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Specialized Geological Modeling
27 Keystone Ave.
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Education

Ph.D. – Geohydrology – University of Wyoming, Laramie, Wyoming *1999*

M.S. – Hydrogeology – University of Florida, Gainesville, Florida *1994*

B.S. – Geology – University of Florida, Gainesville, Florida *1991*

U.S. AIR FORCE ACADEMY, Colorado Springs, Colorado *1986 – 1987*

Professional Background

GeoHydros LLC / H2H Associates LLC / Hazlett-Kincaid Inc, Reno, Nevada
Principal / Modeling Group Leader / Principal *1999 – Present*

Dr. Kincaid co-founded Hazlett-Kincaid, Inc. in 1999 recognizing a need in the environmental industry for modeling services that are more soundly based on accurate conceptualization and articulation of hydrogeologic complexities. He merged the company with H2H Associates in 2007 and then reorganized the group again as GeoHydros, LLC in 2010. Dr. Kincaid's responsibilities include: scientific oversight of all modeling work, program development, business development, and financial oversight, as well as solids and parameter modeling, hydrogeological assessments, presentation development and delivery, and expert testimony. Dr. Kincaid successfully established offices for the group in Akron Pennsylvania, Tallahassee Florida, and Reno Nevada.

Woodward-Clyde Federal Services, Las Vegas Nevada – Geological Modeler *1998*

Dr. Kincaid was primarily responsible for the development of an a*lternate* 3-D geologic framework model of a 3.5 by 5 square-mile area of Yucca Mt., Nevada using EarthVision 4.0. The model consisted of 44 stratigraphic units and 18 fault blocks and required geologic interpretations of fault behavior at depth, bed dips, and lateral rock-unit thinning. The purpose of model was to evaluate QA/QC issues associated with solids and parameter modeling performed by different modelers.

University of Wyoming, Laramie Wyoming – Graduate Assistant *1994 – 1999*

As part of his Ph.D. program, Dr. Kincaid worked under Drs Peter Huntoon and Neil Humphrey on the fractal nature of dissolution permeability in the carbonate aquifers of north Florida and southern Turkey. He used fractal, scaling relationships to develop a new conceptual model for karst conduit development in carbonate aquifers. He also developed a method for creating 3-D volumetric models of saturated cave morphologies from sparse survey data using custom designed computer programs and the EarthVision modeling software and investigated scale relationships in hydraulic conductivity data determined from various types of aquifer testing. Other responsibilities included the supervision of the Geology Department Research Computer Lab and assisting professors with the instruction of physical geology, hydrogeology, and field courses.

Project KarstDive, Antalya Turkey – Project Leader & Chief Scientist *1995 & 1996*

Led a 12 member multi-national team that explored, mapped and documented saturated caves in the Taurus Mountain and Antalya Travertine aquifers of southern Turkey and developed a conceptual model for regional groundwater flow through those aquifers for the Turkish State Hydraulic Works. He successfully solicited funding for the project from various Turkish entities including: the International Research and Application Center for Karst Water Resources, the Turkish State Hydraulic Works, the Underwater Research Society, and Atlas Magazine; as well as from Lufthansa Airlines in Germany, and the National Speleological Society and the National Association for Cave Diving in the United States.

GeoSolutions, Inc., Gainesville Florida – Hydrogeologist I *1992 – 1994*

Responsibilities included the preparation of Phase I and Contamination Assessment Reports; performance of site characterizations including the supervision of monitoring well installation, aquifer testing, ground water sampling, liquid level gauging, and elevation surveying; and database management.

Recent Projects of Note

Woodville Karst Plain Aquifer Characterization & Modeling – Tallahassee Florida – Florida Geologic Survey

Dr. Kincaid is a lead scientist and project manager for a multi-faceted karst aquifer characterization and public education effort in the Woodville Karst Plain of North Florida that is being funded by the Florida Geological Survey and the Florida Department of Environmental Protection. He has led a multi-year quantitative groundwater tracing program that has successfully established hydraulic connections between several sinking streams and the City of Tallahassee's wastewater spray field, and Wakulla Spring, which is one of the largest magnitude spring discharges in the world. He also manages the development of a comprehensive and interactive database for cave and hydraulic data (www.geohydros.com/FGS/) and a basin-scale groundwater flow model designed to specifically simulate flow through mapped and traced karst conduits. In addition, he is part of a steering committee engaged in establishing a research observatory in the Woodville Karst Plain, and organizes public education programs that include workshops, short courses, field trips, and public presentations focusing on spring and aquifer protection.

