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Dr. Bruce K. Darling's background encompasses the fields of groundwater exploration; groundwater development, management, planning and economics; geochemistry, and the origin, transport, and fate of inorganic and organic contaminants in groundwater and surface-water systems. He addresses many complex problems associated with water rights; the development of groundwater resources; water-resource availability; the economic valuation of groundwater; aqueous geochemistry, contamination, and waste disposal. He has worked as a principal investigator for regional and statewide water-planning programs in Texas and Louisiana. Bruce served as President of the Texas Section of the American Institute of Professional Geologists (AIPG) for the years 2000 and 2001, and he was elected National Vice President of AIPG for the year 2003. He is also a licensed professional geologist in Texas (P.G. #57).

EDUCATION

Ph.D., Geological Sciences (Hydrogeology and Geochemistry), 1997, The University of Texas at Austin
M.A., Energy & Mineral Resources (Mineral Economics), 1989, The University of Texas at Austin
M.S., Geology, 1984, The University of Louisiana at Lafayette
B.A., Philosophy, 1975, The University of Louisiana at Lafayette
Ph.D. Program, Mineral Economics Department (1989), Colorado School of Mines, Golden, Colorado

EXPERIENCE

Southwest Groundwater Consulting, LLC, Established October 2007, Principal
Austin Community College, January 2008 – Present, Adjunct Professor
Geology Department, University of Louisiana at Lafayette, 2004 to 2008, Adjunct Professor
LBG-Guyton Associates, Austin, TX, 1996 to 2007, Geochemist/Hydrogeologist
Law Environmental, Inc., Kennesaw, GA, 1994 to 1996, Geochemist/Hydrogeologist
Bureau of Economic Geology, Austin, TX, 1990 to 1994, Graduate Research Assistant/Hydrogeologist
Austin Community College, Austin, TX, 1990 to 1991, Adjunct Faculty Member, Geology
U.S. Bureau of Mines, Denver CO, 1989, Minerals Economist (Summer Appointment)
Pennzoil Exploration & Production Company, Midland, TX, 1981 to 1986, Exploration Geologist

THESES, RECENT ARTICLES, CONSULTING REPORTS, CONSULTING REPORTS, ABSTRACTS, AND PRESENTATIONS

Theses and Dissertation

Darling, Bruce K. (1984), The Depositional Environments of the DeQueen Formation (Trinity Group) in the Nathan Quadrangle of Southwestern Arkansas: M.S. thesis, Geology Department, Univ. of Louisiana at Lafayette.

Darling, Bruce K. (1989), An Analysis of Factors Affecting the Level of Barite Mining in the United States: M.A. thesis, Energy and Mineral Resources (Mineral Economics), The Univ. of Texas at Austin

Darling, Bruce K. (1997), Delineation of the Groundwater Flow Systems of the Eagle Flat and Red Light Basins of Trans-Pecos Texas: Ph.D. dissertation, Department of Geological Sciences, The University of Texas at Austin.

Recent Articles

Darling, B.K. (April, 2007), Texas Groundwater – Rule of Capture and Groundwater Management in Texas. *The Water Report*, Issue 38, p. 9 – 17.

Darling, B.K. (July 2007), Groundwater in Texas – Marketability and Market Value. *The Water Report*, Issue 41, p 18 – 23.

Selected Consulting Reports (Listed in Chronological Order)

Darling, B.K., Hibbs, B.J., and Dutton, A.R. (December 1994), Ground-Water Hydrology and Hydrochemistry of Eagle Flat and Surrounding Area: The University of Texas at Austin – Bureau of Economic Geology report prepared for the Texas Low-Level Radioactive Waste Disposal Authority under Inter-Agency Contract IAC(92-93)-0910. 137 p.

Law Engineering and Environmental Services, Inc. (February 1995), Ground-Water and Surface-Water Monitoring Plan for Plant Lansing Smith: Consulting report prepared for Gulf Power Company, Pensacola, FL.

Law Engineering and Environmental Services, Inc. (July 1995), Reply to Report by ERM-Southeast “Hydrogeological Evaluation and Ground-Water Sampling” Allied Signal, Inc. – East Point, Georgia Property: Consulting report prepared for Southern Wood Piedmont Co., Atlanta, GA.

