

## **Ken A. Rainwater, Ph.D., P.E., BCEE, CFM**

### **Address**

Home:	3113 81st Street Lubbock, Texas 79423	Work:	117 Civil Engineering Building Texas Tech University Lubbock, Texas 79409-1023
e-mail:	ken.rainwater@gmail.com		
Home phone:	806-745-7943		
Mobile phone:	806-789-3597		

### **Personal Data**

Birth: December 16, 1957 in Fort Stockton, Texas.  
Marital Status: Married - May 22, 1982 to Kathryn Karol Killebrew.  
Daughter - Janice Kay (11/10/88), son - Kirk Alan (8/24/92).

### **Education**

B.S.C.E.	Rice University	1979
M.S.C.E.	The University of Texas at Austin	1982
Ph.D.	The University of Texas at Austin	1985

### **Professional Positions**

Cost Engineer, Petrochemical Division, Brown and Root, Inc., Houston, Texas, 1979-80.  
Assistant Professor of Civil Engineering, Texas Tech University, Lubbock, Texas, 1985-91.  
Associate Professor of Civil Engineering, Texas Tech University, Lubbock, Texas, 1991-2002.  
Joint Faculty, Department of Geosciences, Texas Tech University, Lubbock, Texas, 1992-2022.  
Professor, Civil, Environmental, and Construction Engineering, Texas Tech University, Lubbock, Texas, 2002-2022.  
Director, Texas Tech University Water Resources Center, 2002-12.  
Water Resources and Environmental Engineering consultant, 1986-  
System Engineer, South Plains Water Supply Corporation, 2023-.

### **Professional Societies**

American Society of Civil Engineers, Member  
Co-Faculty advisor for Texas Tech J.H. Murdough Student Chapter of ASCE, 1985-2004  
National Committee for Student Services, 1995-99  
Texas Section Student Activities Committee, 1990-2004  
Texas Section Water Resources Technical Session Committee, 1987-88  
Texas Section Continuing Professional Development Committee, chair, 1999-2000  
Vice-President-Educational, Texas Section, 2000-01  
Texas Section Education Committee, 1999-2001, chair 2001  
Texas Section President-elect, 2005-06, President 2006-07, Past President 2007-08  
National Committee on the Academic Prerequisites for Professional Practice, 2008-12  
Region 6 Governor, 2012-15  
National Committee for Student Members, 2012-16  
Review Committee, Texas Section CEECON, 2021  
American Geophysical Union, Member  
Association of Ground Water Scientists and Engineers, Member  
Associate Editor, Editorial Board for Ground Water, 1996-2001  
Co-Chair, Reese Restoration Advisory Board, 1997-2005  
Delegate, Universities Council on Water Resources, 1998-2012  
Board Certified Environmental Engineer (Water/Wastewater), American Academy of Environmental Engineers, 2000-  
Diplomate Water Resources Engineer, American Academy of Water Resources Engineers, 2008-2023  
Member, Llano Estacado Regional Water Planning Group, 2002-  
Certified Floodplain Manager, 2011-  
Member, Chair, Lubbock Water Advisory Commission, 2012-18  
Associate Editor, Texas Water Journal, 2013-  
Member, Upper Brazos Flood Planning Group, 2020-

### **Awards**

Ex-Students Association New Faculty Award	1987
Halliburton Education Foundation Research Award	1987
Tau Beta Pi Outstanding Professor Award	1988
Abell Faculty Teaching Award, College of Engineering	1989, 2001
President's Excellence in Teaching Award	1990
Zone III Faculty Advisor of the Year, American Society of Civil Engineers	1996, 1998
Texas Tech University Teaching Academy	1996-
Who's Who Among America's Teachers	1998
Department of Civil Engineering Teacher of the Year	2000
Service to Students Award, Texas Section, American Society of Civil Engineers	2001
Faculty Advisor Reward, American Society of Civil Engineers	2001, 2002
Department of Civil Engineering Researcher of the Year	2005
TechSpy Educator Award	2009
Whitacre College of Engineering Researcher of the Year (Barnie Rushing nominee)	2010
Award of Honor, Texas Section, American Society of Civil Engineers	2016
Texas Rain-Catcher Award, Texas Water Development Board (HUMS project)	2020
South Plains Chapter of Texas Society of Professional Engineers, Visioneer Award	2023
Lifetime Service Award, Texas Section, American Society of Civil Engineers	2023

### **Professional Registration**

Licensed Professional Engineer, State of Texas No. 65348

### **Courses Taught** (\* responsible for course development, \*\* shared course development)

Undergraduate	CE 1130	CE Seminar I
	CE 1305	Engineering Analysis I
	ENVE 3301	Water Quality Engineering I *
	CE 3305	Fluid Mechanics
	CE 3309	Environmental Engineering I
	CE 3354	Engineering Hydrology
	CE 3371	Environmental Engineering I
	CE 3372	Water Systems Design
	CE 4330	Design of Engineering Systems (w/Claborn, Lawson, or Vann)
	CE 4333	Special Topics in Water Resources (Public Works in Brazil, w/Correa) **
	CE 4353	Design of Hydraulic Systems *
	CE 4363	Groundwater Hydrology *
Graduate	CE 5353	Water Resources I
	CE 5360	Open Channel Hydraulics (combined with CE 4353) *
	CE 5361	Advanced Surface Water Hydrology
	CE 5362	Surface Water Modeling
	CE 5363	Groundwater Hydrology (combined with CE 4363) *
	CE 5364	Groundwater Transport Phenomena *
	CE 5366	Water Resources Management
	CE 5398	Risk Assessment and Public Policy (w/Urban, Mollhagen) **
	ENVE 5305/5306	Environmental Systems Design I&II (w/Ramsey) **
	CE 5101	Graduate Seminar
	CE 5331	Groundwater Hydrology (off-campus course for Chevron) *
	CE 5331	Hazardous Waste Management (w/Ramsey, Cosentino) **

### **Other Teaching Related Activities**

- Organized review session program for the Fundamentals of Engineering Exam for all College of Engineering students each semester, 1986-88.
- Taught fluid mechanics review session for Fundamentals of Engineering exam review, 1986-.
- Automated the departmental course evaluation process with Dr. Jim McDonald.
- Teamed with Drs. Heyward Ramsey and Tony Mollhagen in National Science Foundation grants for analytical and instructional equipment for the Environmental Sciences Laboratory.

- Attended a short course in 1991 in “New Techniques in Water Resources Sciences” sponsored by the U.S. Geological Survey and the National Science Foundation.
- Attended a short course in 1991 at the University of Texas-Austin on “Water Quality Modeling.”
- Taught one of the first graduate courses to be videotaped for off-campus distribution by the College in 1992, CE 4355/5356 Groundwater Hydrology.
- Taught two intersession courses (Water and Wastewater Treatment/Air Pollution and Hazardous Waste Management) in May, 1994, at the Fachhochschule Wilhelmshaven in Wilhelmshaven, Germany, as part of an ongoing exchange program.
- Hosted two faculty members from the Van Hall Instituut in Fall, 1995, as they taught a short course in Risk Assessment Modeling for nine students.
- Served as the local advisor in 1995-96 for Marieke Wiersma and Thale Hadderingh, two seniors from the Van Hall Instituut, as they worked on their senior thesis project.
- Directed a special studies course in Summer, 1996, in which our graduate students participated in field investigation of subsurface contamination at a natural gas compressor station under an agreement with a regional energy company.
- Invited by Provost Burns in Fall, 1996 to join the new Texas Tech University Teaching Academy.
- Hosted exchange student Kerstin Koglin in 1998-99 for the Van Hall Instituut for senior project.
- Research Associate, Texas Tech Center for the Study of Regional Economic and Industrial Development.
- Hosted exchange student Yousif Aleskerov in 2000, for the University of Alaska-Fairbanks and the Soros International Scholars Program as he worked on his master’s thesis project.
- Worked with Dr. Ramsey on the development and accreditation of the 5-year MEnvE program.
- Teaching Academy’s Departmental Teaching Award Committee, 1999-2002, chair 2000-2.
- Led department ABET BSCE self-study, 2005, 2011, 2017 and continuing.
- Co-led study abroad program on Public Works in Brazil with Drs. Correa, Hernandez, and Lawson, Summer 2009.
- Teaching Academy Selection Committee, 2009-11, 2019-21.
- Peer teaching evaluator for WCOE faculty, 2012-22.
- Featured expert in the recent documentary, “Playas: The Land of Little Lakes,” produced by Lee Smith of Austin for the I-20 Wildlife Preserve organization in Midland. The documentary was shown at willing stations starting in 2022.

## **Graduate Student Advising**

### Major Professor, Doctoral Students

1. Mohammad R. Zaman (1993), Subsurface Remediation by Vacuum Extraction for Volatile Organic Chemicals: A Finite Element Model
2. David Harkins (1998), The Future of the Texas High Plains Aquifer System: Modeling and Projections
3. Amit Armstrong (1998), A Two-Dimensional Numerical Model for Soil Vapor Extraction
4. Jeff Stovall (2001), Groundwater Modeling for the Southern High Plains
5. Matt Jones (2007), Modelling Paleoclimate and Groundwater Elevation Changes on the Southern High Plains
6. Kartik Venkataraman (2010), Occurrence, Distribution, and Speciation of Arsenic in the Southern High Plains Aquifer System
7. Ange Abena Mbarga (2017), Economic, Technical, and Regulatory Options for Rural Drinking Water Systems
8. Alireza Asadi (2022), Application of Advanced Modeling Techniques in Groundwater, Surface Water, and Wastewater Treatment

### Major Professor, Master of Science Students, Thesis Option

1. Teh-fang Lee (1987), A Mathematical Model for Estimation of Vertical Air Permeability in the Unsaturated Zone
2. Yu-Chi Chen (1987), Economic Potential for Development of Increasing Storage Beneath a High Plains Municipality
3. Mohammad Zaman (1989), Experimental and Theoretical Study of Volatilization for Hydrocarbon Removal in Unsaturated Porous Media
4. Jeff Wilkerson (1990), Forced Air Volatilization of Hydrocarbons in Porous Media
5. Mary Mayfield (1990), Increasing In Situ Bioremediation of Diesel Fuel by Cyclic Vertical Water Table Movement
6. Joe Ellison (1990), Evaluation of Carbon Dioxide Scale Control Techniques for Very Hard Waters
7. Gary Thomas (1990), Removal Of Calcium Carbonate Scaling by Carbon Dioxide Injection
8. Veen Chee Foong (1990), Numerical Simulation of the Hydraulic Parameters of an Alluvial Aquifer Using a 3-D Finite Element Computer Model
9. Sridhar Varadaraj (1991), Enhanced In Situ Bioremediation of Diesel Fuel Contamination of Groundwater: A Laboratory Investigation

10. Roy Chelagiri (1991), Study of Pulsed and Continuous Volatilization of Hydrocarbons from Unsaturated Porous Media
11. Charles Mehta (1993), Laboratory Study of In Situ Bioremediation of Petroleum Hydrocarbons
12. Steven Dean (1993), Estimation of Potential Evaporation Rates at the Double Lakes Basin, Tahoka, TX
13. Scott Wagaman (1993) Full-Scale Flow Visualization Over a Low-Rise Building
14. Collen Brownlow (1994), Trophic State Assessment of an Urban Playa, Lubbock, Texas
15. Scot Laun (1995), Chromium Contaminant Mobility in the Subsurface Soils at the Pantex Plant
16. Troy Dorman (1996), The Texas High Plains Aquifer System: Modeling and Predictions for the Southern Region
17. Dennis Givens (1997), Sorption of Chromium and High Explosives on Subsurface Soils from the Pantex Plant
18. Walter Medlock (1998), Laboratory Studies Indicating the Potential for Bioremediation of High Explosives in Soil at the Pantex Plant
19. Justin Brown (1999), In Situ Degradation of High Explosives
20. Jeff Stovall (1999), Sub-Regional Groundwater Modeling of the High Plains Aquifer of Texas
21. Matt Jones (2000), Evaluation of the Potential for Enzymatic Degradation of Defense Program Laboratory Waste
22. Sara Black (2002), Perched Aquifer Tracer Test, Pantex Plant, Amarillo, Texas
23. Nilesh Waghdhare (2003), Simulation of Septic System Disposal Unit
24. Ajay Ramachandran (2004), Evaluation of Groundwater Quality in Castro, Dawson and Terry Counties
25. Heather Keister (2004), Evaluation of the Texas Department of Transportation Design Procedure for Complex Drainage Networks
26. Bindu Kota (2004), Enzymatic Degradation of Cotton Used for Spill Absorption
27. Sanjaya Joshi (2005), Comparison of Groundwater Rights in the United States: Lessons for Texas
28. Rahish Khatri (2008), Preliminary Study on Effects of the Conservation Reserve Program (CRP) on Groundwater Resources in the Texas High Plains
29. Geetha Ganesan (2010), Estimating Recharge Through Playa Lakes to the Southern High Plains Aquifer
30. Joel Thai (2010), Water Yield Monitoring of Brush Management in Texas
31. Jeremy Kight (2011), Mechanics of Fluids Teach Laboratory Standard Operating Procedures
32. Robert Pavur (2012), Simulation of Unsaturated Flow and Heat Transport within Playa Soils
33. Marita Moya (2016), Stormwater Drainage Analysis of Marsha Sharp Freeway and University Avenue