Ginnie Springs Springshed Groundwater Model – North Central Florida – Coca-Cola North America

Dr. Kincaid is leading the development of a regional groundwater flow model that specifically simulates flow through mapped and traced conduits to numerous springs along the western Santa Fe River. The model is intended to identify the impact of pumping by a water bottling facility on spring flows and to identify local and regional water quality and quantity vulnerabilities. The model is being developed in FEFLOW™ and is the first of its kind to address conduit dominated groundwater flow and calibrate to measured and estimated spring discharges and tracer-defined conduit flow velocities as well as local and regional groundwater elevations. It is intended to be shared with regional and State resource management agencies to promote more effective groundwater and spring protection measures.

DSCP Hydrogeologic Modeling – Philadelphia, Pennsylvania – Tetra Tech EC, USDOD

Dr. Kincaid is leading the development of a linked geological-groundwater flow model to simulate a 3D heterogeneous multi-aquifer system beneath the former DSCP facility in Philadelphia, Pennsylvania that has been impacted by more than two million gallons of light non-aqueous phase liquid (LNAPL), and then to predict the movement of benzene through the surficial and partially confined aquifers as it dissolves from the LNAPL. The effort has involved the development of a regional and site-scale 3-D Geologic Framework Model (GFM) to evaluate the geospatial relationship between the LNAPL plume, various discontinuous soil and rock zones, and buried utilities. He co-developed a method for using the Van Genuchten equation and parameter grids extracted from the GFM to estimate total recoverable LNAPL volume on a synoptic basis. His group is now using the GFM to establish the framework for simulating groundwater flow and benzene transport through the surficial aquifer and into the deep aquifer to support site closure under Pennsylvania Act 2 regulations. The work is for the US Department of Defense under sub-contract to Tetra Tech EC, formerly Foster Wheeler.

Hercules Quarry Dewatering Groundwater Impact Assessment, Stockertown Pennsylvania, Buzzi UniCem

Dr. Kincaid led the development of a groundwater model in a heavily karstified and geologically complex terrain in northeast Pennsylvania. The project involved creating multiple solids and groundwater flow models and GIS coverages using the software FEFLOW, EarthVision and ArcGIS. The model successfully simulated the gross behavior of the water table in response to current dewatering activities at two quarries and interactions with an adjacent stream. Calibration variations were used to identify probable karstic flow paths and an estimated water budget for the quarry including contributions from preferential flow paths, most likely dissolutionally widened fractures that extend beyond the modeled area, and discharge water re-circulated along local karstic features. The resulting model and visualizations were instrumental in the client securing a permit for quarry expansion.

East Side Access – Tunneling & Contaminant Impact Assessment, Long Island New York
Metropolitan Transportation Authority, Parsons Brinkerhoff Quade & Douglas – STV Joint Venture

Dr. Kincaid developed a combined regional and site-scale 3D Geologic Framework Model (GFM) for the New York Metropolitan Transit Authority's East Side Access Project that delineated the spatial relationship between key geologic horizons, multiple sorbed-phase contaminant plumes, and various engineered features. The GFM was used as the framework for subsequent site-scale groundwater flow and fate and transport modeling. Data generated from the respective process models was imported back into the GFM to develop visualizations and interpretations that were presented to project management (PB-STV Joint Venture), the New York DEC, and legal counsel.

Expert Testimony / Litigation Support

Defense Supply Center Philadelphia; Department of Justice Litigation Meetings, Philadelphia PA	2003-2006
Wakulla Springs Water Bottling; Wakulla County Commission Meeting, Crawfordville FL	2006
Quail Ridge Farm Nutrient Management Plan; PA Environmental Hearing Board, Harrisburg PA	2003
Ben Lewis Farms; Thompson Township Supervisors – Development Hearing, Thompson Township, PA	2002
Gel-Bare Farms; North Heidelberg Township Development Hearing, North Heidelberg Township, PA	2002

Professional Associations & Awards

Global Underwater Explorers (www.gue.com): Vice President, Board of Directors	2000 – Present
Hydrogeology Consortium (www.hydrogeologyconsortium.org): Steering Committee	2002 – Present
Southeastern Geological Society (www.segs.org): Vice President	2006 – Present
National Ground Water Association (www.ngwa.org): Member	2000 – Present
American Water Resources Association (www.awra.org): Member	2000 – Present
Geological Society of America (www.geosociety.org): Member	1991 – Present
- Distinguished Mentor	2004
National Speleological Society – Cave Diving Section (www.nsscds.com): Member	1989 – Present
- Science Award	2006
Florida Springs Protection Award (Florida Department of Environmental Protection)	2005

Technical Skills

Geologic Modeling & Data Visualization

- Solids and parameter modeling of 3-D stratigraphic horizons, geologic structures, and parameter distributions with the EarthVision® (Dynamic Graphics, Inc.) and TecPlot (Amtec Engineering)
- Development of computerized methods for fractal and geophysical analyses

Physical Hydrogeology and Computer Software Proficiency

- Aquifer test analysis, geologic and hydrogeologic mapping, remote sensing, borehole geophysical interpretation
- Quantitative groundwater tracing (SF_6 and Fluorescent dyes), Stable Isotopic tracing (^{222}Rn, $\delta^{18}O$, Cation/Anion Analysis), Cave mapping and survey

Selected Publications & Presentations

Kincaid, T.R. and Werner, C.L., 2008. Conduit flow paths and conduit/matrix interaction defined by quantitative groundwater tracing in the Floridan aquifer, in Yuhr, L.B., Alexander, E.C., and Beck, B.F. eds., *Sinkholes and the Engineering and Environmental Impacts of Karst*, Geotechnical Special Publication No. 33, American Society of Civil Engineers, Reston, VA, pp. 288-302.