Law Engineering and Environmental Services, Inc. (April 1996), ERM Review Report to Allied Signal, dated January 1996, SWP – East Point Facility, Impact of Sulfuric Acid Release: Consulting report prepared for Southern Wood Piedmont Co., Atlanta, GA.

LBG-Guyton Associates (October 1996), Valuation of Ground Water, Nena Lucia Well Field: Consulting report prepared for City of Sweetwater, TX.

LBG-Guyton Associates (December 1996), Environmental Site Assessment of Sections 19 and 20, BLK. A-38, Public School Lands Survey, Andrews County, Texas: Consulting report prepared for Envirocare of Texas (a subsidiary of Envirocare of Utah).

LBG-Guyton Associates (February 1997), Report on Potential Areas for Ground-Water Development in the Vicinity of the City of Sweetwater, Nolan County, Texas: Consulting report prepared for The City of Sweetwater, TX.

Harding Lawson Associates (June 1997), Technical Supplement for Decision Point 2 – Facility Layout Assessment, North Carolina Low-Level Radioactive Waste Facility Project: Consulting report prepared for North Carolina Low-Level Radioactive Waste Management Authority, Raleigh, NC.

Harding Lawson Associates (October 1997), GM-1 Pilot Study Report: Consulting report prepared for North Carolina Low-Level Radioactive Waste Management Authority, Raleigh, NC.

Harding Lawson Associates (October 1997), Summary Report for Decision Point 1, North Carolina Low-Level Radioactive Waste Management Authority: Consulting report prepared for North Carolina Low-Level Radioactive Waste Management Authority, Raleigh, NC.

LBG-Guyton Associates (July 1998), Investigation for Potential Sources of Elevated Radiological Activity in Two Monitoring Wells at Crist Electric Generating Plant: Consulting report prepared for Gulf Power Company, Pensacola, FL.

LBG-Guyton Associates (November 1998), Letter Report to Carl E. Bohls, Quatro Paisanas Ranch, Inc. – Estimated Market Value of Ground Water Sold to Diamond Shamrock Refinery: Consulting report prepared for owners of the Quatro Paisanas Ranch, Live Oak County, TX.

LBG-Guyton Associates (1999), Evaluation of the Potential Impact of the Application of Biosolids on Surface Water and Ground Water Resources in the Vicinity of the Piñon Ranch, Hudspeth County, Texas: Consulting report prepared for the Environmental Protection and Improvement Company, Denville, NJ.

LBG-Guyton Associates (March 1999), Hydrogeologic Study of Sections 19 and 20, BLK. A-38, Public School Lands Survey, Andrews, County, Texas: Consulting report prepared for Envirocare of Texas (a subsidiary of Envirocare of Utah).

LBG-Guyton Associates (January 1999), Letter Report to Frates Seligson – Preliminary Ground-Water Availability Study and Comments Related to the Leasing of Ground-Water Rights: Consulting report prepared for owners of the Quien Sabé Ranch, Guadalupe and Gonzales Counties, TX.

LBG-Guyton Associates (November 1999), Geology of the Quito Mesa Site, Ward County, Texas: Consulting report prepared for Envirocare of Texas, Austin, TX..

LBG-Guyton Associates, Freese & Nichols Engineerings, MCI Consulting Engineers, and M₃H Consulting (January 2001), Far West Texas Regional Water Plan: Consulting report prepared for the Texas Water Development Board, Austin, TX (Volume 1).

LBG-Guyton Associates, Freese & Nichols Engineerings, MCI Consulting Engineers, and M₃H Consulting (January 2001), Far West Texas Regional Water Plan: Consulting report prepared for the Texas Water Development Board, Austin, TX (Volume 2).

LBG-Guyton Associates, Water Prospecting and Resource Consulting, Inc., and Sul Ross State University (December 2001), Igneous Aquifer System of Brewster, Jeff Davis, and Presidio Counties, Texas: Consulting report prepared for Far West Texas Regional Water Planning Group, funded by Texas Water Development Board, Austin, TX.

