



# Groundwater services

## Hydrogeologic Expertise

The availability of groundwater is becoming increasingly complex. An increase in demand has led to financial, political and regulatory agencies often determining how groundwater resources are allocated, managed and distributed. Identifying the location and availability of groundwater resources is dependent on local and regional geology and hydrologic conditions as a key to fully understand a hydrogeologic environment.

At WSP USA, we provide expertise and state-of-the-art technology to discern groundwater availability and productivity, conducted through sound and tested methods ranging from hydrogeologic assessments and groundwater surface interaction studies to groundwater recharge estimations and availability modeling.

Our expertise and advanced analytical tools help our clients develop practical, cost effective solutions to manage regional and local groundwater management challenges.



## OUR SERVICES

### Hydrogeologic Assessments

- Assimilation of public and commercial hydrogeologic data and logs
- Geophysical and geologic evaluations
- Developing conceptual models for potential groundwater sources
- Evaluating sustainability of groundwater supplies
- Brackish groundwater resource studies

### Groundwater Availability Studies

- Assimilation of historical aquifer demands, usage and monitoring data
- Assessing aquifer characteristics and recharge
- Evaluating impacts to aquifer and groundwater users and streams

### Groundwater Recharge Estimation

- Use of multiple methods to verify recharge estimates
- Development of recharge models to assess drought conditions
- Assessing recharge as a component of permitting strategies

### Regional Groundwater Availability Modeling

- Implementation of field programs to develop data for models
- Construction and validation of groundwater availability model
- Prediction of long-term water supplies with groundwater availability models
- Stakeholder education

### Groundwater/Surface Water Interaction

- Statistical assessment of historical baseflow trends
- Construction and validation of groundwater/surface water models
- Field measurements and programs such as stream flow gauging and tracer tests
- Prediction of surface water impact from groundwater pumping
- Watershed-level hydrological modeling

## Groundwater Supply Exploration and Development

- Data reviews to determine feasibility
- Design and supervision of test drilling programs and pumping tests
- Production well and pump equipment design
- Well specifications and construction oversight
- Water-quality evaluations
- Brackish groundwater studies and development
- Water-level interference studies
- Permit preparation and regulatory assistance; and
- Well and pump rehabilitation specifications and oversight

## Wellhead Protection Studies

- Numerical and analytical modeling
- AutoCAD and GIS based mapping
- Land-use issues
- Surface-water treatment rule compliance
- Analysis of pollution potential from contaminated sites

## Water Rights

- Groundwater and surface-water depletion impact analysis
- Competing groundwater usage
- Expert witness testimony
- Local, regional and state water plans

## Wellfield Management

- Well performance testing for maintenance recommendations
- Well rehabilitation plans and construction supervision
- Well field optimization and monitoring
- Artificial recharge/aquifer storage and recovery
- Brackish water development for reverse osmosis

## Support Services

- Computer modeling, including groundwater /surface water interactions and water quality modeling
- Geophysical surveys
- Borehole logging
- Bedrock fracture-trace analysis
- Packer testing
- Downhole video inspection
- Field collection of groundwater and surface water samples



## PROJECT TYPES

- ✓ Regional water planning
- ✓ Groundwater management support
- ✓ Resource evaluations
- ✓ Feasibility studies
- ✓ Well specifications, installation, construction and rehabilitation oversight
- ✓ Pumping and aquifer tests
- ✓ Safe yield determinations
- ✓ Groundwater flow modeling
- ✓ Water rights and permitting
- ✓ Wellhead protection delineation
- ✓ Expert witness and litigation support
- ✓ Desired future conditions process support

## ABOUT WSP

WSP USA is the U.S. operating company of WSP, one of the world's leading engineering, environment and professional services firms. Recognized on [Fast Company's Brands that Matter List for 2022](#) as a top Community-Minded Business, WSP USA brings together engineers, planners, technical experts, strategic advisors and construction management professionals who are dedicated to collaborate in the best interests of serving local communities. WSP USA designs lasting solutions in the buildings, transportation, energy, water and environment markets. With more than 15,500 employees in 300 offices across the U.S., WSP partners with its clients to help communities prosper.



## CONTACT US

For more information about how we can help you deliver your next project, contact:

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