

Jim Van de Water, PG, CHG

Principal Hydrogeologist

EDUCATION

B.S., Geology. State University of New York at Stony Brook, 1986

M.S., Hydrology and Water Resources, University of Arizona, 1989

PROFESSIONAL REGISTRATIONS

California Professional Geologist (No. 6538)

Certified California Hydrogeologist (No. 508)

Arizona Registered Geologist (No. 61345)

PROFESSIONAL AFFILIATIONS

National Ground Water Association

During his 30 years of professional experience, Mr. Van de Water has conducted numerous modeling studies throughout the United States in support of water supply, remediation system design, and risk assessment. His work has involved USEPA and state agencies in California, Nevada, Arizona, Utah, Indiana, New Jersey, and Hawaii. His primary expertise is in the development and application of deterministic and stochastic analytical groundwater flow and solute transport models and numerical groundwater flow and solute transport models in support of regional- and site-scale hydrogeologic investigations and risk assessment. In addition to modeling, his expertise includes groundwater sampling, monitoring well, extraction well, and injection well design and construction, aquifer testing and analysis using analytical and numerical methods, statistical analysis, and expert witness/litigation/mediation services.

PROFESSIONAL EXPERIENCE

2014 to Present: *Principal Hydrogeologist*, Thomas Harder & Co.; Anaheim, California

1999 to 2014: *Independent Consulting Hydrogeologist*; Irvine, California

1995 to 1999: *Associate Hydrogeologist*, Harding Lawson Associates; Irvine, California

1994 to 1995: *Senior Hydrogeologist*, Bechtel Corporation; Norwalk, California

1992 to 1994: *Senior Hydrogeologist*, Multimedia Environmental Technology; Newport Beach, California

1991 to 1992: *Project Hydrogeologist*, Fluor Daniel; Irvine, California

1989 to 1991: *Staff Hydrogeologist*, McLaren-Hart; Irvine, California

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RELEVANT PROJECT EXPERIENCE

Particle Tracking/Solute Transport Modeling

Groundwater Recharge Analysis – Orange County, CA

Client: Irvine Ranch Water District. 2016 (ongoing).

Coupled an analytical solute transport model to a flow-weighted mixing model to assess the impact of injection water containing various levels of total dissolved solids, chloride, and boron to a water supply well field in terms of mass loadings and assimilative capacity based on basin water quality objectives. The resulting analytical model was programmed to run both deterministically and stochastically to identify the most sensitive model inputs and the range of probable outcomes. Based on the results of the analytical modeling and other issues, OCWD revised their proposed injection scenarios to include additional and more widespread injection locations. Given the complexity of these additional scenarios, numerical methods involving the use of MODFLOW-2005, MODPATH, and MT3DMS were implemented.

Former Western Chemical Site - La Mirada, CA

Client: JPR Technical Services, Inc. / SoCo West, Inc. 2006 to 2014.

Conducted aquifer testing and groundwater flow, capture zone, and solute transport modeling using MODFLOW, MODPATH, and MT3DMS, respectively, for a site contaminated with chlorinated solvents being overseen by the RWQCB (Los Angeles Region). The modeling was conducted to assist in the design of a groundwater extraction system. Specifically, the model results were used to identify optimum locations and pumping rates for extraction wells and provide water level data to geotechnical engineers to assist in settlement calculations. The model was updated and expanded to include injection wells and additional extraction wells.

Orange County Water District Forebay / AC Products Site – Placentia, CA

Client: MC2 Environmental Engineering, Inc. / AC Products. 2002 to 2003.

Conducted aquifer testing and developed a groundwater flow, capture zone, and solute transport model using MODFLOW, MODPATH, and MT3DMS, respectively, for a site contaminated with chlorinated solvents. All work was conducted in response to an Order issued by the RWQCB (Santa Ana Region) and involved estimating hydraulic conductivity values from step-drawdown, constant rate, and recovery tests. The modeling was conducted to assess the performance of two extraction wells (P-2 and P-3) located approximately 1 and 2 miles downgradient of the source area and to revise capture zone model predictions reported by the Orange County Water District (OCWD).

Argonne National Laboratory – Ceresco, NE

Client: USDA Parcel. 1997 to 1999.