Turner, Collie & Braden, Inc. and LBG-Guyton Associates (January 2002), Ground-Water Management Information: Consulting report for The Clearwater Underground Water Conservation District (Belton, TX).

- C.H. Fenstermaker & Associates, LBG-Guyton Associates, Hydro-Environmental Technology, Inc., and The Onebane Law Firm (December 2002), Assistance in Developing a Statewide Water Management Plan, Volume 1 (Chapters 1 – 5) – Identification and Use Assessment of Louisiana Water Resources: Consulting report for the Louisiana Ground-water Management Commission (Baton Rouge, LA).
- C.H. Fenstermaker & Associates, LBG-Guyton Associates, Hydro-Environmental Technology, Inc., and The Onebane Law Firm (December 2002), Assistance in Developing a Statewide Water Management Plan, Volume 2 (Chapters 6 – 13) – Planning and Management Issues: Consulting report for the Louisiana Ground-water Management Commission (Baton Rouge, LA).
- C.H. Fenstermaker & Associates, LBG-Guyton Associates, Hydro-Environmental Technology, Inc., and The Onebane Law Firm (December 2002), Assistance in Developing a Statewide Water Management Plan, Volume 3 – Appendices. Consulting report for the Louisiana Ground-water Management Commission (Baton Rouge, LA)
- LBG-Guyton Associates, (January 2003), Letter Report to Dave Owens (Anadarko Petroleum Corporation), regarding domestic well owned by Mrs. Fannie Williams (Jackson Parish, Louisiana): Consulting report prepared for Anadarko Petroleum Corporation (Houston, TX).
- LBG-Guyton Associates (March 2003), Letter Report to Avoyelles Parish Landowner Regarding Potential Contract to Sell Water to the Avoyelles Water Commission: Consulting report prepared for Phil Watkins (Evangeline Parish, LA)
- LBG-Guyton Associates (June 2003), Letter Report to Tampa Bay Water System on Results of Pumping Tests Conducted at the Municipal Well Field near Tarpon Springs, Florida, June 2003: Consulting report for the Tampa Bay Water System (Tampa, FL).
- Leggette, Brashears & Graham (December 2004), Quantification of the Role of Shallow Groundwater Nutrient Enrichment on Exporting Nutrient into the Lower St. Johns River Basin: Consulting report prepared for St. Johns River Water Management District.
- LBG-Guyton Associates (March 2005), Chacahoula #2 Time-Drawdown Test: Report for Layne-Christensen Company (Prairieville, LA).
- LBG-Guyton Associates (October 2005), Report on the Speciation and Transport of Arsenic in Ground Water of the Surficial Aquifer, Florida Panhandle: Consulting report prepared for Southern Company Services, Environmental Services Division (Birmingham, AL).
- LBG-Guyton Associates (2005), Age-Dating of Chicot Aquifer Ground Water, Lafayette Parish, Louisiana – a Basis for Understanding Recharge and the Potential for Contamination: Consulting report prepared for Lafayette Utilities System (Lafayette, LA)
- LBG-Guyton Associates (March 2006), Report on *The Estate of Alex Simoneaux et al vs. Southern Natural Gas Co. et al.*: Consulting report prepared for Wall & Bullington Law Firm (New Orleans, LA).
- LBG-Guyton Associates (March 2006), Findings Related to the Age-Dating of Ground Water at a Proposed Low-Level Radioactive Waste Disposal Site in Andrews County, Texas: Consulting report for INTERA and Cook-Joyce Consulting Engineers, Inc. (Austin, TX).

Leggette, Brashears & Graham (April 2006), Report on Evaluation of Existing Data and Sampling Protocol, Gulf Power Scholz Electric Generating Plant, Sneads, Florida: Consulting report for Gulf Power Company (Pensacola, FL).

LBG-Guyton Associates (April 2006), Comments on Hydrostratigraphy and Shallow Sands and Effects of Pumpage on Water Levels at Port Hudson Mill: Consulting report prepared for Georgia-Pacific Corporation (Zachary, LA).

LBG-Guyton Associates (May 2006), Comments on Analyses of Water Samples from Well #24, Georgia-Pacific Plant, Port Hudson, Louisiana: Consulting report for Georgia-Pacific Corporation (Zachary, LA).

