

**Resume  
Of  
Matthew Uliana**

**Attachment 6**

## Matthew M. Uliana, Ph.D., P.G.

### PRIMARY EXPERTISE

Groundwater and surface-water hydrology, computer modeling of groundwater flow and geochemical reactions, the use of naturally-occurring geochemical and isotopic tracers for hydrologic characterization, groundwater availability studies, aquifer test analysis, and fluid flow in fractured systems. Over 12 years experience in geology, hydrology, and water resource consulting and over 5 years experience in university-level teaching and research.

### EDUCATION AND PROFESSIONAL CERTIFICATIONS

2000	Ph.D.	Geological Sciences (Hydrogeology)	The University of Texas at Austin
1995	M.A.	Geological Sciences (Hydrogeology)	The University of Texas at Austin
1991	B.S.	Geology/Anthropology	James Madison University
2003	P.G.	Professional Geoscientist (Texas) #2506	

### CURRENT POSITION

*January 2007 to Present: Owner and Principal Hydrogeologist, Martin Geologic Consulting (Austin, Texas). Perform geologic and hydrologic assessments, groundwater availability studies, aquifer testing and analysis, aqueous geochemistry investigations, and groundwater modeling. Involved in groundwater and water-resource related consulting projects in Texas since 1995.*

### RELEVANT WORK EXPERIENCE

#### Consulting

*September 2002 to December 2006: Independent consulting professional geologist (Austin, Texas)*

*October 1995 to August 2001: Consulting Hydrogeologist/Staff Scientist, R. J. Brandes Company, Terra Dynamics, Inc, and Robert S. Kier Consulting (Austin, Texas)*

*August 1991 to August 1992: Project Geologist, Geotechnical and Environmental Services (Mt. Sydney, Virginia)*

#### Teaching/University Research

*August 2002 to December 2006: Assistant Professor, Geology Program and Aquatic Resources (Department of Biology), Texas State University-San Marcos.*

*August 2001 to August 2002: Assistant Professor, Department of Geological Sciences, State University of New York at New Paltz*

### DESCRIPTIONS OF SIGNIFICANT PREVIOUS PROJECTS

#### **Unimin Sand Quarry Dewatering Models (multiple projects)**

The general objective of this series of projects is to use aquifer test data, subsurface geologic site data, current and historical water level data, and multi-year mine excavation and backfill plans to develop a series of MODFLOW model that simulate mine drainage and dewatering at the UNIMIN sand quarry operations in Ottawa, Minnesota. The primary goals of the numerical modeling are to predict pump rates necessary for dewatering the quarry and to determine potential impacts of quarry operations on nearby properties. Model results have been used by the operators to determine dewatering pump sizes, to apply for the required operation and discharge permits from the state, and to satisfy state Environmental Impact Statement requirements. To date, two different models have been developed for two separate mining areas, and a third model is currently under construction.

#### **City of Bryan Well #18 Impact Assessment**

The objective of this project was to evaluate the proposed impact of a new, high-capacity well, recently installed by the City of Bryan, on other wells in the surrounding aquifer. This assessment was performed in conjunction with a groundwater use permit application submitted to the Brazos Valley Groundwater Conservation District by the City of Bryan. Impact of the new well on other wells in the district was determined using a parsimonious

groundwater model based on inputs from the Texas Water Development Board's Central Queen City-Sparta Groundwater Availability Model (GAM). The model was used to simulate aquifer response to the well under the maximum pump rate and at 67% of the full pump capacity. Model results were used to develop maps of drawdown in the aquifer related to the locations of current permitted wells.

#### **Newman Property Hydrogeologic Assessment**

The objective of the project was to estimate potential water well yields from the Carrizo-Wilcox aquifer on a property located in Atascosa County, Texas using historical data from the literature. Literature sources were compiled and reviewed, and a database of aquifer parameters (including transmissivity, storage parameters, historical water levels and water-level trends, sand thickness maps, etc) was developed. These data were used to develop a MODFLOW model of the site. The model was then used to predict drawdowns at the site, and on properties adjacent to the site, under various pumping scenarios, and to determine potential future well yields from the proposed well field.

#### **Geological Assessment for Barton Hills Retrofit WPAP**

The objective of this project was to perform a geologic assessment of a property, proposed for the location of a drainage retention pond and drainage management system, for a Water Pollution Abatement Plan (WPAP) as required by 30 TAC §213.5(b)(3). The primary purpose of this assessment was to use site visits and literature investigations to identify potentially significant recharge features on the site. Results indicated that there was a major sub-surface hydrogeologic feature (the Barton Springs Fault) running through the site; however, the hydrogeologic conditions in the overlying soil layer, in combination with proper lining of the retention pond, would provide sufficient protection for the aquifer and nearby springs.

#### **Culberson County Groundwater Salinization**

The objective of this project was to determine the source of salinization of several ranch wells on a property in Culberson County, Texas. The ranch owner noted that cattle stopped drinking water from several shallow (~50-150 ft deep) stock wells located near deep brine injection wells in a petroleum field under secondary recovery. Analysis of water samples from those wells showed increasing concentration of Na and Cl compared to other wells near the site. Graphical analysis and geochemical models were used to show that the most likely source of salinization of the wells is from brine leaking up from the injection zone through faulty casing. The case resulted in a lawsuit; sworn testimony provided by MGC staff resulted in a settlement of the case before trial. The results of this project were published in the peer-reviewed journal *Environmental & Engineering Geoscience* (Uliana, 2005).