Major Professor, Master of Science Students, Report or Non-Thesis Research/Courses Option

1. Brian Moore (1989), Dewatering the Lubbock Lake Landmark: A Design Example
2. Ken Cody (did not complete report)
3. Chennakrishna R. Gunda (1992) Evaluation of Groundwater Storage Beneath Lubbock, Texas
4. Shane E. Nance (1992), Remediation of Soil Contamination at a Leaking Petroleum Storage Tank Site in Gomez, Texas
5. Subbarami Varidireddy (1993), A Critical Review on Depression Storage Description in Rainfall-Runoff Modeling
6. Mohammad Rahman (1993), Recent Developments of In Situ Bioremediation of Contaminated Soil and Groundwater: A Literature Review
7. Praveen Udtha (1993), Comparison of Remedial Technologies and Associated Costs for a Typical Gasoline-Contaminated Site in Lubbock, Texas
8. Abidur Khan (1993), The Scientific Background for the Development of Drinking Water Regulations for Radon-222
9. Rajesh Naidu (1993), Application of an Analytical Model for Prediction of Chloride Changes in Lake Meredith
10. Lakshmi Reddy (1993), Monitoring Groundwater Table Soil Moisture and Temperature in Area 13B, Lubbock Lake Site, Lubbock, Texas
11. F.M. Hasan (1993), Feasibility Study of Scale Removal for Recovery of Flow Capacity in the Central System Pipeline
12. Devin Smith (1994), Computer Simulation of Groundwater Flow at Double Lakes Basin, Tahoka, Texas
13. Prabir Maulik (1994), In Situ Air Sparging: Groundwater Remediation Technology of the Future
14. Amit Armstrong (1994), A Review of Mathematical Modeling of Soil Vapor Extraction Process
15. Paritosh Pathak (1994), Numerical Modeling of Groundwater Contamination at a Leaking Underground Storage Tank Site
16. Sreenivasa Patnam (1994), A Study of the Installation Procedure and the Methods of Leak Detection for Underground Storage Tanks
17. James Greer (1995), Comparison of Infiltration and Evaporation Volumes for the Five Pantex Playa Lakes
18. John S. Cox (1996), The Transport of Conservative and Reactive Solutes through a Physical Model of a Confined Aquifer
19. Jennifer L. Elms (1998), The Superfund Hazard Ranking System: A Discussion and Case Study
20. Carlton Hendrix (1998), Application of Groundwater Vistas for Industrial Water Supply
21. Dinesh Anbumani (2003), Analyzing Drainfield Requirements Across Texas in Comparison with Lubbock
22. Kavitha Pulugundla (2003), Estimating Groundwater Recharge in the Southern High Plains of Texas
23. Srinivasa Anandam (2004), Modeling of Unsaturated Zone Transport of Perchlorate

24. Ashok Bathulla (2004), Sorption of Selected Metals on Pantex Soils
25. Margarethe Berge (2004), Groundwater Management Plan for Mustang Station Power Plant
26. Rajmani Subedi (2006), Investigation of Groundwater Levels in Dawson County
27. Shanker Man Shrestha (2007), Approximate Hydrologic Budgets of Four Playa Lakes in the Southern High Plains
28. Ryan Marshall (2008), Pilot Testing of a Small-Scale Integrated Wind-Water System
29. Chase Bentley (2008), Breach Analysis for Stamford Dam
30. Yeon-Tae Jeong (2012), Perchlorate Transport in the Unsaturated Zone
31. Levi Hein (pending)
32. Nicholas Hall (2013), Estimating Infiltration Through Playa Lakes in Texas for Different Land Uses
33. Paul Giany (2014), Groundwater Law in the United States
34. Jillian Calvit (2017), Texas Tech University Drainage Plan
35. Jordan Rogers (2018), Ranking Procedure and Results for the Fiscal Year 2018 Cost-Share Applications to the Water Supply Enhancement Program
36. Yosselyn Amaya (2018), Physical Plant Project
37. Gladys Figueroa Toro (2018), Guadalupe Arroyo Watershed Study
38. Justin Palad (2019), Stormwater Evaluation Near 15<sup>th</sup> Street and Boston Avenue on Texas Tech University Campus
39. Ana Chavez (2021), Calibration of the EDYS Model for Selected Locations in San Antonio Bay
40. Fayruj Ahmed (2021), research then switched to courses only

Committee Member, Doctoral Students

1. Neelakandan Sathiyakumar (1987)
2. Duane Rosa (Agricultural Economics, 1988)
3. Kate Trauth (1989)
4. Teh-fang Lee (1990)
5. Robert W. Brashear (1991)
6. Yu-Chi Chen (1991)
7. James R. Bartolino (Geosciences, 1991)
8. M. Asri (1995)
9. K.G.K. Jayakody (1998)
10. Victoria Harkins (1998)
11. Audra Morse (2003)
12. Eric Albers (EnvTox, 2004)
13. Marla Potess (Land Use, Planning & Mgmt, 2011)
14. Kui Tan (2003)
15. Srinath Rajagopalan (2005)
16. Eric Vasbinder (Ch E, 2004)
17. Spandana Tummuri (2008)
18. Annesly Nessthinge (Plant and Soil Science, 2008)
19. William Asquith (2011)
20. Cui Liu (2012)
21. Wade Barnes (2013)
22. Bryan Schuetze (2013)
23. Yanlai Han (2016)
24. Haley Schneider (2018)
25. Blake Kronkosky (2018)
26. Caroline Neale (2018)
27. Gondah Moses Zolue (Plant and Soil Science, 2020)
28. Cindy Dickson (Natural Resource Management, pending)
29. Jorge Ruiz de Vinaspre (pending)

Committee Member, Master of Science Students, Thesis (t) or Report (r)

1. Rushi Tasker (t, Biological Sciences, 1988)
2. J. Scott Taylor (t, 1988)
3. B.P. Acharya (t, 1988)
4. Kah Leong (t, 1988)
5. Kerry Howard (t, Geosciences, 1987)

6. Klim Maling (t, Independent Studies, 1988)
7. Yue-ying Deng (t, Agricultural Engineering, 1988)
8. Ron Smith (t, Chemical Engineering, 1988)
9. Vilka Scott (Biological Sciences, did not complete thesis)
10. Kimberlie A. West (r, 1994)
11. Don White (r, 1991)
12. Steven K. Ayres (t, 1991)
13. Ray Brady (r, 1991)
14. Charles R. Hughes (t, Geosciences, 1993)
15. Ai-zhen Huang (t, 1992)
16. Shahid Bhuiyan (r, 1992)
17. Vijay Kurki (r, 1992)
18. Nagi Patibandla (r, 1992)
19. Jeevan Shankar (r, 1992)
21. M. Sancharwala (r, 1993)
22. K. Dwaraganahalli (r, 1993)
20. Venkata Karanam (r, 1992)
23. David Durham (r, 1993)
24. David Dickerson (r, 1994)
25. Darren Harmel (t, Soil Sciences, 1994)
26. J. Alan Reed (t, 1994)
27. Derald Mabbitt (t, Geosciences, 1994)
28. Craig Bunting (t, Geosciences, 1994)
29. S.R. Kondisetty (t, 1994)
30. David Reinhart (r, 1995)
31. David Harkins (r, 1995)
32. Victoria Harkins (t, 1995)
33. Akm Huda (t, 1996)
34. Ken Mars (t, Geosciences, 1996)
35. Shaheed Sajjad (t, 1998)
36. Todd Musick (t, 2005)
37. Luke Swift (t, 2003)
38. Margaret Medellin (r, 1999)
39. Lisset Verde (r, ETM, 2000)
40. Wesley Ingram (t, 2000)
41. Amandeep Kang (t, 2000)
42. Erin Atkinson (t, 2001)
43. Paul Winn (r, 2002 candidate)
44. Mi-Ae Jeon (t, 2001)
45. Chang Yong Lee (r, 2002)
46. Shiva Sandrana (t, 2002)
47. Rawaa Al-Saadi (t, 2002)
48. David McClendon (t, 2002)
49. Anjali Bhangay (t, in progress)
50. Tony Rector (t, 2002)
51. Laxman Patil (t, 2005)
52. Cindy Jones (t, 2006)
53. Jared Lujan (t, 2008)
54. Amit Karki (t, 2007)
55. Phani Ponnada (t, 2011)
56. Chris van Nice (interdisciplinary studies, t, 2012)
57. Vamshi Thummuri (r, 2012)
58. Jessica Quintanilla (t, Geosciences, 2013)
59. Jared Chase (t, Landscape Architecture, 2014)
60. Kyle Clark (t, Geosciences, 2015)
61. Cristal Tay (t, 2015)

62. Li Li, (t, Plant and Soil Science, 2017)
63. Vahid Salahi (t, 2018)
64. Megan Riley (t, pending)

### **Refereed Publications**

1. Rainwater, K.A. and Holley, E.R., 1984, "Laboratory Studies on Hydrocarbon Tracer Gases," Journal of the Environmental Engineering Division, ASCE, Vol. 110, No. 1, pp. 27-41.
2. Rainwater, K.A., Wise, W.R., and Charbeneau, R.J., 1987, "Parameter Estimation Through Groundwater Tracer Tests," Water Resources Research, Vol. 23, No. 10, pp. 1901-1910.
3. Rainwater, K.A., 1988, "Cation Exchange in Groundwater Solute Transport," Journal of the Hydraulics Division, ASCE, Vol. 114, No. 2, pp. 173-191.
4. Fedler, C.B., Rainwater, K.A., Yueying, D., Dvoracek, M.J. and Ramsey, R.H., 1989, "Field Study of Tracer Movement in a Shallow Alluvial Aquifer," Transactions of the ASAE, Vol. 32, No. 3, pp. 857-864.
5. Rainwater, K.A., Zaman, M.R., Claborn, B.J., and Parker, H.W., 1990, "Experimental and Modeling Study of Soil Venting," Proceedings of the 1990 National Conference on Environmental Engineering, ASCE, Arlington, VA, pp. 479-486.
6. Claborn, B.J. and Rainwater, K.A., 1991, "Well-Field Management for Energy Efficiency," Journal of the Hydraulics Division, ASCE, Vol. 117, No. 10, pp. 1290-1303.
7. Mohamed, F.A., Allen, E., and Rainwater, K.A., 1993, "Well Response Tests: III. The Inverse Problem," Inverse Problems, Institute of Physics, Vol. 9, pp. 483-493.
8. Rainwater, K.A., Mayfield, M.P., Heintz, C.E., and Claborn, B.J., 1993, "Enhanced In Situ Biodegradation of Diesel Fuel by Cyclic Vertical Water Table Movement," Journal of the Water Environmental Federation, WEF, Vol. 65, No. 6, pp. 717-725.
9. Armstrong, A., Rainwater, K.A., Vallabhan, C.V.G., and Parker, H.W., 1995, "A Finite Difference Approach for Mathematical Simulation of Soil Vapor Extraction from Unsaturated Zone," Proceedings of the International Symposium on Groundwater Management, ASCE, R.J. Charbeneau, ed., pp. 30-34.
10. Jayawickrama, P.W., Jayakody, K.G.K., and Rainwater, K.A., 1996, "System Identification Methodology for the Characterization of Contaminated Sites," Proceedings of the ASCE Specialty Conference on Uncertainty in the Geologic Environment: From Theory to Practice, C.D. Shackelford, P.P. Nelson, and M.J.S. Roth, eds., Vol. 2, pp. 897-911.
11. Kondisetty, S.R., Jayawickrama, P.W., and Rainwater, K.A., 1996, "Source Characterization at Contaminated Sites: An Inverse Optimization Approach," Proceedings of the ASCE Specialty Conference on Uncertainty in the Geologic Environment: From Theory to Practice, C.D. Shackelford, P.P. Nelson, and M.J.S. Roth, eds., Vol. 2, pp. 927-943.
12. Wood, W.W., Rainwater, K.A., and Thompson, D.B., 1997, "Quantifying Macropore Recharge: Examples from a Semi-Arid Area," Ground Water, NGWA, Vol. 35, No. 6, pp. 1097-1106.
13. Rainwater, K.A. and Ramsey, R.H., 1997, "The New Texas Tech Approach to Environmental Engineering Education: A Five-Year Master of Environmental Engineering Program," Proceedings of the Joint Symposium on Water Resources Education, Training, and Practice: Opportunities for the Next Century, J.J. Warwick, ed., AWRA/UCOWR, pp. 787-796.
14. Jayakody, K.G.K., Jayawickrama, P.W., and Rainwater, K.A., 1998, "Use of SID Technique to Determine Heterogeneity of Contaminated Sites," Proceedings of the First International Conference on Site Characterization, ASCE, pp. 171-176.
15. Harkins, D., Stovall, J., Rainwater, K., Frailey, S., and Urban, L., 1998, "Modeling the Ogallala Aquifer in the Texas High Plains," Proceedings of the UCOWR Cross Currents in Water Policy, pp. 43-50.