Leggette, Brashears & Graham (June 2006), Report on Findings Related to the Source of Arsenic in Groundwater at the Crist Electric Generating Plant, Pensacola, Florida: Consulting report for Gulf Power Company (Pensacola, FL).

LBG-Guyton Associates (July 2006), Opinions regarding matters related to the case of *J. Pauline Duhe, Inc. v Texaco, Inc. et al.*: Consulting report prepared for Kean Miller Law Firm (Baton Rouge, LA).

LBG-Guyton Associates (April 2006), Letter Report on Review of Ground-Water Transactions in Texas, 2001 – 2006: Consulting report for City of Vernon, TX

LBG-Guyton Associates (May 2006), Comments on Analyses of Water Samples from Well #24, Georgia-Pacific Plant, Port Hudson, Louisiana: Technical memorandum prepared for Georgia-Pacific and Layne Christensen (Port Hudson, LA and Prairieville, LA).

LBG-Guyton Associates (July 2006), Letter Report on Hydrostratigraphy on Quaternary Sands at the Port Hudson Mill: Consulting report prepared for Georgia-Pacific Corporation (Zachary, LA).

Southern Company Generation (July 2006), Modeling Arsenic Fate and Transport in Groundwater: Consulting report prepared for Electric Power Research Institute (Palo Alto, CA).

Leggette, Brashears & Graham (June 2007), Ground-Water Investigation Report, Reed Minerals Facility, Tampa, Florida. Consulting report prepared for HARSCO Corporation (Pittsburgh, PA).

LBG-Guyton Associates (August 2008), Evaluation of Brine Disposal Injection Well Options from the Kinder Morgan SACROC Unit, Scurry County, Texas: Consulting Report Prepared for Kinder Morgan CO2 Company (Midland, TX).

Southwest Groundwater Consulting (December 2007), Fieldwork and Laboratory Analyses of Groundwater and Soil Samples Collected at a Gas Plant (Fenner Property), New Ulm, TX: Consulting report prepared for Blackburn & Carter Law Firm (Houston, TX).

Southwest Groundwater Consulting (April 2008), Report on Groundwater Chemistry of the Skiles Property, Robertson County, Texas: Consulting report prepared for Mr. Doug Caroom of Bickerstaff, Heath, Acosta & Delgado (Austin, TX).

Southwest Groundwater Consulting (May 2008), Modeled Results of Mixing Groundwater from Three Test Wells, San Antonio Brackish Water Project: Consulting report prepared for LBG-Guyton Associates (Austin, TX).

Southwest Groundwater Consulting (September 2008), Report on Findings Related to the Restoration of In-Situ Uranium Mines in South Texas: Consulting report prepared for Blackburn & Cater Law Firm (Houston, TX).

Southwest Groundwater Consulting (2008), Letter Report on the Valuation of Sources of Surface Water in Texas: Consulting report prepared for Ronald Barker (Angleton, TX).

Southwest Groundwater Consulting (2009), Interpretation of Normalized Gas Fractions and Stable Isotope Ratios of Natural Gas Collected from the Fred Kyle #16 Well, Panola County, Texas: Consulting report prepared for Anadarko Petroleum Corporation (Houston, TX).

Southwest Groundwater Consulting (November 2008, revised and expanded January 2009), Opinions in the Matter of Goliad County, TX and Luann and Craig Duderstadt v. Uranium Energy Corporation: Consulting report prepared for Blackburn & Carter Law Firm (Houston, TX).

Southwest Groundwater Consulting (2009, in progress), Letter Report on the Valuation of Water Wells and Edwards Aquifer Groundwater, Teravista Development, Williamson County, TX, (Round Rock, TX).

Southwest Groundwater Consulting (2009, in progress), Quality of Brazos Alluvium Groundwater in Vicinity of Farms Owned by Dr. Clifford Skiles (Robertson County, TX): Consulting report prepared for Mr. Doug Caroom, Bickerstaff, Heath, Acosta & Delgado Law Firm (Austin, TX).

