

Discipline/Specialty

- Western US water resource issues: supply, quality, modeling & management.
- Assessment of groundwater basin yield, water quality, natural recharge and sustainability.
- Groundwater exploration, development and management.
- Groundwater well design, construction, maintenance.
- Conjunctive use, groundwater storage/banking, artificial recharge, wetlands treatment.
- Stormwater treatment, water quality compliance, TMDL development.
- Litigation support and expert testimony.

Education

- M.S. Geological Sciences, University of California, Santa Barbara, 1987
- B.S. Geological Sciences (cum laude), University of California, Los Angeles, 1984

Registrations/Licenses

- CA Professional Geologist #5297
- CA Certified Hydrogeologist #332
- AZ Registered Geologist #28138
- Private Pilot
- Certified SCUBA Diver/PADI

Professional Affiliations

- Groundwater Resources Association of California
- National Groundwater Association
- Geological Society of America
- Association of California Water Agencies
- Arizona Hydrologic Society
- Water ReUse Foundation

Summary of Qualifications

Mr. Thompson's 24-years of professional background and education provide a broad base of experience in water resource science, regulatory issues and project management. He has extensive knowledge of local, state and federal regulations and policies, and a detailed understanding of the roles and responsibilities of governmental agencies at various levels. He has provided leadership in all facets of corporate management, client development, technical program development and implementation, and project administration. He is active in numerous groundwater and stormwater projects for both public-sector and private-sector clients focused on water quality issues; water rights; water resource planning; water quantity and water quality modeling; conjunctive use and artificial recharge; constructed wetlands; stormwater and surface water quality modeling and monitoring; stormwater treatment, TMDL and BMP evaluation; and regulatory compliance. Corporate management responsibilities have included leadership of technical and administrative staffs, office management, financial tracking and reporting, and investor relations.

Relevant Experience

Water Resources

Project Manager — City of Fillmore, California

Directed **groundwater supply analysis**, well site selection, basin-wide water quality and water supply modeling, and permitting evaluation of new water supply well field needed by this groundwater-dependant City. Planning for well installation is scheduled to occur in mid-2009. Services also included groundwater-surface water interaction analyses, analysis of groundwater quality effects resulting from recharge associated with proposed changes to overlying land uses, water quantity and water quality modeling for evaluation of potential changes to groundwater resulting from contemplated Regional Board-required modifications to the City's drinking water and wastewater treatment systems.

Project Administrator — Shea Homes RiverPark Development, Oxnard, California

Responsible for design and environmental analysis of **stormwater treatment** systems using wetlands and other natural treatment mechanisms for this large (2,400+ homes and 2.5 million square feet of commercial development) southern California development. Project included extensive CEQA documentation and technical report preparation as part of the EIR team, water rights and groundwater pumping allocation assessment, **groundwater-surface water interaction**, design and modeling of robust stormwater quality treatment facilities, groundwater modeling of nearby contaminated site flow and water quality, evaluation of future water quality constraints, compliance with TMDL limitations, large-scale groundwater dewatering plan design and Los Angeles Regional Water Quality Control Board permitting, monitoring

well design and installation, water quality analysis of surface water-groundwater interactions, assessment of adjacent MTBE contaminated zones issues and impacts, coordination with local agencies (UWCD, Fox Canyon GMA, Ventura County, City of Oxnard) and management of formal destruction of numerous pre-existing oil wells and water wells.

Project Manager – City of Santa Clarita, California

Analysis and mitigation of flooding in a residential area caused by high surficial recharge rates that generate occasional high groundwater conditions. Project included **hydrogeologic evaluation** and well siting work leading to the installation of two (2) monitoring wells, one (1) new production well and retrofit of an existing production well to allow dewatering and associated water level monitoring of groundwater conditions. Tasks included aquifer flow analysis, well permitting, contractor selection, well logging, water quality testing, performance testing, well design and completion, and overall project management.

Project Manager – Lake Arrowhead Community Services District, California

Responsible for the **regional groundwater exploration** and development project, including well site selection, structural geologic mapping and analysis, well design, contractor selection assistance, permitting (County and CEQA). Conducted installation of five (5) deep bedrock wells (600 to 800 ft deep in fractured granitic bedrock), well logging, oversight of geophysical logging, water quality testing, well completion. Follow-on work included evaluation of future drilling targets, environmental compliance support, and identification of optimal future exploration approach and targets.