16. Rainwater, K.A., Ramsey, R.H., and Thompson, D.B., 1999, "A Five-Year Master of Environmental Engineering Program," Journal of Professional Issues in Engineering, ASCE, Vol. 125, No.2, pp. 40-46.
17. Harkins, V.R., Mollhagen, T.R., Heintz, C.E., and Rainwater, K.A., 1999, "Aerobic Biodegradation of High Explosives -- Phase I, HMX," Bioremediation Journal, Vol. 3, No. 4, pp. 285-290.
18. Wagaman, S.A., Rainwater, K.A., Mehta, K.C., and Ramsey, R.H., 2002, "Full-Scale Flow Visualization Over a Low-Rise Building," Journal of Wind Engineering and Industrial Aerodynamics, Vol. 90, No. 1, pp. 1-8.
19. Rainwater, K.A., Heintz, C.E., Mollhagen, T.R., Radtke, C., and Hansen, L., 2001. "Field Demonstration of In Situ Biodegradation of HE in Soils," Proceedings of the Sixth International Symposium on In Situ and On-Site Bioremediation, Battelle Press, Vol. 3, pp. 9-16.
20. Stovall, J.N. and Rainwater, K.A., 2002. "Evaluating Recharge and Irrigation Flow for the South Plains," Proceedings of the Ground Water/Surface Water Interactions Specialty Conference, AWRA, pp. 291-296.
21. Rainwater, K.A., Heintz, C.E., Mollhagen, T.R., and Hansen, L., 2003. "In Situ Biodegradation of HE in Soils: Field Demonstration," Bioremediation Journal, Vol. 6, No. 4, pp. 351-371.
22. Rector, T., Jackson, W.A., Rainwater, K.A., and Pickering, K., 2003. "Determination of the Fate and Behavior of a Commercial Surfactant in a Water Recycle System (WRS)," SAE Paper Number 2003-01-2558, 33<sup>rd</sup> International Conference on Environmental Systems (ICES).
23. Morse, A.N., Jackson, W.A., and Rainwater, K.A., 2003. "Nitrification Using a Membrane-Aerated Biological Reactor," SAE Paper Number 2003-01-2559, 33<sup>rd</sup> International Conference on Environmental Systems (ICES).
24. Muirhead, D.L., Rector, T., Jackson, W.A., Keister, H.R., Morse, A.N., Rainwater, K.A., and Pickering, K., 2003. "Performance of a Small Scale Biological Water Recovery System. SAE Paper Number 2003-01-2557, 33<sup>rd</sup> International Conference on Environmental Systems (ICES).
25. Williams, D.L., Timmons, J.C., Woodyard, J.D., Rainwater, K.A., Lightfoot, J.M., Richardson, B.R., Burgess, C.E., and Heh, J.L., 2004. "UV-Induced Degradation Rates of 1,3,5 Triamino 2,4,6 Trinitrobenzene (TATB)," Journal of Physical Chemistry, American Chemical Society, Vol. 107, no. 44, pp. 9491-9494.
26. Jackson, W.A., Arunagiri, S., Tock, R.W., Anderson, T., and Rainwater, K.A., 2004, "Electrochemical Generation of Perchlorate in Municipal Drinking Water Systems," Journal of the American Water Works Association, Vol. 96, no. 7, pp. 103-108.
27. Rainwater, K.A., Stovall, J.N., Frailey, S.M., and Urban, L.V., 2005, "Transboundary Impacts on Regional Groundwater Modeling in Texas," Ground Water, NGWA, Vol. 43, no. 5, pp. 706-716.
28. Jackson, W.A., Anandam, S., Anderson, T., Lehman, T.M., Rainwater, K.A., Rajagopalan, S., Ridley, M., and Tock, W.R., 2005. "Occurrence of Perchlorate in the Texas Southern High Plains Aquifer System," Ground Water Monitoring and Remediation, NGWA, Vol. 25, no. 1, pp. 137-149.
29. Rainwater, K.A., Jackson, W.A., Ingram, W., Lee, C.Y., Thompson, D.B., Mollhagen, T.R., Ramsey, R.H., and Urban, L.V., 2005. "Field Demonstration of the Combined Effects of Absorption and Evapotranspiration on Septic System Drainfield Capacity," Water Environment Research, Vol. 77, no. 2, pp. 150-161.
30. Muirhead, D.L., Potess, M., and Rainwater, K.A., 2005. "Education Outreach Associated with Technology Transfer in a Colonia of South Texas: Green Valley Farms Science and Space Club for Middle School-aged Children in Green Valley Farms, San Benito, Texas," Paper No. 2004-01-2419, SAE 2004 Transactions, Journal of Aerospace, SAE International, pp. 930-936.
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65. Jackson, W.A., Rainwater, K.A., Anderson, T., Mollhagen, T.R., Lehman, T.M., Ridley, M., and Tock, W.R., 2003. "Perchlorate in Groundwater in the Southern High Plains of Texas," Spring Meeting of the Texas Section of ASCE, Corpus Christi, Texas, April 2-5.
66. Jackson, W.A., Rainwater, K.A., Anderson, T., Lehman, T.M., Ridley, M., and Tock, W.R., 2003. "Perchlorate in Groundwater in the Southern High Plains of Texas," AWRA Annual Water Resources Conference, San Diego, CA, November 3-6.
67. Jackson, W.A., Tock, W.R., Rainwater, K.A., Anderson, T., 2003. "Potential for Perchlorate Generation in Drinking Water Storage Tanks," Texas Water 2003, Corpus Christi, Texas, April 2-4.
68. Jackson, W.A., Rainwater, K.A., Anderson, T., Lehman, T.M., Ridley, M., and Tock, W.R., 2003. "Perchlorate in Groundwater in the Southern High Plains of Texas," Southern High Plains Ground-Water Quality Meeting, USGS, Lubbock, Texas, December 10.
69. Jackson, W.A., Tock, W.R., Rainwater, K.A., Anderson, T., Mollhagen, T.R., Lehman, T.M., and Ridley, M., 2003. "Perchlorate in Groundwater in the Southern High Plains of Texas," Southwest Focus Conference National Groundwater Association, Phoenix, AZ, February 20-21.
70. Rainwater, K.A. and Jackson, W.A., 2004. "Evaluation of Absorption and Evapotranspiration Capacity," Texas On-Site Wastewater Treatment Research Council Annual Conference, Waco, Texas, March 2.
71. Jackson, W.A., Rainwater, K.A., Anderson, T., Lehman, T.M., Ridley, M., Walden, S., and Tock, W.R., 2004, "Occurrence and Source of Perchlorate in the High Plains Aquifer System of Texas," The 11<sup>th</sup> Symposium in GRA's Series on Groundwater Contaminants, Glendale, California, August 4.
72. McLamore, E., Morse, A., Jackson, A., Rainwater, K., and Muirhead, D., 2004. "Development of a Nitrifying Bioreactor for the Treatment of Wastewater in Long-Term Space Applications," Proceedings of the Ninth Annual ASCE Aerospace Division International Conference on Engineering, Construction, and Operations in Challenging Environments, Houston, Texas, March 7-10.
73. Jackson, W.A., Rainwater, K.A., Anderson, T., Lehman, T.M., Ridley, M., Walden, S., and Tock, W.R., 2004, "Perchlorate in Groundwater in the Southern High Plains," Texas Water Conservation Association 2004 Annual Convention, Houston, Texas, March 11-15.
74. Johnson, J.W., Johnson, P.N., Rainwater, K.A., Segarra, E. and Willis, D., 2004, "Evaluation of Water Policy Alternatives for Intertemporal Allocation of Groundwater in the Southern High Plains of Texas, Annual Meeting of the Universities Council on Water Resources, Portland, Oregon, July 20-22.

75. Jackson, W.A., Rainwater, K.A., Anderson, T., Lehman, T.M., Ridley, M., and Tock, W.R., 2004, "Occurrence of Perchlorate in Groundwater in the Southern High Plains of Texas," 2004 Water Quality Conference, East Valley Water District and American Water Works Association Research Foundation, Annual Convention, Ontario, California, Texas, October 27-29.
76. Reeves, J.A. and Rainwater, K.A., 2004. "Volume of Water in Storage (An Ogallala Example with Applicability to All Aquifers in Texas)," 2004 Conference on High Plains Groundwater Resources: Challenges and Opportunities, Texas Tech University Water Resources Center, Lubbock, Texas, December 7-9.
77. Jackson, W.A., Rainwater, K.A., Anderson, T., Lehman, T.M., Ridley, M., and Tock, W.R., 2004, "Occurrence of Perchlorate in Groundwater in the Southern High Plains of Texas," 2004 Conference on High Plains Groundwater Resources: Challenges and Opportunities, Texas Tech University Water Resources Center, Lubbock, Texas, December 7-9.
78. McEnery, J.A., Joshi, S.R., and Rainwater, K.A., 2004. "Lessons in Regulation of Groundwater Rights," 2004 Conference on High Plains Groundwater Resources: Challenges and Opportunities, Texas Tech University Water Resources Center, Lubbock, Texas, December 7-9.
79. Berge, M.D., Harkins, D., Rainwater, K.A., Stovall, J.N., and Barber, F., 2004. "Groundwater Management Plan for Mustang Station Power Plant," 2004 Conference on High Plains Groundwater Resources: Challenges and Opportunities, Texas Tech University Water Resources Center, Lubbock, Texas, December 7-9.
80. Coimbatorem, G., Cobb, G., Anderson, T., Rajagopalan, S., Jackson, W.A., and Rainwater, K.A., 2004. "Geological Formation of Perchlorate: Evidence from the Presence of Other Anions," 2004 Conference on High Plains Groundwater Resources: Challenges and Opportunities, Texas Tech University Water Resources Center, Lubbock, Texas, December 7-9. (poster)
81. Rainwater, K.A., 2005. "Review of Systems for Restaurant Wastewater Pretreatment," Texas On-Site Wastewater Treatment Research Council Annual Conference, Waco, Texas, March 9.
82. Rainwater, K.A., 2005. "Groundwater Hydrology Issues in the Texas High Plains," Farm Bureau Water Summit, Kansas City, Kansas, September 6-7 (invited).
83. Jackson, W.A., Anderson, T., Rainwater, K.A., Dasgupta, P.K., Rajagopalan, S., Fahlquist, L., 2005. "Natural Sources, Occurrence, and Fate of Perchlorate," 16<sup>th</sup> Annual Quality Assurance Conference, EPA Region 6, Dallas, Texas, October 20.
84. McEnery, J.A., Joshi, S.R., and Rainwater, K.A., 2005. "Lessons in Regulation of Groundwater Rights," AWRA 2005 Annual Water Resources Conference, Seattle, Washington, November 7.
85. Jones, M.W. and Rainwater, K.A., 2005. "Climate Change and Groundwater Elevation Fluctuations on the Southern High Plains of Texas," 2005 Ground Water Expo, NGWA, Cobb County, Georgia, December 13.
86. Jackson, W.A., Rajagopalan, S., Rao, B., Anderson, T., Rainwater, K., Stonestrom, D., Fahlquist, L., Orris, G., and Harvey, G., 2006. "Occurrence of Atmospherically Generated Perchlorate in Arid and Semi-Arid Regions of North America," The 16<sup>th</sup> Symposium in GRA's Series on Groundwater Contaminants, Perchlorate 2006, Santa Clara, California, January 26.
87. Jackson, W.A., Anderson, T., Rainwater, K.A., Dasgupta, P.K., Rajagopalan, S., Fahlquist, L., 2006. "Natural Sources, Occurrence, and Fate of Perchlorate," AWWA Inorganic Contaminants Workshop, Austin, Texas, January 29 (invited).
88. Rainwater, K.A., Barbato, L., Mulligan, K., and Reeves, J., 2006. "Mapping and Analysis of the Southern High Plains Aquifer," 2006 Spring GIS Specialty Conference, American Water Resources Association, Houston, Texas, May 8-10.
89. Rainwater, K.A., Gitz, D., Hudnall, W., Smith, L.M., Stout, J., and Zartman, R., 2006. "Estimating Aquifer Recharge through Playas of the Great Plains Using Temperature Probes," Annual Meeting of the Universities Council on Water Resources, Santa Fe, New Mexico, July 18-20.
90. Rainwater, K.A., Joshi, S., and McEnery, J.A., 2006. "Comparison of Groundwater Rights in the United States: Lessons for Texas," Annual Meeting of the Universities Council on Water Resources, Santa Fe, New Mexico, July 18-20.