Developed numerical groundwater flow/solute transport model using MODFLOW and MT3D/MT3DMS to assess the potential impact of carbon tetrachloride-impacted ground water on a municipal supply well.



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RELEVANT PROJECT EXPERIENCE

Particle Tracking/Solute Transport Modeling (continued)

Tri Valley Growers, Inc. – Madera, CA

Client: Tri Valley Growers, Inc. 1997 to 1999.

Developed a numerical groundwater flow/solute transport model using MODFLOW and MT3D/MT3DMS to optimize operation of a groundwater remediation system for a 1.5-mile long chloride plume and assess the impact of retention pond operations.

9th Avenue Superfund Site – Gary, IN

Client: Fluor Daniel, Inc. 1992 to 1994.

Developed numerical solute transport models using both BIOPLUME II and MT3D and a multiphase flow model (ARMOS) to optimize the performance of a remediation system comprised of dual-phase extraction wells and infiltration galleries.

Hi Shear Site - Torrance, CA

Client: Alta Environmental, Inc. / Lisi Aerospace, Inc. 2012 to 2013.

Conducted aquifer testing and groundwater flow and capture zone modeling using MODFLOW and MODPATH, respectively, for a site contaminated with chlorinated solvents. All work was conducted in response to an Order issued by the RWQCB (Los Angeles Region) and involved estimating hydraulic conductivity values from step-drawdown, constant rate, and recovery tests. The modeling was conducted to identify optimum extraction well locations and projected pumping rates to assess the feasibility of groundwater extraction as a remedial technology.

Tidal Modeling – Oakland Army Base, Oakland, CA

Client: ERRG, Inc. 2015-2016.

Programmed an analytical tidal-influence groundwater solute transport model and coupled it to tidal-influence surface water model to assess transport of volatile organic compounds and pesticides into, and subsequent mixing within, the intertidal zone of the San Francisco Bay. Installed, continuously logged, and developed several groundwater monitoring wells and conducted tidal measurements (using pressure transducers) which were used to calibrate the models.

Baker Hughes Centrilift Facility – Huntington Beach, CA

Client: AIS, Inc. 2014 to Present.

Lead hydrogeologist for extensively sampled and remediated site being overseen by the Regional Water Quality Control Board. Responsibilities include development of site- and regional cross-sections, aquifer test analysis, and stochastic solute transport modeling.



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RELEVANT PROJECT EXPERIENCE

Particle Tracking/Solute Transport Modeling (continued)

AMVAC – Los Angeles, CA

Client: Pacific Edge Engineering, Inc. 2005 to 2015.

Provided hydrogeologic and risk management support for large extensively sampled chemical manufacturing site largely impacted by organochlorine and organophosphorus pesticides including the highly volatile and toxic fumigant DBCP. Used vadose vapor- and aqueous-phase fate-and-transport models to assess migration of contaminants and to identify optimum locations for groundwater monitoring wells.

Former LASMO Facility - Port Liberté, NJ

Client: IESI, Inc. 2000.

Reviewed MODFLOW simulations performed in support of remedial design involving groundwater extraction wells and trenches, and a slurry wall for site impacted by fuel hydrocarbons. Based on the review, an analytical, stochastic solute transport model was developed and implemented to assess the long-term performance of a slurry wall.

Southern California Edison Service Area – Rosemead, CA

Client: SCE. 2002 to 2005.

Developed numerical vadose zone solute transport model coupled to an analytical groundwater model to assist SCE in prioritizing cleanup for their regional network of above- and below-ground transformers.

Stringfellow Superfund Site – Glen Avon, CA

Client: Stringfellow PRP Group. 1994 to 1995.

Developed a two-dimensional vadose zone numerical modeling (using VS2DT) to assess the feasibility of dewatering to assess the feasibility of various remedial approaches.

Shiloh Road Site – Santa Rosa, CA

Client: Fluor Daniel, Inc. 1991 to 1992.

Developed surface water model to simulate aqueous- and sorbed-phase transport in local and regional surface water systems (using SWRRBWQ), as well as a numerical vadose zone and analytical saturated zone solute transport model (using SESOIL and AT123D, respectively).



