

Senior Hydrogeologist

Expertise Mining Hydrogeology, Groundwater Modeling, Inverse Modeling

Education Graduate Certificate (Earth Resources Data Science), 2024
Colorado School of Mines, Golden, Colorado, USA
M.S. (Environmental Engineering), 2011
Universidad Nacional Agraria, Lima, Peru
B.S. (Physics), 2007
Imperial College London, London, England

Professional Affiliations Nevada Mine Water Association

Certifications MSHA (Mine Safety and Health Administration)

Professional Experience

2025 – Present	ITASCA Denver, Lakewood, Colorado Senior Hydrogeologist
2024 – 2025	FloSolutions, Denver, Colorado Technical Principal Hydrogeologist
2021 – 2024	FloSolutions, Denver, Colorado Senior Hydrogeologist
2020 – 2021	WSP, Denver, Colorado Mine Water Team Leader
2016 – 2021	WSP, Denver, Colorado Senior Hydrogeologist
2013 – 2016	Schlumberger, Denver, Colorado Project Hydrogeologist
2010 – 2012	Schlumberger, Lima, Peru, and Santiago, Chile Staff Hydrogeologist

Project Experience

Mining Hydrogeology: Has worked on mining hydrogeology (open-pit and underground) studies in the USA, Peru, Chile, Mexico, Brazil, Canada, Kazakhstan, and Serbia. Extensive experience developing conceptual and numerical groundwater models at greenfield and operating mines. Lead modeler for over 15 groundwater models to support pre-feasibility, feasibility, operational, and closure studies for mine sites. Codes used to develop models include *MODFLOW 6*, *MODFLOW-USG*, *MODFLOW-SURFACT*, and *FEFLOW*. Project experience includes delivering model reports and client presentations on model development and predictive results. Results of the groundwater models have been used to design dewatering systems; as

inputs for slope-stability analyses, water-management studies, and closure studies; and for international, federal, and state permitting studies.

Transport Modeling: Has experience in the use of advective-dispersive modeling for applications at mine sites, including work at tailings storage facilities. Experience with *FEFLOW* to simulate possible seepage discharge below embankments to be used in Environmental Impact Assessments. Used *MODFLOW* 6 GWT module to simulate a large (> 1-mile) multi-species plume containing total dissolved solids, sulfates, boron, and arsenic. The model was used for management decisions on remediation, capture, and treatment systems. Experience using particle tracking codes (*MODPATH* 7 and PRT module) to evaluate advective flow patterns.

Inverse Modeling: Experience applying novel optimization workflows to calibrate groundwater models and assess uncertainty in model parameters and predictive results. Has experience using the *PEST/PEST++* suite of algorithmic tools for linear and nonlinear (Monte Carlo) uncertainty assessments. Applied ensemble-based methods (*PEST++/IES*) to calibrate a 200+ realization ensemble for use in a probabilistic dewatering flow assessment of an underground mine. Experience with pilot points methodology to calibrate highly parameterized heterogeneous media at multiple sites. Used linear optimizer to assess pumping schedule for a pump-and-treat capture system and reduce client energy costs.