Publications

Lock, B.E., Darling, B.K., and Rex, I.D. (1983), Marginal Marine Evaporites, Lower Cretaceous of Arkansas: Gulf Coast Association of Geological Societies Transactions, v. 33, p. 145 – 152.

Darling, B.K., and Lock, B.E. (1984), The Lower Cretaceous Formations of Southwest Arkansas, and a Proposed Revision of Stratigraphic Rank for the Three Lowest Units: Gulf Coast Association of Geological Societies Transactions, v. 34, p. 321 – 327.

- Darling, B.K., Hibbs, B.J., Dutton, A.R., and Sharp, J.M., 1995, Isotope Hydrology of the Eagle Mountains Area, Hudspeth County, Texas - Implications for Development of Groundwater Resources, *in* Hotchkiss, W.R., Downey, J.S., Gutentag, E.D., and Moore, J.E., eds., *Water Resources at Risk*, American Institute of Hydrology, Minneapolis, MN, p. SL12-24.
- Hibbs, B.J., and Darling, B.K. (1995), Aquifer Testing and Characterization at the Proposed Low-Level Radioactive Waste Disposal Site, Hudspeth County, Texas, *in* *Groundwater Management: American Society of Civil Engineers*, New York, p. 205 – 210.
- Hibbs, B.J., and Darling, B.K. (1995), Salinization of the Rio Grande Alluvial Aquifer in Hudspeth County, Texas, *in* *Research Leads the Way*, Proceedings of the 24th Water For Texas Conference, P. 157 – 161.
- Hibbs, B.J., and Darling, B.K., 1995, Environmental Isotopes and Numerical Models for Understanding Aquifer Dynamics in Southwestern Basins, *in* Cleveland, T.G., ed., *Advances in the Development and Use of Models in Water Resources*, American Water Resources Association, Herndon, VA, p. 195 - 200.
- Hibbs, B.J., Darling, B.K., and Ashworth, J.B. (1995), Interbasin Movement of Groundwater and Vertical Groundwater Flow, *in* *Texas Water '95*, First International Congress on Water, American Society of Civil Engineers, p. 267 – 277.
- Darling, B.K., Hibbs, B.J., and Sharp, J.M. Jr. (1998), Environmental Isotopes as Indicators of the Residence Time of Groundwaters of the Eagle Flat and Red Light Basins of Trans-Pecos Texas, *in* *The Search Continues into the 21st Century*, Proceedings of the West Texas Geological Society Fall Symposium, Midland, TX, p. 259 - 270.
- Hibbs, B.J., Darling, B.K., and Jones, I.C. (1998), Hydrogeologic Regimes of Arid-Zone Aquifers Beneath Low-Level Radioactive Waste and Other Waste Repositories in Trans-Pecos, Texas and Northern Chihuahua, Mexico, *in* Brahana et al. (eds), *Gambling with Groundwater - Physical, Chemical, and Biological Aspects of Aquifer-Stream Relations*, American Institute of Hydrology, Minneapolis, MN, p. 311-322.
- Darling, B.K. and Hibbs, B.J. (2001), The Aquifers of Red Light Draw, Green River Valley, and Eagle Flat, *in* Mace, R., Mullican, W.F. III, and Angle, T. (eds), *The Aquifers of West Texas: Texas Water Development Board Report 356*, Austin, TX, Chapter 16.
- Scanlon, B.R., Darling, B.K., and Mullican, W.F. III (2001), Evaluation of Groundwater Recharge in Basins in Trans-Pecos Texas, *in* Mace, R., Mullican, W.F. III, and Angle T. (eds), *The Aquifers of West Texas: Texas Water Development Board Report 356*, Austin, TX, Chapter 3.
- Hibbs, B.J., and Darling, B.K. (2005), Revisiting a Classification Scheme for U.S.-Mexico Alluvial Basin-Fill Aquifers, *in* *Groundwater*, V. 43, No. 5 (Theme Issue: Transboundary Groundwater), National Groundwater Association, pp. 750 – 763.