Project Manager – Goleta Water District, California

Managed the feasibility study, design and grant funding application for **well injection** of potable water into six (6) existing District wells for aquifer recharge project. Grant was fully funded and was one of the two highest scoring applications submitted statewide for the early 2002 round of Proposition 13 Water Bond funding.

Project Manager – Young-Nak Presbyterian Church, Lake Hughes, California

Provided technical analyses in support of the CEQA evaluation of potential impacts associated with expansion of this retreat center. Work involved **groundwater supply assessment**, recharge calculations, groundwater quality modeling, stormwater modeling and regulatory liaison services with County of Los Angeles and other regulatory agencies.

Project Manager – Green Valley County Water District, California

Directed the **groundwater exploration and development** program for this community in northern Los Angeles County. Work included regional exploration and well site selection, design and oversight of seismic surveys, installation of 900 ft bedrock well, including contractor oversight, permitting (including extensive US Forest Service coordination), well logging, water quality testing, wellhead treatment recommendations, well completion and startup.

Project Manager – Bear Valley Community Services District, Tehachapi, California

Services included extensive analysis of this groundwater-dependant District's needs and requirements, bedrock aquifer analyses, quantification of natural recharge, geophysical evaluations (seismic reflection and refraction), remote sensing investigations, site selection and installation of 4 deep-bedrock, 1 alluvial, and 2 monitoring wells and consulting on various groundwater management issues and opportunities.

Project Team Member – City of Los Angeles, California

Operated in the City's Watershed Division as part of stakeholder group CREST (Cleaner Rivers Through Effective Stakeholder TMDLs) in the preparation of **stormwater pollutant load** estimates in this highly urbanized Los Angeles area watershed, and the prediction of the impacts of various watershed management scenarios on in-stream water quality TMDLs. Project involved preparation of the Ballona Creek Bacteria TMDL, including work items such as devising various implementation options for achieving bacteria limits for the three reaches of the Creek, understanding the effects of potential implementation options, and evaluating the range of suggested options in relation to a series of goals and objectives.

Project Manager – Sleepy Valley Water Company, Canyon Country, California

Conducted **water rights evaluations** of groundwater resource in a tightly bounded basin with direct connection to the surface water resource of overlying Mint Canyon Creek. Tasks include preparation of a Water Availability Analysis as part of the Sleepy Valley Water Company's water rights application; response to competing water rights applicants via formal Water Right Complaint process; aquifer analysis; technical support and testimony at Los Angeles County Regional Planning Board of Supervisors Conditional Use Permit application hearings; and, pumping test oversight. As part of this process, estimates of the available water in the watershed above the point of diversion were calculated in an effort to assess the average annual available water in relation to Sleepy Valley's annual diversion amount and in relation to amounts allocated other users in the basin, both upstream and downstream of Sleepy Valley's wells.

Project Team Member – County of Los Angeles, California

Team member for preparation of Los Angeles County Department of Public Works North Santa Monica Bay Watersheds (NSMBW) Regional Watershed Implementation Plan and the Malibu Creek **Bacteria TMDL**. Provided technical support to the project team regarding overview of the hydrogeology of the NSMBW and Malibu Creek watersheds, water quality model-based support for the development of structural and non-structural solutions, and research on existing municipal codes pertaining to stormwater quality.

Project Administrator / Technical Lead – City of Avondale, Arizona

Oversaw the design, permitting and construction of a 15,000 AFY **constructed wetlands and groundwater recharge** project. The constructed wetlands facility treats surface water from agricultural runoff collected by the regional SRP canal system to standards acceptable for groundwater recharge and subsequent potable reuse. This project included all aspects of project management, groundwater modeling, facility design, technical work for permit acquisition, installation (including design, logging, sampling and testing of 4 monitoring wells), system start-up and preparation of comprehensive operations & maintenance manual, and on going technical support services.

Fontana Property, Fontana, California

In support of a confidential client's interest in developing water rights investment opportunities, Mr. Thompson executed a purchase agreement for a 200-acre parcel in Fontana, California for **groundwater recharge using treated effluent** from Cucamonga County Water District. Due diligence investigations included site recharge performance testing, 4-mile pipeline routing, water quality considerations, Chino Basin adjudication issues (related to obtaining recharge credits), and financial and economic projections.