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RELEVANT PROJECT EXPERIENCE

Basin-Scale Groundwater Flow Modeling

Groundwater Flow Model of the Tule Basin – Tulare County, CA

Client: Tule Basin MOU Group, 2017 (ongoing).

Developed a numerical groundwater flow model of the Tule Subbasin using the USGS code OWHM (MODFLOW). The model covers an area of approximately 1,100 square miles and has been prepared in support of Sustainable Groundwater Management Act (SGMA) compliance. The model analysis will be used to refine the Sustainable Yield estimate of the subbasin and enable planning analyses using basin management scenarios. The model analysis is also being used to inform the development of six Groundwater Sustainability Plans (GSPs) for the six individual Groundwater Sustainability Agencies (GSAs) in the subbasin..

Groundwater Flow Model of the Beaumont Basin – Riverside County, CA

Client: Beaumont Basin Watermaster. 2014 to Present.

Assisted in the development of a numerical groundwater flow model of the Beaumont Basin for the purpose of groundwater management and reevaluating the safe yield of the basin. The model, developed using MODFLOW-2005, is updated and recalibrated on an annual basis for the purpose of evaluating different basin management scenarios.

Groundwater Flow Model of the Kern Fan Area – Bakersfield, CA

Client: Rosedale-Rio Bravo Water Storage District. 2011 to Present.

Assisted in the development of a numerical groundwater flow model using MODFLOW-2005 of the Kern Fan Area west of Bakersfield, California. The model has been successfully calibrated for the transient period from 1988 through 2011 and is currently being used to evaluate potential groundwater level changes associated with various recharge and recovery scenarios.

Site-Scale Groundwater Flow and Dewatering Modeling

San Joaquin Apartments Parking Structure Subdrain Design – Irvine, CA

Client: The Irvine Company. 2014.

Conducted a hydrogeological analysis of groundwater levels in the vicinity of a proposed parking structure. Conducted aquifer tests to quantify input parameters for numerical model. Developed a groundwater flow model using MODFLOW-2005 for assessing the effectiveness of a proposed subdrain design at maintaining groundwater levels below the bottom of the parking structure and estimating discharge rates from the proposed subdrain system.



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Parkside Estates Dewatering Plan – Huntington Beach, CA

Client: Shea Homes. 2014.

Conducted groundwater flow modeling using MODFLOW-2005 to support development of a construction dewatering plan for a parcel targeted for residential development. Specifically, the model results were used to identify optimum locations and pumping rates for extraction wells and provide water level data to geotechnical engineers to assist in settlement calculations for shallow and deep excavations in close proximity to a regional confined aquifer.

Hydrogeologic Evaluation of Wastewater System – Malibu, CA

Client: Robertson Geotechnical, Inc. 2015

Managed the development of a numerical groundwater flow model using MODFLOW-2005 within a proposed residential area to assess groundwater mounding due to discharge from a proposed onsite wastewater system.

Risk Assessment

Mr. Van de Water has provided risk assessment services for numerous residential and commercial projects throughout California, as well as Arizona, Nevada, and Hawaii. His primary expertise is in groundwater flow and fate-and-transport / attenuation flux modeling in support of human health risk assessment and regional- and site-scale hydrogeologic characterization. In addition to conducting risk assessments for his clients, Mr. Van de Water also reviews risk assessments on behalf of the U.S. Environmental Protection Agency (USEPA Region IX), the Nevada Department of Environmental Protection (NDEP), Santa Cruz and San Luis Obispo County and has given exposure assessment modeling presentations to regulatory agencies. He also formerly reviewed risk assessments for the California Environmental Protection Agency and the Arizona Department of Environmental Quality.

The risk assessment landscape in California and nationwide has undergone significant changes since 2009 with the issuance of USEPA RAGS Part F (which substantially altered the manner in which the vapor and particulate inhalation exposure is handled) and even more recently with DTSC's issuance of several health risk assessment 'notes' since 2011. Therefore, although Mr. Van de Water has been conducting risk assessments since the mid-1990s, the list below focuses on representative larger risk assessment projects conducted since 2009 under the various revised USEPA and CalEPA guidances.