91. Jackson, W.A., Anderson, T., Rainwater, K.A., Dasgupta, P.K., Rajagopalan, S. and Fahlquist, L., 2006. "Natural Sources, Occurrence, and Fate of Perchlorate," 3<sup>rd</sup> Public Drinking Water Conference 2006, Texas Commission on Environmental Quality, Austin, Texas, August 16.
92. Rainwater, K.A., Joshi, S., and McEnery, J.A., 2006. "Comparison of Groundwater Rights in the United States: Lessons for Texas," Austin ASCE Branch Meeting, Austin, Texas, September 19 (pdh).
93. Rainwater, K.A., Joshi, S., and McEnery, J.A., 2006. "Comparison of Groundwater Rights in the United States: Lessons for Texas," Rio Grande Valley ASCE Branch Meeting, McAllen, Texas, September 20 (pdh).
94. Rainwater, K.A., Joshi, S., and McEnery, J.A., 2006. "Comparison of Groundwater Rights in the United States: Lessons for Texas," Brazos ASCE Branch Meeting, College Station, Texas, September 21 (pdh).
95. Jackson, W.A., Anderson, T., Rainwater, K.A., Dasgupta, P.K., Rajagopalan, S. and Fahlquist, L., 2006. "Natural Sources, Occurrence, and Fate of Perchlorate," East Valley Water District Water Quality Conference, Ontario, California, October 11-13.
96. Barbato, L., Mulligan, K., and Rainwater, K.A., 2006. "Development of a Geospatial Database for Mapping the Ogallala Aquifer on the Southern High Plains of the United States," ICASALS 2006 International Conference, Lubbock, Texas, November 15.
97. McGee, S., Jackson, W.A., Rainwater, K.A., and Seshaiyer, P., 2006. "Modeling Contaminated Flow in the Unsaturated Zone in the Presence of Roots," ICASALS 2006 International Conference, Lubbock, Texas, November 15.
98. Zartman, R., Hudnall, W., Rainwater, K., Smith, L., and Gitz, D., 2006. "Estimating High Plains Aquifer Recharge Using Temperature Probes," ICASALS 2006 International Conference, Lubbock, Texas, November 16.
99. Rainwater, K.A., 2007. "Subsurface Hydrogeologic Transport Modeling: Unraveling the Perchlorate Mystery," Geotechnical Seminar, Geo-San Antonio, San Antonio Branch of ASCE, San Antonio, Texas, January 26.
100. Jones, C., Rainwater, K.A., and Thompson, D.B., 2007. "Five-Minute Unit Hydrographs for Texas Watersheds," HEC-HMS User's Conference: Current Trends and Applications, ASCE/AAWRE/EWRI, Austin, Texas, April 5 (invited).
101. Jones, M.W. and Rainwater, K.A., 2007. "Simulation of Paleoclimate Impacts on Groundwater Elevations in The Southern High Plains Of Texas," AGU Fall Meeting, San Francisco, California, December 10.
102. Venkataraman, K. and Rainwater, K.A., 2007. "Subsurface Occurrence, Distribution, and Speciation of Arsenic in the Southern High Plains," AGU Fall Meeting, San Francisco, California, December 10. (invited)
103. Jones, M.W. and Rainwater, K.A., 2007. "Simulation of Paleoclimate Impacts on Groundwater Elevations in The Southern High Plains Of Texas," II International Conference on Water in Arid and Semiarid Lands, Gravata, Brazil, September 11.
104. Rainwater, K.A., Joshi, S., and Eckstein, G., 2007. "Diversity in American Groundwater Management: Lessons for Texas," NGWA Ground Water Summit, Albuquerque, New Mexico, May 3.
105. Eckstein, G. and Rainwater, K.A., 2007. "Can Ground Water Science Make Ground Water Law Less Mysterious and Occult?," NGWA Ground Water Summit, Albuquerque, New Mexico, May 4. (invited)
106. Rainwater, K.A., Joshi, S., and Eckstein, G., 2007. "Diversity in American Groundwater Management: Lessons for Texas," Fort Worth ASCE Branch Meeting, Fort Worth, Texas, September 17.
107. Rainwater, K.A., Joshi, S., and Eckstein, G., 2007. "Diversity in American Groundwater Management: Lessons for Texas," San Antonio ASCE Branch Meeting, San Antonio, Texas, May 14.
108. Rainwater, K.A., Joshi, S., and Eckstein, G., 2007. "Diversity in American Groundwater Management: Lessons for Texas," Northeast ASCE Branch Meeting, Tyler, Texas, May 17.



109. Rainwater, K.A., Joshi, S., and Eckstein, G., 2007. "Diversity in American Groundwater Management: Lessons for Texas," High Plains ASCE Branch Meeting, Amarillo, Texas, May 18.
110. Smith, L.M., Haukos, D.A., McMurry, S.T., Gitz, III, D., Rainwater, K.A., Zartman, R.E., and Hudnall, W.H. 2007. "Influence of Conservation Practices on Ecosystem Services Provided by Playa Wetlands in the High Plains," presented at the High Plains CEAP-Wetlands Symposium, 2007 SWCS Annual Conference, Tampa, Florida, July 21-25.
111. Rainwater, K.A., 2008. "Rainwater Harvesting in a Residential and Community Scale," 19<sup>th</sup> Annual Southern Plains Conference, Managing Energy, Water, and Carbon: Rural Communities Respond to Global Climate Change, Hereford and Nazareth, Texas, February 13.
112. Rainwater, K.A., 2008. "Realistic Approaches to Deal with Climate Change Impacts on Water Resources Management and Policy," Climate Change Impacts on Texas Water, Texas River Systems Institute, Austin, Texas, April 29. (invited)
113. Rainwater, K.A. and Reeves, J.A., 2008. "The Dockum Aquifer in Texas: Municipal Replacement for the Ogallala?," NGWA International Conference on Nonrenewable Ground Water Resources – Sociotechnological Aspects of Nonrenewable Ground Water Resources: Half-Empty, Half-Full, Top-Down, Bottom-Up, and Some Paths Forward, Portland, Oregon, October 13. (invited)
114. Mulligan, K.R., Barbato, L., Warren, A., Van Nice, C. and Rainwater, K.A., 2008. "A Regional Analysis of Groundwater Depletion in the Ogallala Aquifer in Texas," 2008 Joint Meeting of GSA/SSSA-ASA-CSSA/GCAGS-GCSSEPM, Houston, Texas, October 8. (invited)
115. Rainwater, K.A., 2008. "West Texas Water Issues," Permian Basin Regional Planning Commission, Annual Meeting, Seminole, Texas, November 20. (invited keynote)
116. Jackson, W.A., Rao, B., Anderson, T.A., Orris, G.J., Rainwater, K.A., Rajagopalan, S., Sandvig, R.M., Scanlon, B.R., Stonestrom, D.A., Walvoord, M.A., Harvey, G., Fahlquist, L., and Andraski, B., 2008. "Background Concentrations of Perchlorate in Arid and Semi-arid Regions of North America and Its Impact on Site Assessment," Sixth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, California, May 19-22.
117. Mulligan, K.R. and Rainwater, K.A., 2009. "Current Status of the Ogallala Aquifer," Irrigation Training Program, High Plains Irrigation and Trade Show, Texas AgriLife, Amarillo, Texas, January 14.
118. Rainwater, K.A., 2009. "Wind Power and Water Desalination Technology Integration," Final Presentation to the Bureau of Reclamation, Denver, Colorado, January 23.
119. Rainwater, K.A., 2009. "The Texas Tech University Water Resources Center – Making the Best of a Half-full Glass," Texas Tech University System Community Engagement Conference, Lubbock, Texas. March 27.
120. Rainwater, K.A., 2009. "Groundwater in Texas: Boone Pickens Doesn't Sound Quite So Crazy," Oregon State University Water Resources Graduate Seminar, Impending Water Crises and Solutions, Corvallis, Oregon, April 8. (invited)
121. Rainwater, K.A., 2009. "Protecting Your Groundwater," Annual Meeting of Far West Texas Judges and Commissioner's Conference, Terlingua, TX, September 25. (invited)
122. Rainwater, K.A., 2009. "Who Owns the Groundwater? Well, That Depends....," Osher Lifelong Learning Institute, Texas Tech University, Lubbock, TX, November 10. (invited)
123. Venkataraman, K., Rainwater, K.A., Jackson, W.A., and Ridley, M., 2009. "Speciation and Source Identification for Arsenic in the Southern High Plains Aquifer," AGU Fall Meeting, San Francisco, California, December 18. (poster)
124. Rainwater, K., Ganesan, G., Gitz, D., Zartman, R., Hudnall, W., and Smith, L., 2009. "Estimating Recharge through Playa Lakes to the Southern High Plains Aquifer," AGU Fall Meeting, San Francisco, California, December 18. (poster)

125. Rainwater, K., Fish, E., Zartman, R., and Beierle, M., 2010. "Evaluation of the White River Watershed," Presentation to White River Municipal Water District, Spur, Texas, March 9.
126. Rainwater, K.A., 2010. "Recharge of Over-Exploited Aquifers: Playa Project," International Workshop on Policies of Management for Sustainability in the Zacatecas State, Zacatecas, Mexico, May 28. (invited)
127. Rainwater, K.A., 2010. "Municipal Demonstration of a Wind-Powered RO System," South Central Membrane Association 2010 Annual Conference, South Padre Island, TX, September 28. (invited)
128. Maidment, D.R. and Rainwater, K.A., 2010. "The Texas Water Digital Library," Global Resources Network Forum: Global Water – 2010 and Beyond, Center for Research Libraries, Denver, CO, October 21. (invited)
129. Willis, D.B., Stovall, J.N., Johnson, J.W., Wheeler-Cook, E., and Rainwater, K.A., 2010. "The Impact of Spatial Variation in Land Use Patterns and Aquifer Characteristics on the Agricultural Cost of Groundwater Conservation for the Southern Ogallala Aquifer," American Agricultural and Applied Economics Association's 2010 AAEA, CAEA & WAEA Joint Annual Meeting, Denver, CO, July 25-27.
130. Rainwater, K.A., 2011. "Reducing the Stress of Rural Community Desalination with Wind Energy," Multi-States Salinity Coalition, 2011 Annual Salinity Summit, San Antonio, TX, February 17. (invited)
131. Rainwater, K.A., 2011. "When Is the Aquifer Officially Depleted," National Ground Water Association Webinar, February 25. (invited)
132. Rainwater, K.A. and Johnson, J., 2011. "When Is the Aquifer Officially Depleted," Annual Meeting of Universities Council on Water Resources, Boulder, CO, July 13. (invited)
133. Rainwater, K.A., 2011. "Permian Basin Groundwater Issues," Permian Basin Regional Planning Commission Annual General Membership Meeting, Big Spring, TX, October 12. (keynote speaker)
134. Rainwater, K.A., 2011. "Declining Aquifers: What Future Do We Deserve?" National Ground Water Association Virtual Conference on Declining Groundwater Levels: Measuring, Monitoring, and Mitigation, October 19. (keynote speaker)
135. Rainwater, K.A., 2011. "Desalinization Program," Innovative Farming: Integrating Limited Water Resources into Today's Farming Conference, Llano Estacado Underground Water Conservation District and AgriLife Extension, Seminole, TX, December 6.
136. Scheutze, B., Rainwater, K., and Song, L., 2011. "Development of a Small-Scale Reverse Osmosis System for Energy Efficient Brackish Water Desalination at High Recoveries," 2001 North American Membrane Society Conference, Las Vegas, NV, June 4-8.
137. Liu, C., Rainwater, K., and Song, L., 2011. "Accurate Quantification of Energy Consumption in Crossflow RO Desalination Processes," A Global Platform for Water Solutions, 2011 Qingdao International Desalination Conference, A Symposium on Desalination and Water Treatment, China Desalination Association/European Desalination Society, Qingdao, China, June 20-23.
138. Willis, D.B., Stovall, J.N., Johnson, J.W., Rainwater, K.A., Barbato, L.S., Mulligan, K.R., and Fish, E.B., 2011. "The Impact of Spatial Heterogeneity in Aquifer Characteristics on Groundwater Conservation Policy," Annual Meeting of the Southern Agricultural Economics Association, Corpus Christi, TX, February 5-8.
139. Rainwater, K., 2012. "West Texas Water Issues 2012," Texas Society of Professional Engineers, South Plains Chapter, Lubbock, TX, March 20.
140. Rainwater, K., 2012. "West Texas Water Issues 2012," Keynote Speaker, Annual Appreciation Luncheon, Keep Midland Beautiful, Midland, TX, March 22.

141. Rainwater, K., 2012. "Fracking and the Energy/Water Nexus: A Look at Every Aspect and Every Question Surrounding this Timely Issue," Panelist, Texas Water Symposium, Schreiner University, Kerrville, TX, April 12.
142. Rainwater, K., Nash, P., Song, L., and Schroeder, J., 2012. "Wind-powered Brackish Groundwater Treatment for Municipal Water Supply," Storage and Power Electronics Team, Department of Energy Sandia National Laboratory, Lubbock, TX, April 25.
143. Rainwater, K., 2012. "West Texas Water Issues 2012," West Texas County Judges and Commissioners Annual Conference, Odessa, TX, April 25.
144. Rainwater, K., 2012. "Engineering the Challenges of Energy and Water," Texas Tech University Water Summit, Lubbock, TX, July 10.
145. Rainwater, K., Nash, P., and Song, L., 2012. "Wind-powered Desalination of Brackish Groundwater for Municipal Supply," Managing Water, Energy, and Food in an Uncertain World, Annual Meeting of Universities Council on Water Resources, Santa Fe, NM, July 19.
146. Rainwater, K., Fish, E., and Beierle, M., 2012. "Demonstration of Brush Removal Criteria for Water Supply Enhancement," presented to Senator Robert Duncan on behalf of the Texas State Soil and Water Conservation Board, Lubbock, TX, August 22.
147. Rainwater, K., 2012. "West Texas Water Issues 2012," Osher Lifelong Learning Institute, Texas Tech University, Lubbock, TX, September 27.
148. Rainwater, K., Fish, E., and Beierle, M., 2012. "Demonstration of Brush Removal Criteria for Water Supply Enhancement," Testimony to the Agriculture and Livestock Subcommittee of the Natural Resources Committee, Texas Legislature, Austin, TX, September 13.
149. Rainwater, K., 2012. "Hydrology 101, Texas Style," Texas Lyceum Water Conference, Amarillo, TX, August 10.
150. Rainwater, K., Fish, E., and Beierle, M., 2012. "Demonstration of Brush Removal Criteria for Water Supply Enhancement," Presentation to the Texas State Soil and Water Conservation Board Annual Meeting, Temple, TX, July 27.
151. Rainwater, K., 2012. "Hydrology 101, Texas Style," Society of Environmental Journalists Annual Conference, Lubbock, TX, October 19.
152. Rainwater, K., Ganesan, G., Gitz, D., Zartman, R., Hudnall, W., and Smith, L., 2012. "Comparison of Seepage Rates in Playa Lakes in Grassland and Cropland Basins, Texas High Plains," National Ground Water Association Conference on Great Plains Aquifers: Beyond the Ogallala, Omaha, NE, October 25.
153. Rainwater, K., Nash, P., and Song, L., 2012. "Wind-powered Desalination of Brackish Groundwater for Municipal Supply," Wind Science and Engineering Seminar, Texas Tech University, Lubbock, TX, September 26.
154. Rainwater, K., 2012. "The Seminole Project: Renewable Energy for Municipal Water Desalination," Webinar Report to Department of Energy, Lubbock, TX, December 19.
155. Rainwater, K., 2013. Appearance for Senate Finance Committee, State of Texas, Texas State Soil and Water Conservation Board, Austin, TX, February 6.
156. Arsuffi, T., Seldomridge, E.D., Rainwater, K., and Wagner, K., 2013. "Texas Hill Country Watershed/Climate/Riparian-based Multiple Approaches and Stakeholders," Sustaining Water Resources and Ecological Functions in Changing Environments, Annual Meeting of Universities Council on Water Resources, Lake Tahoe, CA, June 11.
157. Rainwater, K., 2013. "Ground Water Hydrology," Water Technology & Policy Short Course, Center for Lifelong Engineering Education, University of Texas at Austin, Austin, TX, October 22. (invited)