Project Manager – Pacific Gas & Electric Company, Diablo Canyon Power Plant, San Luis Obispo, CA

Provided comprehensive **aquifer investigation, groundwater-surface water interaction** assessment, well testing and rehabilitation, and regulatory consulting services. Project included bedrock aquifer evaluation,

site selection and installation of 2 deep bedrock wells, extensive aquifer and well testing, evaluation water quality challenges, and determination of potential connection between groundwater pumping and flows in nearby Diablo Creek.

Project Manager – City of Santa Barbara, California

Directed the feasibility study and implementation of an **aquifer recharge** project involving well injection of potable water. Project involved review of all viable City wells to determine the suitability of each for conversion to an injection well and selection of two wells for extensive well testing and performance evaluation for conversion to dual use injection-extraction wells. Evaluation also included geochemical modeling of potential effects of mixing surface water and groundwater of differing chemistries.

Technical Manager – City of Mesquite, NV

Oversee **groundwater-surface water interaction** component of the lower Virgin River Habitat Conservation Plan (HCP), as required for regulatory compliance with Section 7 of the Endangered Species Act. Mr. Thompson's role includes preparation and implementation of the Hydrological Monitoring and Mitigation Plan which constitutes a long-term monitoring program developed to determine if groundwater pumping effects flows in the adjacent Virgin River. Initial work involves collection of substantial existing data, analysis of groundwater conditions, initial assessment of groundwater-surface water interaction, review of a newly prepared groundwater model of the area, and coordination with client and local agencies.

Project Manager – City of Santa Barbara, California

Managed the drought mitigation well drilling program, including extensive groundwater exploration and development in multiple locations including:

- Mission Creek - Site selection, driller contracting, well logging, water quality testing, well performance testing and well completion of three (3) deep **bedrock production wells** (1,300 ft, 1,100 ft and 900 ft) tapping new water supplies. Project included installation of pipeline for water conveyance and extension of power lines for pumping needs and all associated permitting and agency coordination.
- North Portal of Mission Tunnel - Site selection, driller contracting, well logging, water quality testing, well performance testing and well completion of deep **bedrock production well** (1,250 ft) tapping new water supplies and conveyed to North Portal of Mission Tunnel for augmentation of City water supply.
- Gibraltar Reservoir – **Groundwater exploration** under emergency drought-related demands including regional hydrogeologic investigations, well site selection, driller contracting, well logging, water quality testing, well performance testing. Project resulted in completion of five (5) shallow alluvial production wells (80 to 130 ft) tapping water supplies present beneath reservoir bottom silts and muds during drought period when reservoir was completely dry. Well site selection was based upon geophysical analysis of subsurface materials, primarily employing time-domain electromagnetic geophysical techniques.

Project Administrator / Technical Lead – Central Arizona Project, Arizona

Oversaw the conceptual design and permitting analysis of a 100,000 AFY **groundwater recharge** facility feasibility study. Project included extensive permitting evaluations; preparation of preliminary design drawings for recharge facilities and conveyance facilities; and in-stream habitat considerations. Diagnostic infiltration testing was conducted and used to predict long-term recharge basin performance and provide input data for preliminary groundwater modeling analysis of potential project impacts..

Water Resources Technical Lead – California Department of Food and Agriculture (DFA)

As part of the ENTRIX team preparing a programmatic EIR for the eradication of the light brown apple moth (*Epiphyas postvittana*) (LBAM) from affected counties within the state of California, Mr. Thompson provides analysis of potential **water quality** and watershed effects associated with the various methods contemplated for eradication. The ENTRIX team members are also coordinating with an Environmental Task Force and other state agency staff in preparing the PEIR and responding to public comments. Other aspects being evaluated by the team include potential impacts from program activities on human and ecological health from aerial and ground application of pheromone mating disruption pesticide and bacterial-based larvicides, the economic impacts of No Project and program activities on organic farmers, water quality/watershed effects, noise, and public services.