### **PUBLICATIONS**

- Chowdhury, A.H.; Uliana, M.M.; and Wade, S.; Recharge and Ground Water Flow Constraints in the Presidio-Redford Bolson Aquifer: *Ground Water* (submitted September 2006, currently in press)
- Uliana, M.M.; Banner, J.L.; and Sharp, J.M., Jr., 2007. Regional groundwater flow paths in Trans-Pecos, Texas inferred from oxygen, hydrogen, and strontium isotopes: *Journal of Hydrology*, vol. 334 (3-4) p. 334-346.
- Uliana, M.M., 2005. Identifying the Source of Saline Groundwater Contamination Using Geochemical Data and Modeling: *Environmental & Engineering Geoscience*, vol. 11 (2) p. 107-123.
- Uliana, M.M., 2005. Entry GW-1103: Storage Coefficient. In *Wiley Encyclopedia of Water* (J. Lehr, ed.), John Wiley & Sons, New York
- Uliana, M.M., 2005. Entry GW-486: Hydraulic Head. In *Wiley Encyclopedia of Water* (J. Lehr, ed.), John Wiley & Sons, New York
- Uliana, M.M., 2005. Entry GW-979: Regional Flow Systems. In *Wiley Encyclopedia of Water* (J. Lehr, ed.), John Wiley & Sons, New York
- Sharp, J.M., Boghici, R. and Uliana, M.M., 2003. Groundwater systems feeding the springs of West Texas. In *Aquatic Fauna of the Northern Chihuahuan Desert* (Garret, G.P., and Allan, N.L., eds.), Special Pub. No. 46, Museum of Texas Tech Univ., p. 1-11.
- Uliana, M.M., and Sharp, J.M. Jr., 2001. Tracing regional flow paths to major springs in Trans-Pecos Texas using geochemical data and geochemical models: *Chemical Geology*, vol. 179 (1-4) p. 53-72.

- Uliana, M.M., 2001. The geology and hydrogeology of the Capitan aquifer: a brief overview. In Aquifers of West Texas (Mace, R.E., Mullican, W.F., III, and Angle, E.S., eds.), Texas Water Development Board Report 356, Ch. 11, p. 153-166.
- Uliana, M.M., 2000. Delineation of regional groundwater flow paths and their relation to structural features in the Salt and Toyah Basins, Trans-Pecos Texas: unpub. Ph.D. Dissertation, The University of Texas at Austin, 215 p.
- Sharp, J.M., Jr., Halihan, T., Uliana, M.M., Tsoflias, G.P., Landrum, M.T., and Marrett, R., 2000. Predicting fractured rock hydrogeological parameters from field and laboratory data. In Groundwater: Past Achievements and Future Challenges (Sillito, O., et al., eds.), Proceedings of the 30th Congress, International Association of Hydrogeologists, Cape Town, South Africa, p. 319-324
- Halihan, T., Simmons, C., Sharp, J.M. Jr., Uliana, M.M., and Fenstermaker, T., 1999. GSA International Internet Symposium: an experiment in scientific communication: *GSA Today*, vol. 9, no. 5, p. 9.
- Sharp, J.M. Jr., Uliana, M.M., and Boghici, R., 1999. Fracture controls on regional groundwater flow in a semiarid environment and implications for long-term maintenance of spring flows: Water 99 Joint Congress, Inst. of Eng. Brisbane, Au., v. 2, p. 1212-1217.
- Uliana, M.M., and Sharp, J.M. Jr., 1996. Springflow augmentation possibilities at Comal and San Marcos Springs, Edwards aquifer: Transactions of the Gulf Coast Association of Geological Societies, vol. XLVI, p. 423-432.
- Uliana, M.M., 1995. The potential for springflow augmentation at Comal and San Marcos Springs, Central Texas: unpub. M.A. Thesis, The University of Texas at Austin, 147 p.
- Uliana, M.M., 1994. Potential methods of springflow augmentation at Comal and San Marcos Springs: Edwards Aquifer in Barton and San Marcos Springs Area Field Trip Guidebook, American Institute of Hydrology Annual Meeting, Austin, Texas, 14 p.

#### PROFESSIONAL SERVICE

Member of the National Ground Water Association, the Texas Association of Professional Geoscientists, and the Austin Geological Society.

Member of Texas Water Development Board Groundwater Availability Modeling (GAM) program Technical Advisory Group.

Technical advisor to Texas Oasis Springs Region Watershed Management Plan Team

Member of The University of Texas at Austin Hydrogeology Library Fund Development committee

Registered stakeholder for several Texas Water Development Board GAM projects

Provided manuscript peer reviews for the journals *Applied Geochemistry* (Elsevier), *Ground Water* (NGWA), *Environmental & Engineering Geoscience* (GSA/AEG), and *Lakes & Reservoirs: Research and Management* (Blackwell) as well as various state agency reports.

#### PROFESSIONAL DEVELOPMENT

Participant in the "Teaching Hydrogeology in the 21st Century" workshop sponsored by the On the Cutting Edge Professional Development for Geoscience Faculty project, Lincoln, Nebraska, July 23-28, 2005.

"Using the Queen City-Sparta GAM Model"; 3-hour workshop sponsored by INTERA, Inc., Austin Texas; October 19, 2004.

"Water Well Rehabilitation"; 1-day workshop sponsored by Johnson Well Screens, Inc.; June 2003.

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