158. Rainwater, K., 2013. "Renewable Energy in Water Treatment," Energy Technologies and Water Resources On the Road to Sustainable Futures, Regional Cyber and Energy Security Center, University of Texas at El Paso, El Paso, TX, October 24. (invited)
159. Hernandez, E., Rainwater, K., and Uddameri, V., 2013. "Evaluation of Nine Projects for Prioritization of Water Enhancement," Texas Soil and Water Conservation Board Annual Meeting, Austin, TX, March 5.
160. Rainwater, K., Fish, E., and Beierle, M., 2013. "Demonstration of Brush Removal Criteria for Water Supply Enhancement," Presentation to the Stakeholders for the Llano River Watershed Protection Plan, Junction, TX, February 21.
161. Rainwater, K., Tewari, R., Willis, D., Stovall, J., Hayhoe, K., Hernandez, A., Mauget, S., Leiker, G., and Johnson, J., 2013. "Future Projections for Southern High Plains Agriculture Using Coupled Economic and Hydrologic Models and Climate Variability," AGU Fall Meeting, San Francisco, CA, December 11.
162. Rainwater, K., Abena Mbarga, A., Song, L., and Schroeder, J., 2014. "Desalination of Brackish Groundwater Using Renewable Energy at Seminole, Texas," World Environmental and Water Resources Congress, Environmental and Water Resources Institute, American Society of Civil Engineers, Portland, OR, June 4.
163. Rainwater, K., Fish, E., and Beierle, M., 2014. "Demonstration of Brush Removal Criteria for Water Supply Enhancement," Testimony to Agriculture and Livestock Committee, Texas Legislature, Austin, TX, September 23.
164. Rainwater, K., Song, L., Cleveland, T., Schroeder, J., Fish, E., McLendon, T., Zartman, R., Arsuffi, T., Asquith, W., 2014. "Selected Recent Texas Water Research Interests and Capabilities," Presentation to Speaker of the Texas House of Representatives Joe Straus and 84<sup>th</sup> District Representative John Frullo, Office of the President of Texas Tech University, September 29.
165. Rainwater, K., 2014. "Why Do People Think Water Costs Too Much?" TTU Water Workshop, Texas Tech University, Lubbock, TX, November 11.
166. Rainwater, K. and Cleveland, T., 2014. "Water Market Issues: the Texas Example," Trinity Industries, Business Development Meeting, Dallas, TX, December 16.
167. Rainwater, K. and Fish, E., 2015. "Geospatial Analysis," Public Outreach Meeting, Water Supply Enhancement Program, Texas State Soil and Water Conservation Board, Temple, TX, January 29. (invited)
168. Rainwater, K., 2015. "Ranking Index and Project Prioritization," Public Outreach Meeting, Water Supply Enhancement Program, Texas State Soil and Water Conservation Board, Temple, TX, January 29. (invited)
169. Rainwater, K., 2015. "Who Owns the Groundwater? Well, That Depends....," High Plains Branch Meeting, American Society of Civil Engineers, Amarillo, TX, March 20.
170. Rainwater, K., 2015. "Who Owns the Groundwater? Well, That Depends....," El Paso Branch Meeting, American Society of Civil Engineers, El Paso, TX, March 25.
171. Rainwater, K., 2015. "Thinking about Your Future," keynote address, Rocky Mountain Student Regional Conference, American Society of Civil Engineers, Albuquerque, NM, April 11.
172. Reible, D., Arsuffi, T., and Rainwater, K., 2015. "Water Research and Expertise: Texas Tech University Ready to Serve Texas' Water Challenges," WaterU!, Texas Water Development Board Work Session, Austin, TX, April 29. (invited)
173. Rainwater, K. and Pearl, A., 2015. "Groundwater Law Issues in Texas and Beyond," 2015 Permian Basin Environmental Regulatory Seminar, SPE Permian Basin/PPDC Midland College/PBPA, Midland, TX, May 14. (invited)
174. Rainwater, K., Song, L., Schroeder, J., 2015. "Lessons Learned at the Seminole Brackish Groundwater Desalination Project," World Environmental and Water Resources Congress, Environmental and Water Resources Institute, American Society of Civil Engineers, Austin, TX, May 18. (invited)

175. Rainwater, K., 2015. "Water and Ethical Issues," Panelist at Second Annual Global Ethics Day, Carnegie Council for Ethics in International Affairs and Texas Tech University Ethics Center, Lubbock, TX, October 16.
176. Rainwater, K., 2016. "Water and Climate Issues," Panelist at Texas Tech Climate Science Center Interdisciplinary Seminar Series, Lubbock, TX, March 1.
177. Rainwater, K., 2016. "Present and Future Opportunities for Texas Water Challenges," 87<sup>th</sup> Annual West Texas County Judges and Commissioners Association Conference, Horseshoe Bay, TX, April 27. (invited)
178. Rainwater, K., 2016. "Lessons Learned in the High Plains Where Agriculture and Energy Coexist," The Groundwater Visibility Initiative: Integrating Groundwater and Surface Water Management Workshop, National Groundwater Association, Denver, CO, April 28. (invited)
179. Abena Mbarga, A., Rainwater, K., Song, L., Cleveland, T., and Williams, B., 2016. "Economic Analyses of the Seadrift Wind-Aided Wastewater Treatment Plant," 2016 World Environmental and Water Resources Congress, Environmental and Water Resources Institute, Environmental and Water Resources Institute, May 24.
180. Abena Mbarga, A., Rainwater, K., Song, L., and Cleveland, T., 2016. "A New Approach for Regulatory Compliance for Rural Drinking Water Systems in Texas," 2016 World Environmental and Water Resources Congress, Environmental and Water Resources Institute, West Palm Beach, FL, May 26.
181. Cleveland, T., Rainwater, K., Moya, M., Kronkosky, B., 2017. Evaluation of Frequent Inundation of the Marsha Sharp Freeway near Texas Tech University," World Environmental and Water Resources Congress, American Society of Civil Engineers, Environmental and Water Resources Institute, Sacramento, CA, May 23.
182. Cleveland, T., Rainwater, K., Moya, M., Calvit, J., 2017. "Modeling Frequent Inundation of the Marsha Sharp Freeway near Texas Tech University," TFMA Fall Conference, Texas Flood Plain Managers Association, San Antonio, TX, August 30.
183. Rainwater, K., 2017. "Groundwater Science 101," Texas Alliance of Groundwater Districts, GCD Staff and Board Member Training, Amarillo, TX, November 8.
184. Rogers, J. and Rainwater, K. 2018. "Ranking Procedure and Results for the Fiscal Year 2018 Cost-Share Applications to the Water Supply Enhancement Program," January Meeting of the Texas State Soil and Water Conservation Board, Temple, TX, January 17.
185. Rainwater, K., Fish, E., and Beierle, M., 2018. "Demonstration of Spatial Analysis for Brush Removal Criteria for Water Supply Enhancement", January Meeting of the Texas State Soil and Water Conservation Board, Temple, TX, January 17.
186. Rainwater, K., Ahmed, F., Millerick, K., Edwards, J., Kennerly, R., Allen, L., and Yan, W., 2018. "Investigation of Downhole Corrosion at the T-Bar Well Field in Winkler County, Texas," World Environmental and Water Resources Congress, American Society of Civil Engineers, Environmental and Water Resources Institute, Minneapolis, MN, June 6.
187. Rainwater, K., and Kennerly, R., 2018. "Causes, Problems, and 'Cures' Related to Groundwater Corrosivity in the Permian Basin," Texas Aquifer Conference, American Ground Water Trust Annual Texas Groundwater Conference, Austin, TX, June 7.
188. Rainwater, K., and Kennerly, R., 2018. "Causes, Problems, and 'Cures' Related to Groundwater Corrosivity in the Permian Basin," June Webinar, Texas Section of the American Society of Civil Engineers, Austin, TX, June 12.
189. Rainwater, K., Giany, P., Joshi, S., and Eckstein, G., 2018. "Who Owns the Groundwater? Well, That Depends...", AWRA 2018 Summer Specialty Conference, The Science, Management and Governance of Transboundary Groundwater, Fort Worth, TX, July 10 (invited).
190. Rainwater, K., 2018. "Groundwater Science 101," Texas Alliance of Groundwater Districts Leadership Training, Austin, TX, October 24 (invited).

191. Rainwater, K., 2018. "Feasibility of Produced Water Desalination for Irrigation Augmentation – Texas Issues," New Mexico Produced Water Conference on Policy, Regulations and Economic Support Total Resource Recovery, New Mexico Desalination Association, Santa Fe, NM, November 16 (invited).
192. Rainwater, K., Lawson, W., Surles, J., and Estrada, F., Jackson, W., 2019. "Field Comparison of Road Salt vs. Magnesium Chloride for Anti-Icing Operations," Transportation Research Board 98th Annual Meeting, TRB, Washington, DC, " International, peer-reviewed/refereed, published in proceedings, January 14.
193. Lawson, W., Rainwater, K., Surles, J., Jackson, W., 2020. "Deicing Application of Snow and Ice Control Chemicals: Side-By-Side Field Comparison," Transportation Research Board 99th Annual Meeting, TRB, Washington, DC, International, peer-reviewed/refereed, published in proceedings. January 14.
195. Lawson, W.D., Cleveland, T.G., and Rainwater, K.A., 2020. "Bill and Ted's Excellent Adventure: Lessons Learned from Eight Years' Instruction on the CEBOK," Paper 30024, ASEE's Virtual Conference At Home with Engineering Education, June 22-26, 2020.
196. Millerick, K., Rainwater, K., Allen, L., and Deonarine, A. 2022. "Microbially Induced Corrosion at the T-Bar Well Field: Impacts, Implications & Mitigation," Texas Water 2022, Texas American Water Works Association and Water Environment Association of Texas, San Antonio, TX, April 5.

**Research Projects** – collaborators CECE unless noted in brackets

1. Principal Investigator (with B.J. Claborn), "Atmospheric Influence on Air Pressure in the Unsaturated Zone," Texas Tech University Water Resources Center, 1985-86, \$10,000.
2. Principal Investigator, "Feasibility of Field Experiments on Groundwater Contaminant Transport," State Organized Research Funds for New Faculty, 1985-86, \$5,000.
3. Co-Principal Investigator (with C.B. Fedler [AgE], M.J. Dvoracek [AgE], and R.H. Ramsey), "Study of the Movement of Chemicals Through the Soil Profile to the Groundwater," Texas Water Development Board, 1986-87, \$82,000.
4. Assistant (with L.V. Urban, R.H. Ramsey, R.M. Sweazy, and B.J. Claborn), "Evaluate the Water Supply and Treatment System for City of Midland, Texas," 1985-86, \$20,832.
5. Principal Investigator (with R.H. Ramsey), "Rising Groundwater in West Texas Municipalities--Economic Potential for Development," Texas Tech University Water Resources Center, 1986-87, \$10,500.
6. Co-Principal Investigator (with H.W. Parker [ChE]), "Chemical In Situ Oxidation for Rehabilitation of Aquifers--Laboratory Demonstration of Feasibility," Texas Tech University Water Resources Center, 1986-87, \$9,200; Phase II 1987-88, \$12,000; Phase III 1988-89, \$11,300; Phase IV 1989-90, \$9,800.
7. Co-Principal Investigator (with B.J. Claborn), "Air Injection for Removal of Contaminants in the Unsaturated Zone," Texas Tech University Water Resources Center, 1986-87, \$12,000; Phase II 1987-88, \$12,250; Phase III 1988-89, \$10,200.
8. Co-Principal Investigator (with B.J. Claborn and C.E. Heintz [Bio]), "Increasing In-Situ Biodegradation of Diesel Fuel by Cyclic Water Table Movement," Texas Tech University Water Resources Center, 1988, \$11,500; 1988-89, \$12,375.
9. Co-Principal Investigator (with L.V. Urban), "Demonstration of Carbon Dioxide Scale Technique in Water Systems with Very Hard Water," U.S. Army Construction Engineering Research Laboratory, 1988-89, \$20,000.
10. Co-Principal Investigator (with R.H. Ramsey and T.R. Mollhagen), "Development of a State-of-the-Art Instructional Laboratory for Environmental Analyses," National Science Foundation, 1988-90, \$46,992 (plus \$46,993 match from State of Texas HEAF).
11. Co-Principal Investigator (with L.V. Urban), "Evaluation of Carbon Dioxide Scale Control Techniques for Very Hard Waters," U.S. Army Construction Engineering Research Laboratory, 1989-90, \$22,500.