Project Manager / Technical Lead – Apex Industrial Park, Las Vegas, Nevada

Regional groundwater exploration and permitting effort resulting in installation of two (2) deep bedrock wells (2,450 ft production well and 1,400 ft monitoring well), regional hydrogeologic evaluations, water rights filing and water supply planning. Duties included well logging; water quality sampling and analysis; drilling oversight; contractor administration; well testing design, monitoring and evaluation; and well completion design and supervision. Well site selections and regional hydrogeologic analyses were also conducted in 4 separate groundwater basins throughout the area north of Las Vegas, along with extensive water rights and federal agency coordination and planning.

Project Manager – TriMark Development Partners – North Shore Mandalay Development, Oxnard, California

Development of **stormwater water quality model** and subsequent design recommendations to establish compliance with City and State regulatory limits. Additionally, provided long-term groundwater monitoring services for wetland mitigation parcel required as part of project implementation.

Project Manager – Los Alamos Community Services District, California

Evaluation of **groundwater basin yield** and water quality utilizing existing wells, well site selection, well design and permitting consulting for planned new well for this small community in northern Santa Barbara County.

Due Diligence Support**HerbThyme Farms, Oceanside, California**

In support of pre-acquisition due diligence being conducted by The Riverside Company, Mr. Thompson conducted expert review and support services related to **water supply alternatives**, water rights, surface water – groundwater interaction and reverse-osmosis treatment system design alternatives.

Teasdale Quality Foods, Atwater, California

In support of pre-acquisition due diligence, Mr. Thompson conducted expert review and support services related to this cannery's **groundwater production** including: reliability of yield, integrity of well and pumping facilities, regional groundwater contamination issues impacting clients' wells, Regional Water Quality Control Board NPDES permitting considerations for facility effluent, considerations related to partial conversion to City water supplies, and cost analysis of various physical and institutional water supply alternatives.

Las Posas Basin, Moorpark, California

In support of a confidential client's interest in developing water rights investment opportunities, Mr. Thompson conducted extensive analyses of **groundwater recharge** options in an over-drafted portion of this large southern California groundwater basin for determination of groundwater recharge volumetric potential and water rights investment opportunities. Evaluation involved extensive review and analysis of existing wells, planned wells, water quality information, water rights and groundwater modeling conducted by USGS and Ventura County.

Summit Engineering, Reno, Nevada

Conducted detailed **groundwater recharge** calculations for investor-based EcoVision project encompassing entire northern half of State of Nevada. Developed robust GIS-based methodology to calculate natural recharge to the numerous vast groundwater basins from natural precipitation, including considerations of 30+ years of rainfall, snowpack, runoff and evapotranspiration data. Developed a modified approach to the soil-moisture balance technique to determine long-term recharge amounts in support of demonstrating to Nevada Division of Water Resources State Engineers Office the presence of surplus, un-allocated groundwater. Project concept included intention to wheel water down Humboldt River for sale to potential buyers in Reno and Carson City areas.

Burlington Northern-Santa Fe InterModal Railroad Yard, San Bernardino, California

Conducted detailed groundwater development, water quality, wellfield design and water rights evaluations for an investor supported **groundwater development** program in the Bunker Hill basin area of San Bernardino, California. Project included determination of potential groundwater production rates for potential resale of water to other entities.

Calpine Company, California

Provided due diligence support for Calpine Company's efforts to consider bidding on a partially-permitted power plant site in Redlands, California. Conducted analysis of **groundwater production potential**, available surface water supplies, permitting issues and water quality aspects that were critical to evaluating costs and timelines for installation and operation of a proposed 500 MW powerplant. Expertise and familiarity with general water issues, groundwater conditions, regulatory/permitting requirements and local agencies provided a highly valuable resource to Calpine in their due diligence process.

Calpine Company, Colorado

Technical services were also provided to Calpine for evaluation of a new water supply to cool a proposed 500 MW power generating station to be built by Calpine in Colorado. In addition to initial conceptual design and feasibility studies, water rights and water delivery agreements, the project required evaluation of permitting, detailed design, and engineering cost schedules.