Abstracts

- Darling, B.K., and Lock, B.E. (1982), Sabkha or Subaqueous Intrastratal Origin of Chicken-Wire Gypsum, DeQueen Formation (Cretaceous), Arkansas: American Assoc. of Petroleum Geologists, v. 66 no. 5, p. 161.
- Darling, B.K., Sharp, J.M, and Hart, M. (1991), Delineation of Groundwater Systems by Cluster, Principal Components, and Multiple Discriminant Analyses: Geological Society of America, Rocky Mountains Section Annual Meeting, Albuquerque, NM, Abstracts with Programs.
- Hibbs, B.J., Darling, B.K., and Peckham, D.S. (1994), Isotope Hydrology and Simulation of Groundwater Flow in the Red Light Draw Bolson – a Southwestern Alluvial Basin: Geological Society of America, Abstracts with Programs (Annual Meeting), v. 26, p. A362.
- Hibbs, B.J., and Darling, B.K. (1995), Sources of Salinity in the Rio Grande Alluvial Aquifer: *New Waves*, The Research Newsletter of the Texas Water Resources Institute, v.8, no.2, p.10
- Darling, B.K., and Emerson, P. (2001), Removing Obstacles to Water Marketing: Abstract and presentation at Texas Water Conservation Association meeting in Austin, Texas, January 2001.
- Hibbs, B.J., Darling, B.K., and Hawley, J.W. (2001), Revisiting a Classification Scheme for Southwestern Alluvial Basin Aquifers: Geol. Soc. America Abs. with Programs (Cordilleran Sec.), v.33, p.A-39.
- Darling, B.K., Hamilton, G.B., Stover., S.L., and Sonnier, B. (2002), Water Management Planning in Louisiana *in* Dutton S.P., Ruppel S.C., and Hentz, T.F. (eds), Gulf Coast Association of Geological Societies Transactions, v 52, p. 76.
- Hibbs, B.J., and Darling, B.K. (2002), Revisiting a Classification Scheme for Southwestern Alluvial Basin Aquifers: SAHRA 2nd Annual Meeting, an NSF Science and Technology Center at the University of Arizona, (Poster Session) Abs. with Programs, R10.

Selected Presentations

- Determinants of the Market Value of Groundwater: Presentation at Texas Water Conservation Association, Houston, Texas (October 2001).
- Water Planning in Louisiana: Presentation at Louisiana Water Quality Technology Conference, Alexandria and Baton Rouge, LA (December 2001).

Water Usage in Louisiana, and the Development of a Statewide Comprehensive Water Management Plan: Presentation to Lafayette, LA Rotary Club (April 2002).

The Louisiana Comprehensive Groundwater Management Plan: Presentation to Alexandria, LA Chamber of Commerce (May 2002).

Estimating the Economic Value of Groundwater – the Texas Experience: Presentation at Louisiana Mid-Continent Oil and Gas Association Environmental Affairs Conference, Baton Rouge, LA (Dec. 2002).

Update on Louisiana Groundwater Management Plan: Presentation at Louisiana Water Quality Technology Conference, Alexandria and Baton Rouge, LA (December 2002).

Groundwater Management Issues in Louisiana: Series of Three One-Hour Presentations for Lorman Educational Services, Bossier Parish, LA (August 2004).

Age-Dating Groundwater for the Lafayette Utilities System: Presentation at Quarterly Meeting of Groundwater Advisory Committee, Louisiana Department of Environmental Quality, Baton Rouge, LA (May 2005)

Preference-Feasibility Analysis as a Tool to Understand Rural-Urban Water Needs and Conflicts in Louisiana: Presentation at Louisiana Water Summit, Bossier City, LA (August 2005).

Understanding Groundwater Markets and Market Values of Water Rights in Texas: Presentation at Texas Water Law Conference, Austin, TX (September 2005).

Isotopic Indicators of Groundwater Age and Paleoclimatic Conditions in the West Texas System of Bolsons: Presentation at National Groundwater Association Water Summit, San Antonio, TX (April 2006).

Texas Groundwater – Marketability and Market Value: Presentation at Continuing Legal Education Conference on Water Marketing, SanAntonio, TX (April 2008)

Determining the Market Value of Groundwater in Texas: Presentation at Continuing Legal Education Conference on Texas Water Law, Austin, TX (September 2008)