12. Co-Principal Investigator (with B.J. Claborn and C.E. Heintz [Biol]), "Laboratory Investigation of Cyclic Vertical Water Table Modulation for Enhancement of In Situ Aerobic Biodegradation," Texas Tech University Water Resources Center, 1989-90, \$8,500 (matching funds for following grant).
13. Co-Principal Investigator (with B.J. Claborn and C.E. Heintz [Biol]), "Laboratory Investigation of Cyclic Vertical Water Table Modulation for Enhancement of In-Situ Aerobic Biodegradation," U.S. Environmental Protection Agency, 1989-91, \$116,794.
14. Co-Principal Investigator (with R.H. Ramsey and T.R. Mollhagen), "Development of Interactive, Multimedia Courseware as a Supplemental Learning Strategy for Undergraduate Engineering Courses," Academic Donation Program, Apple Computer, Inc., 1989, \$11,560.
15. Co-Principal Investigator (with B.J. Claborn), "A Comparison of Pulsed and Steady Vaporization of Residual Hydrocarbons in Unsaturated Porous Media," Texas Tech University Water Resources Center, 1989-91, \$20,500.
16. Co-Principal Investigator (with F. Mohamed [Math]), "Well Response Test: Application to Partially Penetrating Wells in Unconfined Aquifers," Texas Tech University Water Resources Center, 1990-92, \$24,000.
17. Co-Principal Investigator (with R.H. Ramsey and T.R. Mollhagen), "Development of a Hypermedia Learning Laboratory for Undergraduate Engineering Students," National Science Foundation, 1990-92, \$33,000.
18. Principal Investigator (with B.J. Claborn, L.V. Urban, R.H. Ramsey, T.R. Mollhagen, R. Zartman [PSS], and E.B. Fish [RWM]), "Geologic and Hydrologic Site Characterization of the Pantex Plant in Support of DOE's Environmental Monitoring and Hazardous Waste Remediation Program," Department of Energy, Subcontract to the University of Texas at Austin Bureau of Economic Geology, 1990-1995, \$1,092,000.
19. Co-Principal Investigator (with C.V.G. Vallabhan and B.J. Claborn), "A Computer Model to Evaluate Efficiency of Soil Venting for Restoration of Unsaturated Soil," U.S. Army Construction Engineering Research Laboratory, 1991, \$24,795.
20. Co-Principal Investigator (with T.M. Lehman [Geo] and G.B. Asquith [Geo]), "Investigation of Radon Occurrence in the Ogallala Aquifer in the Southern High Plains of Texas," Texas Tech University Water Resources Center, 1992-93, \$13,500.
21. Co-Principal Investigator (with D.B. Thompson), "Feasibility Study of Scale Removal for Recovery of Flow Capacity in the Central System Pipeline," Canadian River Municipal Water Authority, 1993-94, \$45,740.
22. Co-Principal Investigator (with P.W. Jayawickrama), "A Dual-Porosity Model for the Characterization of Aquifer Recharge through Playa Lakes," Texas Tech University Water Resources Center, 1993-94, \$14,225, 1994-95, \$7,800.
23. Principal Investigator, "Demonstration of New Techniques for Remediation of Petroleum-Contaminated Soils," Texas Tech University Office of Research Services, 1993, \$4,000.
24. Co-Principal Investigator (with S. Frailey [PetE]), "Management and Development of the Ogallala Aquifer: An Application of a Full-Field Reservoir Simulation Model," Texas Tech University Water Resources Center, 1994-95, \$10,000, 1995-96, \$11,000.
25. Principal Investigator (with R.H. Ramsey, L.V. Urban, T.R. Mollhagen, C.E. Heintz [Biol] and D.B. Thompson), "Environmental Related Studies at Pantex - TBEG," Department of Energy, Texas Higher Education Consortium, 1994-95, \$120,452.
26. Co-Principal Investigator (with D.B. Thompson), "Field Study of Scale Removal for Recovery of Flow Capacity in the Central System Pipeline," Canadian River Municipal Water Authority, 1995, \$10,000, 1996, \$10,000.
27. Principal Investigator (with C.E. Heintz [Biol], R. Zartman [PSS], R.H. Ramsey, L.V. Urban, T.R. Mollhagen, and D.B. Thompson), "Pantex Environmental Restoration," Department of Energy, Texas Higher Education Consortium, 1995-96, \$335,899.
28. Principal Investigator, "Field Treatability at Pantex," engineering-environmental Management, Inc., 1995-96, \$49,563.

29. Co-Principal Investigator (with S. Frailey [PetE]), "High Plains Ogallala Area Management Plan: The Development of the Ogallala Aquifer Hydrologic Model," Texas Tech University Water Resources Center and Texas Tech University, 1996-98, \$90,674 (matching funds for following grant).
30. Co-Principal Investigator (with S. Frailey [PetE]), "High Plains Ogallala Area Management Plan: The Development of the Ogallala Aquifer Hydrologic Model," Texas Water Development Board through the High Plains Underground Water Conservation District No. 1, 1996-98, \$81,052.
31. Principal Investigator (with C.E. Heintz [Biol] and T.R. Mollhagen), "Feasibility of In Situ Remediation of Residual High Explosives in the Vadose Zone Beneath the Pantex Plant," Amarillo National Resource Center for Plutonium, Department of Energy, 1997, \$274,633.
32. Co-Principal Investigator (with D.B. Thompson and L.V. Urban), "Interactions Between Precipitation, Evapotranspiration, Streamflow, and Ground Water," Texas Tech University Water Resources Center, 1997-98, \$5,000 (matching funds for following grant).
33. Co-Principal Investigator (with D.B. Thompson and L.V. Urban), "Interactions Between Precipitation, Evapotranspiration, Streamflow, and Ground Water," Texas Water Development Board through the High Plains Underground Water Conservation District No. 1, 1997-98, \$12,611.
34. Co-Principal Investigator (with S. Frailey [PetE]), "Groundwater Modeling for the Southern High Plains," Texas Tech University Water Resources Center, 1998-99, \$12,650.
35. Principal Investigator (with C.E. Heintz [Biol] and T.R. Mollhagen), "Continuation of Feasibility of In Situ Remediation of Residual High Explosives in the Vadose Zone Beneath the Pantex Plant," Amarillo National Resource Center for Plutonium, Department of Energy, 1998, \$239,506, 1999, \$156,080.
36. Co-Principal Investigator (with W.A. Jackson), "Assessment of the Potential for Natural Attenuation of Chlorinated Solvents in Contaminated Groundwater in the Texas High Plains," Texas Tech University Water Resources Center, 1998-99, \$10,800.
37. Co-Principal Investigator (with J.D. Woodyard [Chem, WTAMU] and B.R. Richardson [Mason&Hanger, Pantex]), "Mechanisms of Formation of Trace Decomposition Products in Complex High Explosive Mixtures," Amarillo National Resource Center for Plutonium, Department of Energy, 1998, \$197,889 (TTU share \$68,579), 1999, \$199,478 (TTU share \$54,954).
38. Co-Principal Investigator (with C.E. Heintz [Biol]), "Enzymatic Degradation of Pu/U 'Suspect Contaminated' Waste," Amarillo National Resource Center for Plutonium, Department of Energy, 1998, \$105,105, 1999, \$105,761.
39. Co-Principal Investigator (with D.B. Thompson and R. Zartman [PSS]), "Updating Site Topographic Survey," Mason & Hanger Corporation, Inc., 1999, \$58,710.
40. Co-Principal Investigator (with T.M. Lehman [Geos] and L.V. Urban), "Evaluation of Shallow Groundwater Resources of Andrews County, Texas," Andrews Industrial Foundation, 1999, \$113,747.
41. Co-Principal Investigator (with S. Frailey [Petr]), "Groundwater Modeling for the Southern High Plains," Texas Water Development Board, 1999-2000, \$130,744.
42. Co-Principal Investigator (with L.V. Urban, R.H. Ramsey, D.B. Thompson, T.R. Mollhagen, W.A. Jackson, and R.E. Zartman [PSS]), "Effects of Combining Absorbic and Evaporative Disposal Methods on Drainfield Sizing in Arid and Semiarid Areas," Texas On-Site Wastewater Treatment Research Council, 1999-2001, \$293,954.
43. Co-Principal Investigator (with W.A. Jackson), "Potential for In Situ Remediation of Perchlorate Contamination in Sediments and Groundwater," Texas Tech University Water Resources Center, 1999-2000, \$11,000, 2000-2001, \$12,000.
44. Principal Investigator, "Field Demonstration of In Situ Degradation of High Explosives in Soil," U.S. Army Corps of Engineers Waterways Experiment Station, 1999-2000, \$18,226.



45. Principal Investigator (with H. Gurrola [Geos] and N. Guven [Geos]), "Evaluation of Brine Extent and Migration in the Brownfield Basin Area, Terry County, Texas," Texas Tech University Water Resources Center, 1999-2000, \$12,000.
46. Co-Principal Investigator (with L.V. Urban, W.A. Jackson, and R.H. Ramsey), "Evaluation of NASA's Advanced Wastewater Recycling Process for Non-Optimal Conditions and Evaluation of Terrestrial Applications," NASA, 2000-2001, \$291,185, 2001-2002, \$409,096.
47. Principal Investigator (with H. Gurrola [Geos] and N. Guven [Geos]), "Variable-Density Groundwater Model for the Brownfield Basin Area, Terry County, Texas," Texas Tech University Water Resources Center, 2000-2001, \$10,000.
48. Principal Investigator (with T.R. Mollhagen and C.E. Heintz [Biol]), "In Situ Bioremediation of Explosives in the Vadose Zone," Idaho National Engineering and Environmental Laboratory, Department of Energy, 2000-01, \$30,000.
49. Principal Investigator (subcontract to WTAMU), "Mechanisms of Formation of Trace Decomposition Products in Complex High Explosive Mixtures," BWXT - Pantex Plant, Department of Energy, 2000-01, \$23,737.
50. Principal Investigator (with T.R. Mollhagen and C.E. Heintz [Biol]), "Expansion of In Situ HE Biodegradation System," BWXT – Pantex Plant, Department of Energy, 2001, \$34,702.
51. Principal Investigator (with T.R. Mollhagen), "Design & Modeling of Large-Scale Laboratory Tests for Treatment of Contaminated Soils from Small Arms Firing Ranges," U.S. Army Corps of Engineers Environmental Research and Development Center, 2001, \$15,000.
52. Principal Investigator (with D.B. Thompson), "Groundwater Balances for Recharge Estimation in Selected Counties in the Southern High Plains," Texas Tech University Water Resources Center, 2001-2002, \$14,000.
53. Principal Investigator (with T.R. Mollhagen and C.E. Heintz [Biol]), "Demonstration of In Situ Biodegradation of High Explosives in Soil Zone," Idaho National Engineering and Environmental Laboratory, Department of Energy, 2002, \$95,000, 2003, \$40,000.
54. Co-Principal Investigator (with G.P. Cobb [TIEHH], E.E. Smith [TIEHH], and F.F. Roberto [INEEL]), "Quantifying Cancer Risks Following In-situ Remediation of Explosives: Strengthening Collaboration with the Idaho National Environmental and Engineering Laboratory, United States Department of Energy," Texas Excellence Funds, State of Texas, 2002, \$52,463.
55. Co-Principal Investigator (with L.V. Urban and W.A. Jackson), "Evaluation of Drainfield Absorption and Evapotranspiration Capacity," Texas On-Site Wastewater Treatment Research Council, 2002-03, \$199,125.
56. Co-Principal Investigator (with W.A. Jackson, A. Morse, D.L. Muirhead, and T. Anderson), "Evaluation of NASA's Advanced Life Support Integrated Water Recovery System for Non-Optimal Conditions and Terrestrial Applications," NASA, 2002-03 (Year 3), \$459,164, 2003-04 (Year 4), \$581,460.
57. Principal Investigator (with T.R. Mollhagen and C.E. Heintz [Biol]), "Expansion of In Situ HE Biodegradation System," BWXT-Pantex Plant, Department of Energy, 2002-03, \$16,133, 2003-04, \$30,861.
58. Co-Principal Investigator (with W.A. Jackson, L.V. Urban, T.R. Mollhagen, T.M. Lehman [Geos], M. Ridley [Geos], T. Anderson [TIEHH], and R.W. Tock [ChE]), "Distribution and Potential Sources of Perchlorate in the Southern High Plains Aquifer," Texas Commission on Environmental Quality, 2002, \$295,376, 2003, \$115,000, 2003-04, \$482,300.
59. Co-Principal Investigator (with Jackson, Anderson [TIEHH], Ridley [Geos], and Dasgupta [Chem]), "Identification and Characterization of Natural Sources of Perchlorate," Strategic Environmental Research and Development Program, DOD/DOE/EPA, 4/05-3/08, \$518,754, 2005-06, \$45,000.
60. Principal Investigator (with J.A. McEnery), "Column Transport of Selected Metals," BWXT-Pantex Plant, Department of Energy, 2004, \$102,515.
61. Principal Investigator, "Review of Systems for Restaurant Wastewater Pretreatment," Texas On-Site Wastewater Treatment Research Council, 2003-04, \$33,988.