Western Water Company, San Diego, California

Provided technical expertise in hydrogeology and **groundwater resource analysis** to this water resources investment company on a wide range of technically diverse projects. Conducted evaluations of groundwater basin production capacity, groundwater banking programs, and water transfers for many Western Water projects throughout California and the southwestern US. Expertise in basin analysis and groundwater resource issues was combined with GIS tools for most project investigations. Work commonly included coordinated a variety of information sources including research results from the U.S. Geological Survey, studies conducted by other consultants and engineering firms, and the work of public water supply agencies

that were commonly program partners. Projects also included evaluations of privatization of water supply systems and unused, treated wastewater, and also to alternative plans for existing groundwater resource use. All work products extensively utilized geographic information system (GIS) and database tools that provided analytical capabilities important to client's investment goals.

Legal and Expert Witness

- Southern California Edison v. Sunrise Growers – Provided Expert Witness services in evaluation of historical groundwater use and reporting case.
- Ladd Construction v. Ventura County Public Works - Provided Expert Witness Deposition and Testimony in formal arbitration hearing related to technical and permitting issues on construction costs dispute lawsuit.
- Keller et al v. DR Horton Homes – Deposed as a fact witness for land ownership lawsuit related to technical matters associated with timing of entitlements associated with RiverPark Development, Oxnard, CA.
- IWR v. South Tahoe Public Utilities District - Provided Expert Witness technical support and mock-trial participation for land and water-rights value determination in Federal court condemnation case.
- Spiekerman v. City of Avondale - Deposed as a fact witness for construction timing and delays lawsuit related to timing of design document, permitting completion and public agency review turn-around-time issues on a \$15 million construction project involving constructed wetlands, artificial recharge basins and residential development.

Oil & Gas Exploration

- Merrill Avenue Gas Field Discovery - Member of discovery team for a commercial gas field exploration effort in Firebaugh area of northern San Joaquin Valley. Discovery well and subsequent development wells identified the sizable “Merrill Avenue gas field”. Duties included stratigraphic analysis using adjacent well logs, seismic data interpretation and collaboration with paleontology team.
- Oil and Gas Exploration - Geologic and geophysical analyses in preparation for then-pending offshore lease sales and Central Valley opportunities as part of Unocal's technical team.
- West Coast Oil and Gas Field Research - Technical analysis, basin analysis, report research and preparation for confidential industry reports associated with near-shore oil fields and offshore California lease sale preparations, focused on northern and central California potential oil and gas fields, including offshore Santa Barbara County, Point Arena-Mendocino County, and Eel River-Humboldt County.
- Coastal California Monterey Formation Research - Field mapping and analysis of Monterey Formation and adjacent units in Point Arena area of northern California for Mobil Oil Corporation.

Corporate Management

Office Manager for Corporate Headquarters

Administrative activities include review and approval of timecards and expenses; management of payables and receivables; budgeting, staffing, recruitment and hiring; office lease negotiations; and management of network and GIS staffs and facilities.

Business Development

Duties include identification, project delineation and contracting for current and new technical programs including hydrogeologic services, TMDL services, regulatory and permitting support, water quality and environmental document technical support services. Representative clients developed include City of Los Angeles, County of Los Angeles, County of Ventura, City of Fillmore, City of Santa Barbara, Metropolitan Water District of Southern California, Calpine Corporation, Western Water Corporation, Goleta Water District, Shea Homes, numerous water districts, developers and small suppliers.

Corporate Secretary and Treasurer

Responsibilities included reporting to Board or Directors on corporate matters ranging from corporate direction, technical program development, shareholder issues, financial reporting, personnel, legal, and insurances.

Development and maintenance of collaborative partnerships

Collaborative relationships with selected consulting firms for long-term or project-specific consulting projects represent an integral component of IWR's consulting work. Representative firms include, among others: CH2MHill, CDM, Montgomery-Watson-Harza, Kennedy-Jenks, Penfield & Smith, Rincon Consulting, Impact Sciences, West Coast Environmental, Boyle Engineering, Fugro-West, GeoSyntec, and Bren School (UCSB).