Meyer, B.A., Kincaid, T.R., and Hazlett, T.J., 2008. Modeling karstic controls on watershed-scale groundwater flow in the Floridan aquifer of north Florida, in Yuhr, L.B., Alexander, E.C., and Beck, B.F. eds., *Sinkholes and the Engineering and Environmental Impacts of Karst*, Geotechnical Special Publication No. 33, American Society of Civil Engineers, Reston, VA, pp. 351-361.

Short Course. Karst Hydrogeology in Florida with Special Focus on the Santa Fe River Basin. Hydrogeology Consortium and University of Florida TREEO Center, August 23-24 2007, Gainesville Florida.

Kincaid, T.R., 2007, Karst Hydrogeology of the Santa Fe River Basin, Fieldtrip Guidebook No. 47, Southeastern Geological Society, Tallahassee, FL.

Short Course. Karst Hydrogeology in Florida with Special Focus on the Woodville Karst Plain. Hydrogeology Consortium, December 5-6 2006, Tallahassee Florida.

Kincaid, T.R., 2006, Karst Hydrogeology of the Woodville Karst Plain: Wakulla & St. Marks River Basins, Field Trip Guidebook No. 46, Southeastern Geological Society, Tallahassee, FL.

Kincaid, T.R., Hazlett, T.J., and Davies, G.J., 2005, Quantitative groundwater tracing and effective numerical modeling in karst: an example from the Woodville Karst Plain of North Florida: in Sinkholes and the Engineering and Environmental Impacts of Karst, Barry F. Beck ed., American Society of Civil Engineers, Reston, VA, p. 114-121.

Loper, D.E., Werner, C.L., Chicken, E., Davies, G., and Kincaid, T., 2005, Coastal Carbonate Aquifer Sensitivity to Tides, *EOS*, *Transactions of the American Geophysical Union,* vol. 86, no. 39.

Kincaid, T. R., Davies, G. J., Hazlett, T. J., Loper, D., DeHan, R., and McKinlay, C., 2004, Groundbreaking characterization of the karstified Floridan aquifer in the Woodville Karst Plain of north Florida, Abstract No: 80391, GSA Abstracts with Programs Vol. 36, No. 5.

Vialrdi, C.V. and Kincaid, T.R., 2002, Design-Phase Geologic Framework Modeling for Large Construction Projects, Proceedings: Battelle Third International Conference on the Remediation of Chlorinated and Recalcitrant Compounds, Monterey, California.

Kincaid, T.R. and Heffron, M., 2002, Database Design & Management for 3-D Hydrogeologic Modeling at the DOD DSCP Facility, Philadelphia, Pennsylvania, Proceedings: National Defense Industry Association Annual Meeting, Charleston, South Carolina.

Kincaid, T.R., 2000, Three Dimensional Geometric Modeling and Visualization of Phreatic Karst Caves with Implications for Hydrologic and Geomorphic Studies, in: Sasowsky, I.D. & Wicks, C.M. eds, Groundwater flow and contaminant transport in carbonate aquifers: A.A. Balkema, Rotterdam, pp. 169-190.

Kincaid, T.R., 2000, The Relationship Between Cave Development and Spring/Aquifer Protection, Proceedings of the 1st Annual Florida Springs Conference, February 2000, Gainesville, Florida, Florida DEP; http://susdl.fcla.edu/lfnh/related/springs.html

Kincaid, T.R., 2000, Speleogenesis in the Kirkgozler Region of the Taurus Mountains, Southern Turkey, Proceedings of the Underwater Science and Technology Meeting - SBT2000, December 2-3, 2000, Middle East Technical University, Ankara Turkey.

Kincaid, T.R., 1999, Volumetric fractal dimension as a quantitative descriptor for saturated cave morphology, in: Palmer, A.N., Palmer, M.V., and Sasowsky, I.D. (eds.), Karst Modeling, Special Publication 5, Karst Waters Institute, Charles Town, West Virginia, pp. 186.

Kincaid, T.R., 1998, Rapid River Water Intrusion to the Unconfined Floridan Aquifer, *Environmental & Engineering Geoscience,* vol. 4, no. 3, College Station, Texas.