62. Principal Investigator, "Operation and Maintenance of the Zone 12 HE Biodegradation Site," BWXT-Pantex Plant, Department of Energy, 2003-05, \$27,566.
63. Principal Investigator (with K. Mulligan [Geog] and L. Barbato [Geog]), "Ogallala Initiative: Hydrology and Climatology," Department of Agriculture, 2004, \$35,570, 2004-05, \$37,251, 2005-06, \$30,044.
64. Principal Investigator (with J.A. McEnery), "Evaluation of Mobile Dual Phase Extraction Applications at LPST Sites in Texas," Texas Commission on Environmental Quality, 2005, \$93,671.
65. Principal Investigator (with J.A. McEnery), "Measurements of Uranium Sorption in Blackwater Draw Formation Soils," BWXT-Pantex Plant, Department of Energy, 2005, \$75,925.
66. Principal Investigator (with L.M. Smith [RWFM], R. Zartman [PSS], W. Hudnall [PSS], and D. Gitz [USDA]), "High Plains Aquifer Recharge: Importance of Playas and Influence of Sediments," Department of Agriculture, 2005-06, \$109,749, 2006-07, \$109,000, 2007-08, \$83,000, 2008-09, \$75,000.
67. Co-Principal Investigator (with W.A. Jackson and A.N. Morse), "Evaluation of NASA's Advanced Life Support Integrated Water Recovery System for Non-Optimal Conditions and Terrestrial Applications, Year 5," NASA, 2005-06, \$411,180.
68. Principal Investigator (with A. Swift and W.A. Jackson), "Wind Power and Water Desalination Technology Integration," Bureau of Reclamation, 2005-06, \$99,735.
69. Principal Investigator (with L. Barbato [Geog] and K. Mulligan [Geog]), "Transmissivity Distribution in the Ogallala Aquifer for Floyd, Hale, Lubbock, Randall and Swisher Counties," Canadian River Municipal Water Authority, 2006, \$15,264.
70. Co-Principal Investigator (with P.K. Dasgupta [Chem] and C. Martin [Math]), "Perchlorate and Iodide Intake and Excretion in Breastfed Infants," Texas Higher Education Coordination Board Advanced Research Program, 2006-08, \$100,000.
71. Co-Principal Investigator (with A. Swift), "DOE Integrated Wind-Water System," Department of Energy/Texas State Energy Conservation Office, 2005-07, \$50,000.
72. Co-Principal Investigator (with L. Smith [NRM], R. Zartman [PSS], W. Hudnall [PSS], and D. Gitz [USDA]), "High Plains Aquifer Recharge: Importance of Playas and Influence of Sediments," Panhandle Groundwater Conservation District, 2006-07, \$20,000.
73. Co-Principal Investigator (with J. Johnson [AAEC], D. Willis [AAEC], D. Ethridge [AAEC], K. Mulligan [Geog], and E. Fish [NRM]), "Ogallala Initiative: Sustainable Rural Economics Through New Water Management Technologies," Department of Agriculture, 2007-2009, \$1,000,000.
74. Co-Principal Investigator (with A. Swift), "Great Plains Wind Power Test Facility," Department of Energy, 2006-07, \$1,485,000.
75. Principal Investigator (with K.R. Mulligan [CGT], L. Barbato [CGT], R.E. Zartman [PSS], W.H. Hudnall [PSS], and D. Gitz, III, [USDA-ARS]), "Influence of USDA Programs on Ecological Services Provided by Playa Wetlands in the High Plains," USGS/NRCS, 2007-08, \$83,807, 2008-09, \$76,930.
76. Principal Investigator (with S. Smirnov [ME]), "Hydraulic Performance Evaluation of Horizontal Inlet Type H," Texas Department of Transportation, 2007-08, \$143,520, 2008-09, \$138,320.
77. Principal Investigator (with D. Thompson [ROA], T. Cleveland, and W. Asquith [USGS]), "Develop Statewide Regression Equations for Improved Flood Peak Estimation," Texas Department of Transportation, 2008-09, \$8,503.
78. Principal Investigator (with E.B. Fish [NRM] and R.E. Zartman [PSS]), "Evaluation of the TSSWCB Brush Control Program: Monitoring Needs and Water Yield Enhancement," Texas Commission on Environmental Quality, 2008, \$150,000.

79. Principal Investigator (Task 2 with L. Song, A. Jackson, A. Morse, and P. Nash), "Great Plains Wind Power Test Facility," Department of Energy, 2008-10, \$688,000 (total project \$1,968,000). [8%, \$157,440]
80. Co-principal Investigator (with A. Jackson and T. Anderson [TIEHH]), "Laboratory Demonstration of In Situ Treatment Effectiveness for Reduction of Perchlorate, TCE, and Chromium at Pantex Plant," B&W Pantex LLC, 2008-09, \$115,776.
81. Principal Investigator (with R.E. Zartman [PSS]), "Managing Effects of Agronomic Systems on Playa Wetland Hydrology and Ecology," USDA-ARS, 2008-13, \$30,000. [20%, \$6,000]
82. Principal Investigator (with K. Hayhoe [Atmo]), "Quantifying Effects of Long-Term Climate Change on Precipitation and Evapotranspiration," USDA-ARS, 2008-09, \$50,000.
83. Principal Investigator (with E.B. Fish [NRM], R.E. Zartman [PSS], and E.A. Hernandez), "Design of Monitoring Program for Water Yield Enhancement Program," Texas State Soil and Water Conservation Board, 2008-10, \$100,000. [25%, \$25,000]
84. Co-Principal Investigator (with A. Jackson and T. Anderson [TIEHH]), "Research Needs Related to Natural Perchlorate: Production, Occurrence, and Stable Isotopic Signatures," AFOSR/SAIC, 2008-09, \$112,668, 2009-11, \$115,000. [20%, \$23,000]
85. Co-principal Investigator (with K. Hayhoe [Geos], J. Johnson [Ag Eco], and E.A. Hernandez), "Climate Change Impacts on Water Supply in West Texas," Bipartisan Policy Center, 2009-2010, \$54,188. [20%, \$10,838]
86. Principal Investigator (with D.B. Thompson [R.O. Anderson] and S. Tummuri [CDM]), "Assessment of General Circulation Models for Water-Resources Planning Applications," Texas Water Development Board, 2009-2010, \$90,918. [100% TTU, \$90,918]
87. Principal Investigator (with E.A. Hernandez), "Impact of Climate Change on Depletion of the Ogallala Aquifer," USDA-ARS, 2010-12, \$39,297. [33%, \$12,968]
88. Co-Principal Investigator (with R.E. Zartman [PSS]), "Texas High Plains Playa Instrumentation Network," USDA-ARS, 2010-12, \$18,972. [50%, \$9,486]
89. Co-Principal Investigator (with L. Song and P. Nash), "FY 10 Great Plains Wind Power Test Facility, Task 2," Department of Energy, 2010-12, \$1,902,998. [8%, \$152,240]
90. Co-Principal Investigator (with L. Song and P. Nash), "FY 11 Great Plains Wind Power Test Facility, Task 2," Department of Energy, 2011-13, \$2,000,000. [8%, \$160,000]
91. Principal Investigator (with A. Jackson, A. Morse, T. Cleveland, and A. Hernandez), "City of Lubbock Canyon Lakes Water Reuse Project," Alan Plummer and Associates, 2009-13, \$57,700. [20%, \$11,540]
92. Co-Principal Investigator (with L. Song), "Demonstration of a High Recovery and Energy Efficient RO System for Small-scale Brackish Water Desalination," Texas Water Development Board, 2010-2012, \$101,597. [25%, \$25,399]
93. Principal Investigator (with R.E. Zartman [PSS] and W.H. Hudnall [PSS]), "Playa Lake Recharge Monitoring," Texas Water Development Board, 2010-2011, \$57,540. [34%, \$19,564]
94. Principal Investigator (with J. Schroeder [WiSE]), "SECO Renewable Technology Grant," State Energy Conservation Office, 2010-11, \$162,000. [50%, \$81,000]
95. Principal Investigator (with E.B. Fish [NRM], R.E. Zartman [PSS], and E.A. Hernandez), "Application of the EDYS Decision Tool for Modeling of Target Sites for Water Yield Enhancement through Brush Control," Texas State Soil and Water Conservation Board, 2011-12, \$224,230. [25%, \$56,058]
96. Co-Principal Investigator (with K. Mulligan [CGST] and L. Barbato [CGST]), "TCU 359: CRP Effects on the Ogallala Aquifer," USGS, 2011, \$60,030. [10%, \$6,003]

97. Co-Principal Investigator (with T. Arsuffi [LRFS]), "Llano River Watershed Protection Plan," Texas State Soil and Water Conservation Board, 2011-14, \$519,053. [40%, \$207,621]
98. Co-Principal Investigator (with A. Jackson and T. Anderson [TIEHH]), "Identification and Characterization of Naturally Occurring Perchlorate Phase 4," USAF-AFMC, 2009-13, \$210,280. [20%, \$42,056]
99. Co-Principal Investigator (with A. Jackson), "High Plains Chromium Investigation," Department of Energy, BWXT Pantex, 2012-13, \$70,000. [60%, \$42,000]
100. Co-Principal Investigator (with T. McLendon [PSS]), "Application of the EDYS Model for Evaluation of Sites for Water Enhancement Through Brush Control: Goliad and Victoria Counties," Texas State Soil and Water Conservation Board, 2013-15, \$106,939. [15%, \$16,041]
101. Principal Investigator (with T. Cleveland, V. Uddameri, A. Hernandez, and H. Gurrola [Geos]), "Irion and Sterling County Groundwater Evaluation," Irion and Sterling County Underground Water Districts, 2013-14, \$30,000. [20%, \$6,000]
102. Co-Principal Investigator (with J.Zak [Biol], Hayhoe [Pols], and others), "A Proposal to Host the Department of the Interior's South-Central Climate Science Center," USGS/University of Oklahoma, 2013-2014, \$195,235. [20%, \$39,047]
103. Co-Principal Investigator (with T. McLendon [PSS]), "Expansion of the Upper Llano River Watershed EDYS Model and Evaluation of Sites for Water Enhancement Through Brush Control," Texas State Soil and Water Conservation Board, 2013-15, \$140,287. [11%, \$15,432]
104. Co-Principal Investigator (with A. Jackson and T. Anderson [TIEHH]), "Cooperative Agreement FA8650-10-2-6049; Request for Add Work Proposal," U.S. Air Force/AFMC, 2009-2014, \$51,230. [20%, \$10,246]
105. Co-Principal Investigator (with A. Jackson, W. Lawson, W. Yan, D. Liang, A. Morse, and S. Senadheera), "0-6793 TxDOT Snow and Ice Chemicals for Texas Roads - MOD 2 Field Trial," Texas Department of Transportation, 2013-2015, \$99,757. [14%, \$13,966]
106. Co-Principal Investigator (with J.Zak [Biol], Hayhoe [Pols], and others), "A Proposal to Host the Department of the Interior's South-Central Climate Science Center," USGS/University of Oklahoma, 2014-2015, \$150,910. [20%, \$30,182]
107. Co-Principal Investigator (with A. Jackson, W. Lawson, W. Yan, D. Liang, A. Morse, and S. Senadheera), "Snow and Ice Chemicals for Texas Roads: Modification 3, Field and Lab Testing," Texas Department of Transportation, 2014-2015, \$226,164. [13%, \$29,401]
108. Principal Investigator (with T. McLendon [PSS] and T. Arsuffi [LRFS]), "Water Supply Enhancement Program Guidance," Texas State Soil and Water Conservation Board, 2015-17, \$145,000. [34%, \$49,300]
109. Co-Principal Investigator (with J.Zak [Biol], Hayhoe [Pols], and others), "A Proposal to Host the Department of the Interior's South-Central Climate Science Center," USGS/University of Oklahoma, 2015-2016, \$154,905. [20%, \$30,981]
110. Co-Principal Investigator (with T. Cleveland), "Task 41 Hydrologic and Hydraulic Evaluation of Stormwater Drainage at Marsha Sharp Freeway and University Avenue," Texas Department of Transportation, Lubbock District, under Contract No. 05-03XX1A001, 2015-16, \$60,229. [50%, \$30,115]
111. Co-Principal Investigator (with J.Zak [Biol], Hayhoe [Pols], and others), "A Proposal to Host the Department of the Interior's South-Central Climate Science Center," USGS/University of Oklahoma, 2016-2017, \$134,326. [20%, \$30,981]
112. Principal Investigator (with T. McLendon [PSS] and T. Arsuffi [LRFS]), "Water Supply Enhancement Program Guidance," Texas State Soil and Water Conservation Board, 2015-17, \$67,500. [34%, \$22,950]
113. Principal Investigator (with J. Booker [PSS] and T. Arsuffi [LRFS]), "Water Supply Enhancement Program Guidance," Texas State Soil and Water Conservation Board, 2017-19, \$67,120. [34%, \$22,821]