Beckman Coulter International – Fullerton, California (ongoing)

- Derived risk-based concentrations (RBCs) for VOC-impacted site under DTSC oversight using indoor and trench air vapor intrusion models and site-specific soil physical parameters.
- Used RBCs to characterize risks for residential, industrial worker, and construction worker receptors.
- Also derived soil screening levels (SSLs) protective of groundwater using EPA leaching models and site-specific aquifer test data.
- The RBCs and SSLs are being used to guide an extensive fast-track remediation program for this large site that will be redeveloped for residential and commercial use.
- Derived risk-based concentrations for total petroleum hydrocarbons in soil.



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Beckman Coulter International – Palo Alto, California (ongoing)

- Derived soil gas risk-based concentrations (RBCs) for VOC-impacted site under RWQCB oversight using indoor vapor intrusion model and site-specific soil physical parameters.
- Used soil gas RBCs and indoor air data to characterize risks for residential and industrial worker receptors.
- Derived risk-based concentrations for total petroleum hydrocarbons in soil.

U.S. Forest Service – Mammoth Stamp Mill, Inyo National Forest (ongoing)

- Derived background threshold values for metals-impacted former mining site using statistical methods.
- Derived risk-based concentrations (RBCs) for metals for incidental soil ingestion, dermal contact, and particulate inhalation exposure pathways.
- Evaluated residential, commercial/industrial, construction worker, recreational user, and cabin occupant receptors in accordance with Bureau of Land Management, USEPA, and CalEPA guidance.

Donald Heim Dry Cleaners – Watsonville, California (recently completed)

- Conducted third-party review of risk assessment as part of a litigation for a site being overseen by the Regional Water Quality Control Board and Santa Cruz Department of Environmental Health. Initially characterized as a ‘small’ site, the release from the dry cleaning facility has been exacerbated by drain lines and has expanded to include several residential city blocks for this now high profile/publically sensitive project.
- Was deposed based on my critique of the risk assessment conducted by primary investigator, which caused the regulatory agencies to rethink the remedial plan-forward.
- Became the lead risk assessor for the project.
- Mr. Van de Water’s work is posted on Geotracker, which is populated with numerous documents for this site.

Baker Hughes Centrilift Facility – Huntington Beach, California (ongoing)

- Lead risk assessor and consulting hydrogeologist for extensively sampled and remediated site being overseen by the Regional Water Quality Control Board.
- The commercial/industrial site is impacted primarily by chlorinated and petroleum hydrocarbon VOCs.
- Primary role has been to redevelop the conceptual model developed by previous consultant that led to overestimates of risk, rerun risk assessment based on revised conceptual model, and develop and evaluate results of indoor air sampling program.
- Will be presenting risk results at public meeting in the next few months.

Palmdale Air Force Base (Plant 42, Sites 16, 19, and 20) – Palmdale, California (recently completed)

- Lead risk assessor for AFB being overseen by the DTSC.
- Sites are variously impacted by metals, PAHs, and VOCs.
- Spearheaded effort to obtain site-specific soil physical parameters for use in vapor intrusion model for planned residential closure.



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- All data have been recently received and we are currently running the risk calculations associated with soil and soil gas.

AMVAC – Los Angeles, California (recently completed)

- Lead risk assessor for DTSC-approved risk assessment for large, extensively sampled chemical manufacturing site largely impacted by organochlorine and organophosphorus pesticides including the highly volatile and toxic fumigant DBCP.
- Derived statistically-based background concentrations for metals.
- Given the size of the project, the risk assessment was delivered as three separate interim deliverables (data usability and background concentration study, identification of chemicals of potential concern [COPCs] and associated toxicity criteria, and finally the risk assessment)
- Derived soil- and soil gas-based RBCs for industrial and construction worker receptors that were used to characterize risk.
- Also conducted an extensive leaching analysis to identify optimum locations for groundwater monitoring wells.

Confidential Client – Montclair, California

- Derived soil gas RBCs for property targeted for residential development.
- Calculated risk values using vapor intrusion model assuming the absence and presence of a proprietary vapor barrier.

Confidential Client – Sunnyvale, California

- Derived soil gas RBCs for property targeted for residential development.
- Calculated risk values using vapor intrusion model based on geotechnical specifications provided by the developer at the request of the Regional Water Quality Control Board.