Publications

- Thompson, T.J., 2001, Stormwater Drainage Planning – RiverPark Development: Presentation/Documentation for Fox Canyon Groundwater Management Agency, Ventura, California, April 25, 2001.
- Thompson, T.J., 1999, Treatment and Recharge at the Wetlands of Avondale [abs.]: Ninth Biennial Symposium on the Artificial Recharge of Groundwater, Tempe, Arizona, June 10 – 12, 1999.
- Thompson, T.J., 1997, Wetlands Treatment and Artificial recharge of Colorado River Water [abs.]: Groundwater Resources Association, Ventura, May 15, 1997.
- Thompson, T.J., 1995, Constructed Wetlands and groundwater replenishment using imported Colorado River water in Avondale, Arizona [abs.]: Proceedings of the Arizona Hydrological Society's 8th Annual Symposium, Water Use in Arizona: Cooperation or Conflict, September 14-16, 1995, p. 123-124.
- Thompson, T.J., 1988, Outer-fan lobes of the lower to middle Eocene Juncal Formation, San Rafael Mountains, California: in Filewicz, M. V., and R.L. Squires, eds., Paleogene stratigraphy, west coast of North America, Field Trip Guidebook - Pacific Section Soc. Econ. Paleon. Mineral., 58, p.113-128
- Thompson, T.J., 1987, Depositional environments and controls of Juncal Formation, southern San Rafael Mountains, California [abs.]: Amer. Assoc. Petroleum Geol. Bull., 71, p. 621-622.
- Thompson, T.J., S.B. Bachman and D.L. Parkinson, 1997, The Wetlands of Avondale: A Water Treatment System Using Constructed Wetlands and Artificial Recharge; in The 8th Biennial Symposium on the Artificial Recharge of Groundwater; June 2-4, 1997, Tempe, Arizona; p. 203-212.
- Thompson, T.J. and S.B. Bachman, 1996, Constructed Wetlands and Groundwater Recharge for Treatment and Re-use of Reclaimed Water [abs.]: Salt River Project Water Treatment Plant Operators Forum, Phoenix, Arizona, September 24, 1999.
- Thompson, T.J., and S.B. Bachman, 1995, Wetlands treatment and artificial recharge of Colorado River water in Avondale, Arizona: in Johnson, A.I., and Pyne, R.D.G., eds., Artificial Recharge of Groundwater, II,

-
- Proceedings of the Second International Symposium on Artificial Recharge of Groundwater, Orlando Florida, July 17-22, 1994, p. 362-371.
- Thompson, T.J., and S.B. Bachman, 1994, Constructed wetlands and groundwater recharge for treatment and reuse of reclaimed water [abs.]: Joint meeting of California Groundwater Resources Association and Metropolitan Water District of Southern California on Water Reclamation and Groundwater Resource Management, November 16, 1994.
- Thompson, T.J., and S.B. Bachman, 1994, Wetlands treatment and artificial recharge of Colorado River water for Municipal Use in Avondale, Arizona [abs.]: Proceedings of the 1994 Annual Meeting of the California Groundwater Resources Association, Groundwater: The Crucial Component to California's Future, September 29-30, 1994.
- Bachman, S.B., N.N. Brown, T.J. Thompson, and N. Larsen, 1994, Using a Geographic Information System (GIS) in Groundwater Management: Examples from Central California: Proceedings of the 1994 Annual Meeting of the California Groundwater Resources Assoc., Groundwater: The Crucial Component to California's Future, September 29-30, 1994.
- Bachman, S.B. and T.J. Thompson, 1991, Extraction of emergency ground water from beneath a dry reservoir, Santa Barbara, California [abs.]: Groundwater, 29, p. 729.
- Brown, N.N., T.J. Thompson, S.B. Bachman, and N. Larsen, 2001, Bedrock Groundwater Recharge Estimates for Groundwater Exploration- Mount Rose and Peavine Mountain Areas, Nevada: Proceedings: Nevada Water Resources Association, Reno, Nevada, February 8-9, 2001.
- Brown, N.N., S.B. Bachman, T.J. Thompson and N. Larsen, 1997, Groundwater Quality during a 40 Year Period in the Oxnard Aquifer, Ventura County, California: Proceedings: Chapman Conference on the Application of GIS, Remote Sensing, Geostatistics, and Solute Transport Modeling to the Assessment of Non-Point Source Pollutants in the Vadose Zone, Riverside, California, October 19-24, 1997.
- Brown, N.N., S.B. Bachman, T.J. Thompson and D. McHarg, 1995, New Isohyetal Map for North-Central Nevada, [abs.]: Proceedings of 1995 Annual meeting of Assoc. Eng. Geol. and Groundwater Resources Assoc., Diversity in Engineering Geology and Groundwater Resources, Oct. 2-8, 1995, Sacramento, Calif., p. 37.