114. Principal Investigator, "Alternative Solutions for Corrosion Problems at the T-Bar Ranch Well Field," Midland County Fresh Water Supply District #1, 2016-17, \$114,695.
115. Co-Principal Investigator (with L. Song), "Emerging Ion Concentration Polarization for Brackish Desalination," Bureau of Reclamation, 2018-19, \$143,978. [50%, \$71,989]
116. Principal Investigator (with K. Millerick and W. Yan), "Alternative Solutions for Corrosion Problems at the T-Bar Ranch Well Field – Phase II," Midland County Fresh Water Supply District #1, 2017-18, \$123,705. [34%, \$42,060]
117. Co-Principal Investigator (with B. Ancell [Geos], C. Lindquist [Soc], B. Ren [ME], T. Arsuffi [LRFS], N. Flores [Soc]), "Assessing the Livability and Technological Compatibility of an Independent, Interactive, and Sustainable Water and Power Home Utility System", Texas Tech University College of Arts and Sciences, 2017-19, \$140,000. [14%, \$19,600]
118. Principal Investigator (with C. Coldren [PSS] and T. Arsuffi [LRFS]), "Water Supply Enhancement Program Guidance," Texas State Soil and Water Conservation Board, 2018-19, \$29,000. [34%, \$9,860]
119. Principal Investigator (with C. Coldren [PSS]), "Goliad County Recharge Evaluation," Goliad County Groundwater Conservation District, 2018-19, \$17,992, 2019-20, \$11,789, 2020-21, \$12,146. [50%, \$8,996, 70%, \$8,252, 70%, \$8,502]
120. Co-Principal Investigator (with L. Song), "Emerging Ion Concentration Polarization for Brackish Desalination," United States Bureau of Reclamation, 2018-1019, \$144,696. [50%, \$72,348]
121. Co-Principal Investigator (with C. Coldren [PSS]), "Inflows for SA Bay EDYS Modeling: Task 2, 2018-2019," San Antonio River Authority, \$99,258. [50%, \$49,629]
122. Principal Investigator (with K. Millerick and W. Yan), "Alternative Solutions for Corrosion Problems at the T-Bar Ranch Well Field – Phase III," Midland County Fresh Water Supply District #1, 2018-19, \$199,859. [34%, \$67,952]
123. Principal Investigator (with C. Coldren [PSS] and T. Arsuffi [LRFS]), "Water Supply Enhancement Program Guidance," Texas State Soil and Water Conservation Board, 2019, \$29,000. [50%, \$14,500]
124. Principal Investigator (with C. Coldren [PSS] and G. Herrmann), "Carrizo Cane Eradication Program Guidance: Field Activities to Identify, Assess, and Monitor the Potential for Bank Erosion and Water Quality Impacts Associated with Giant Cane Control Along the Rio Grande," Texas State Soil and Water Conservation Board, 2019-20, \$43,855. [40%, \$17,542]
125. Principal Investigator (with K. Millerick and A. Deonarine), "Alternative Solutions for Corrosion Problems at the T-Bar Ranch Well Field – Phase IV," Midland County Fresh Water Supply District #1, 2019-20, \$91,000. [50%, \$45,500]
126. Co-Principal Investigator (with C. Coldren [PSS]), "Maintenance Activities for the EDYS Model," San Antonio River Authority, \$69,217. [20%, \$13,843]
127. Co-Principal Investigator (with C. Coldren [PSS]), "Maintenance Activities for the EDYS Model: Task 4, 2020-21," San Antonio River Authority, \$70,000. [20%, \$14,000]
128. Co-Principal Investigator (with K. Millerick and J. Guelfo), "Biotransformation Potential of Per- and polyfluoroalkyl Substances (PFAS) in West Texas Aquifers," Environmental Protection Agency, \$25,371. [20%, \$5,074]
129. Principal Investigator (with J. Guelfo). "PFAS Column Studies," Consolidated Nuclear Security, LLC (Pantex), \$115,539. [60%, \$69,323]

### **Consulting Clients**

1. B.L. Williams Farm, near Tahoka, TX (1987). Surface water contamination assessment.
2. McWhorter, Cobb, and Johnston legal firm, Lubbock, TX (1988). Surface water contamination assessment.

3. Mike Irish Ranch, near Dickens, TX (1988). Surface and groundwater contamination assessment.
4. Bolton Oil Company, Lubbock, TX (1989-93). Leaking petroleum storage tank (LPST) site assessments and remediation design.
5. U.S. Army Corps of Engineers Construction Engineering Research Laboratory, Champaign, IL (1988-89). Literature review on the state-of-the-art of in situ bioremediation of aquifers and soil.
6. S.B. Campbell Trucking Company, Lubbock, TX (1989). LPST site assessment.
7. Ralph George for Estate of Roy George, Lubbock, TX (1990-94). LPST site assessment and remediation design.
8. Compliance Services Group, Inc., Lubbock, TX (1990-91). Four LPST site assessments for clients in Amarillo and Lubbock.
9. Oller Engineering, Inc., Lubbock, TX (1990-91). Three LPST site assessments for clients in Lubbock. Hazardous waste site assessment for cottonseed delinting company in Shallowater.
10. Technical Coatings, Inc., Lubbock, TX (1991-95). LPST site assessment.
11. University Medical Center, Lubbock, TX (1992). Jet-fuel leak site assessment review.
12. JB Fluids Services, Inc., Seminole, TX (1993-94). LPST court case site assessment.
13. Andrews Industrial Foundation, Inc., Andrews, TX (1993-98). Hazardous waste landfill site evaluation.
14. St. Anthony's Hospital, Amarillo, TX, (1993). LPST site assessment.
15. Hughes Remediation, Inc., Lubbock, TX (1992-93). LPST site monitoring.
16. Glovier and Associates, Dumas, TX (1994). Groundwater monitoring plan for city landfill, Dumas, TX.
17. McFall, Sherwood, and Sheehy, Attorneys, Houston, TX (1994-95). Expert for defendants Farm and Home Association, Brio landfill site, near Friendswood, TX.
18. Provost and Umphrey, Attorneys, Beaumont, TX (1994-97). Expert for plaintiff home owners (two depositions), Austin Tank Farm site, Austin, TX.
19. Reich and Binstock, Attorneys, and Susman Godfrey, L.L.P., Houston, TX (1994-98). Expert for plaintiff home owners (three depositions), potential damage by petrochemical plants in Corpus Christi, TX.
20. Clark, Thomas, and Winters, Attorneys, Austin, TX (1994-95). Expert for plaintiff land owner affected by groundwater contamination from Reese Air Force Base (one courtroom testimony), Lubbock, TX.
21. Newton Schwartz, Attorney, Houston, TX (1997-99). Expert for plaintiffs, potential damage by the MOTCO facility, Houston, TX.
22. ENPROTEC, Lubbock, TX (1997). Consult on petroleum contamination and remediation issues for sites in Lubbock, TX.
23. Cowles and Thompson, Attorneys, Dallas, TX (1998-99). Expert for defendant oil lease operator on surface and subsurface contamination in Ward County (one deposition).
24. engineering-environmental Management, Inc. (1998). Slug tests at Pantex monitoring well sites.
25. Denver City Energy Associates, Denver City, TX (1998-2000). Groundwater resources evaluation for power plant development.

26. U.S. Department of Energy Pacific Northwest Laboratory, Hanford, WA (1998-99). Review hydrologic research report.
27. U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg, MI (1999-2000). Field demonstration of degradation of high explosives in soil.
28. Texas Instruments (2000-2). Groundwater contamination assessment.
29. Stubbeman, McRae, Sealy, Laughlin and Browder, Attorneys, Midland, TX (2000). Expert for defendant oil lease operator on surface and subsurface contamination in Reeves County.
30. LS Power, LLC, St. Louis, MO (2000-01). Groundwater resources evaluation for power plant development.
31. Jimmy May, P.E., Lubbock, TX (2001). Expert for well productivity loss (one deposition, one courtroom testimony).
32. Environmental Technologies Group, Inc. (2001-03). Groundwater and subsurface contamination assessment and remediation (one deposition, two courtroom testimonies).
33. Willis Gresham, Attorney, Lubbock, TX (2001-03, 2008-09). Groundwater contamination assessment.
34. Water Preservation Committee, LLC, Garden City, KS (2002-03). Groundwater allocation assessment (hearing testimony).
35. Hope, Mills, Bolin, Collins, Ramsey, and Heydman, Attorneys, Garden City, KS (2002-03). Groundwater allocation assessment (one deposition).
36. BWXT-Pantex, Amarillo, TX (2003-06). Outside review of remediation and investigation of groundwater contamination.
37. Espey Consultants, Inc., Austin, TX (2003-04). Water quality sampling in playa lakes.
38. Craig, Terrill, Hale & Grantham, L.L.P., Lubbock, TX (2003-06). Expert in groundwater contamination assessment (one deposition).
39. The Sher Law Firm, P.L.L.C., Houston, TX (2004-06). Expert witness in groundwater contamination assessment (one deposition).
40. Quilling, Selander, Cumiskey, Lownds, P.C., Dallas, TX (2004). Expert witness for groundwater presence in pipeline construction (one deposition).
41. Foulston Siefken LLC, Wichita, KS, (2004-05). Groundwater rights issues in Kansas (hearing testimony).
42. J.C. Adams, Morton, TX, (2005). Groundwater contamination assessment.
43. C.H. Guernsey & Company, Oklahoma City, OK (2005). Groundwater and surface water assessment for municipal supply.
44. Lower Colorado River Authority, Austin, TX (2005-10). Scientific review of LCRA/SAWS project.
45. Temple Dickson, Attorney, Sweetwater, TX (2005-06). Groundwater contamination assessment.
46. Foulston Siefken LLC, Wichita, KS, (2005-06). Groundwater rights issues in Kansas (hearing testimony).
47. Foulston Siefken LLC, Wichita, KS, (2006-07). Surface water rights issues in Kansas.
48. Zach Brady, attorney, Lubbock, TX (2006-07). Groundwater availability assessment.
49. BWXT-Pantex, Amarillo, TX, (2007). Evaluation of expansion of groundwater pump-and-treat system.
50. Lynch, Chappell & Alsup PC, Midland, TX, (2007-08). Expert witness for groundwater contamination assessment.

51. Texas State Soil and Water Conservation Board, Temple, TX, (2007-15). Determination of selection criteria for brush control/streamflow enhancement sites.
52. John Visser, Lariat, Texas, (2008). Evaluation of groundwater availability and use at dairy.
53. Terracon, Dallas, TX (2009-19). Modeling groundwater contamination site for City of Lubbock.
54. Clay Gaston, Midland, TX (2009-12). Groundwater contamination assessment (one deposition).
55. Foulston Siefken LLC, Wichita, KS, (2010). Groundwater contamination assessment.
56. Housing Authority of Corpus Christi, Corpus Christi, TX (2010-11). Groundwater contamination assessment.
57. Jasper Quintanilla, LLC, Dallas, TX, (2011). Well permit application review.
58. Kalsec, Inc., Kalamazoo, MI, (2012-6, 2022-). Groundwater management for irrigation, Gaines and Yoakum counties.
59. Foulston Siefken LLC, Wichita, KS, (2013). Surface water rights assessment, City of Independence.
60. Gerald Schultz, Garden City, KS (2014-7). Groundwater rights in western Kansas (two depositions, two court testimonies).
61. University of Illinois at Urbana-Champaign, Energy Frontier Research Center for Geologic Storage of CO<sub>2</sub> (2014). Groundwater issues associated with the Illinois Basin Decatur Project demonstration.
62. Molzen Corbin, Albuquerque, NM (2015-7). Clovis drainage master plan, playa lake issues.
63. Brent and Linda Brady, Wilson, TX (2015). Domestic water well evaluation.
64. George Thompson, Lubbock, TX (2015-7). Soil contamination evaluation at ranches in Reagan County.
65. Reich and Binstock, Attorneys, Houston, TX (2017-9). Expert for plaintiffs in aftermath of Hurricane Harvey in Houston, TX.
66. Texland Petroleum, Lubbock, TX (2016-17). Groundwater supply evaluation.
67. Espinoza Land & Cattle, Denver City, TX (2018-23). Groundwater supply evaluation for tax purposes.
68. Lea County Electric Cooperative, LLC, Lovington, NM (2019). Projections of groundwater use for irrigation.
70. Latham Watkins, LLC, Washington, DC (2020-21). Groundwater issues at sand mining facilities.
71. Ricky Bowman, Hermleigh, TX (2020-21). Soil contamination evaluation at farmland in Scurry County.
72. Larry Dunbar, Attorney, Houston, TX (2021-22). Expert witness for plaintiffs in flood damage lawsuit (one deposition).
73. West Texas Consultants, Andrews, TX (2023). Evaluation of groundwater quality from test holes for new well field near Pecos, TX, along with modeling of proposed well field operations.
74. Capital Area Groundwater Conservation District, Baton Rouge, LA (2023-24). Evaluation of drinking water well field management for water quality protection.
75. Iron Horse, LLC, Midland, TX (2023-24). Subsurface soil contamination assessment.
76. High Plains Underground Water Conservation District (2024). Evaluation of co-mingling well site.
77. Gilani Law Firm, Dallas, TX (2024-). Expert witness for plaintiffs in flood damage lawsuit (one deposition).

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