
- Silver Lake Landfill Remediation, Reno, Nevada
- Solid Waste Assessment Testing (SWAT) Evaluations and Groundwater Quality Monitoring Networks at Approximately 12 Landfill Facilities, Riverside and San Bernardino Counties, CA

Publications & Seminar/Conference Presentations

Smith, D.L., and Childress, J.M., 2012, **Observations of Elevated Chloride and Bromide Contents in Bulk Precipitation and Mountain Block Spring Samples in Dixie Valley, Churchill and Pershing Counties, Nevada, 2010 NWRA Nevada Water Conference**, Las Vegas, NV, abstract and presentation.

Childress, J.M., and Smith, D.L., **Arsenic Distribution in Groundwater of Ralston Valley, Nevada and Identification of Alternative Groundwater Sources for the Town of Tonopah, 2012 NWRA Nevada Water Conference**, Las Vegas, NV, abstract and presentation.

Blazer, D.J., Barter, H.W., and Smith, D.L., 2011, **Development of a Coupled Pit-Dewatering and Post-Closure Lake-Development Model for Projections of Long-Term Mining Impacts**, paper and abstract presentation to the 2011 MODFLOW and More Conference, International Center for Groundwater Modeling, Golden, Colorado.

Smith, D.L., 2010, **Diamond Valley Numeric Flow Modeling and Observed Responses to Four Decades of Agricultural Pumping above the Estimated Perennial Yield, 2010 NWRA Nevada Water Conference**, Las Vegas, NV, abstract and presentation.

Childress, J.M., Smith, D.L., and Katzer, T.K., 2010, **Hydrogeology of Granite Springs Valley, Nevada & Geochemical Evidence for Pleistocene-Age Recharge Waters in a Closed-Basin Valley-Fill Aquifer, 2010 NWRA Nevada Water Conference**, Las Vegas, NV, abstract and presentation.

Smith, D.L., 2008, **Hydrogeology of Martis Valley, Placer and Nevada Counties, CA**, public seminar sponsored by the Truckee River Watershed Council, Watershed Issues Forum.

Ayoub, A., Collier, S., and Smith, D.L., 2008, **Review of Climate Variation and Hydrologic Responses at the Muddy River Springs, Clark County, Nevada - Comparison of Climate Indices for use in Partitioning Climate and Pumping Influences, 2008 NWRA Nevada Water Conference**, Mesquite, NV, abstract and presentation.

Smith, D.L., 2007, **Utility of Numeric Flow Models in Administration of Nevada Water Rights**, Association of Engineering Geologist 2007 Annual Conference, Los Angeles, CA, abstract and presentation.

- Smith, D.L., 2006, **Groundwater & Surface Water Management – Technical Issues**, in *Water Rights Management: Use and Shared Use Agreements in Nevada*, Lorman Education Services seminar, Reno, NV.
- Smith, D.L., Johnson, J., Kisting, G., and Donovan, D., Burns, A., 2004, “**Climate and Barometric Pressure Influences on Pederson Spring Discharge and the Carbonate Aquifer near the Muddy Springs, Southern Nevada**”. *Journal of the Nevada Water Resources Association*, Fall 2004, Vol. 1, No. 1, pp. 76 – 103.
- Smith, D.L., Johnson, J., Kisting, G., and Donovan, D., 2004, “**Implications of Barometric Pressure and EH-5B Water Levels to Discharge of Pederson Spring, Clark County, Nevada**”, 2004 NWRA Nevada Water Conference, abstract and presentation.
- Smith, D.L., Albright, C.A., and Smitherman, J., 2003, “**Availability of Decreed Truckee River Water Rights and Projections of Future Water Demands in the Truckee Meadows Area, Southern Washoe County, Nevada**”, 2003 NWRA Nevada Water Conference, abstract and presentation.
- Johnson, J., Smith, D.L., and Katzer T., 2002, “**Regional Carbonate Aquifer - A Hypothesis of Terminal Groundwater Outflow to the Colorado River**”, 2002 NWRA Annual Nevada Water Conference, abstract and presentation.
- Smith, D.L. and Guitjens, J.C., 1999, “**Characterization of Urban Surfacing Groundwater in Northwest Henderson, Clark County, Nevada**”, *Environmental and Engineering Geosciences*, Vol. IV, No. 4, pp. 455 - 478.
- Smith, D.L. and Katzer, T., 1998, “**Lemmon Valley Water Resources Project - Marshall Ranch Alternative, Proposed Development of a Supplemental Water Supply for the North Valleys Area of Reno**”, 1998 NWRA Nevada Water Conference, abstract and presentation.
- Smith, D.L. and Guitjens, J.C., 1996, “**Shallow and Surfacing Groundwater in an Arid Urban Environment**”, *Proceedings of the ASCE North American Water and Water Environment Congress of 1996*.

Testimony as a Qualified Expert in Hydrogeology, Water Resources Evaluations, and Water Rights

- 2001 – Hydrogeology – Warm Springs Valley, Washoe County, Nevada, proposed interbasin spring and stream water rights transfer – Intermountain Water Supply.
- 2002 – Hydrogeology – Coyote Spring Valley, Lincoln and Clark Counties, Nevada, groundwater resources, regional carbonate aquifer flow, regional spring discharge, and potential impacts to the Muddy River Springs - Coyote Springs Investments.
- 2003 – Hydrogeology – Warm Springs Valley, Washoe County, Nevada, proposed artificial recharge, storage and recovery, including numeric flow modeling – Intermountain Water Supply.
- 2004 – Hydrogeology – Three Lakes and Tikaboo Valleys, Southern Nevada, regional flow system interpretations - Southern Nevada Water Authority.
- 2006 – Hydrogeology – Bedell Flat, Washoe County, Nevada, basin water resources, numeric flow modeling, and committed water rights – Intermountain Water Supply.

- 2006 – Water Rights – Spring Valley, Eastern Nevada, committed underground water rights and consumptive water uses – Southern Nevada Water Authority.
- 2007 – Hydrogeology and Water Rights – Tracy Segment of the Truckee River, application to appropriate groundwater for light industrial uses – Grand Slam Enterprises.
- 2007 – Hydrogeology and Water Rights – Granite Springs and Kumiva Valleys, representing a protestant to proposed groundwater exportation – C-Punch Ranch.
- 2007 – Hydrogeology – Amargosa Desert pending change applications and potential impacts to Ash Meadows and Devils Hole – Ponderosa Dairy.
- 2007 – Water Rights – Expert witness in a civil action to resolve a Truckee River water rights transaction dispute.
- 2008 – Hydrogeology and Modeling – Mount Hope Project, Eureka County, Nevada – Basin-scale water resources development for a proposed mining project - General Moly.
- 2010 - Hydrogeology and Modeling – Mount Hope Project, Eureka County, Nevada – Updated Basin-scale water resources model for the Diamond Valley flow system - General Moly.
- 2012 - Hydrogeology - Expert witness in a civil litigation involving sources and occurrences of shallow and surfacing groundwater, and potential association with up-gradient surface water runoff retention facilities at a ski resort in the Sierra Nevada Mountains.