Curriculum Vitae for
CHARLES D. SHACKELFORD
(latest update: 03/12/23)

Department of Civil and Environmental Engineering
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EDUCATION

- Ph.D. (Civil Engineering, May 1988), University of Texas at Austin, Austin, TX 78712
  Dissertation Title: *Diffusion of Inorganic Chemical Wastes in Compacted Clay*
  Advisor: Dr. David E. Daniel
- M.S. (Civil Engineering, Aug. 1983), University of Texas at Austin, Austin, TX 78712
  Report Title: *Stability of Slopes Excavated in Cohesionless Soil Associated with Texas Lignite Mining*
  Advisor: Dr. Stephen G. Wright
- B.S. (Civil Engineering, May 1980), Missouri University of Science and Technology[1], Rolla, MO 65401
- High School Diploma (May 1973), O'Fallon Township High School, O'Fallon, IL 62269

ACADEMIC EXPERIENCE

- Professor, Dept. of Civil and Environmental Engineering[2], Colorado State University (since July 1, 1999)
- Associate Professor, Dept. of Civil Engineering, Colorado State University (July 1, 1993-June 30, 1999)
- Assistant Professor, Dept. of Civil Engineering, Colorado State University (Jan. 6, 1988-June 30, 1993)

ADMINISTRATIVE EXPERIENCE

- Head, Department of Civil and Environmental Engineering, Colorado State University, Fort Collins, CO 80523-1372 (July 1, 2014 – present)
- Interim Head, Department of Civil and Environmental Engineering, Colorado State University, Fort Collins, CO 80523-1372 (Aug. 1, 2013 – June 30, 2014)
- Associate Head, Department of Civil and Environmental Engineering, Colorado State University, Fort Collins, CO 80523-1372 (Jan. 5, 2012 – July 31, 2013)
- Director, *Rocky Mountain Regional Hazardous Substance Research Center* for EPA Region 8 (Nov. 1, 2001 – Oct. 31, 2007)

[1] Formerly, the University of Missouri-Rolla
[2] Name changed from Civil Engineering to Civil and Environmental Engineering on July 1, 2006

AWARDS/HONORS/RECOGNITION

23 Paper entitled, "Apparent salt diffusion coefficients for soil-bentonite backfills," published in the *Canadian Geotechnical Journal* (2020, 57(5), 623-634, http://dx.doi.org/10.1139/cgj-2019-0058) selected as the "Editor's Choice" for May 2020

22 Paper entitled, "Enhanced bentonites for containment of inorganic waste leachates by GCLs," published in *Geosynthetics International* (2018, 25(4), 392-411, http://www.icevirtuallibrary.com/page/authors/awards-for-papers) selected for the *Geosynthetics International Prize* (best paper in the journal) by the Institute of Civil Engineers, London, Oct. 4, 2019

21 *Life Member* of the American Society of Civil Engineers, Jan. 1, 2019

20 Selected by the Canadian Geotechnical Society as the lecturer for the *Spring 2019 Cross-Canada Lecture Tour* (https://www.cgs.ca/cross_canada.php)

19 Paper entitled, "Membrane behavior of unsaturated sodium bentonite," published in the *Journal of Geotechnical and Geoenvironmental Engineering* (2018, 144(1), 04017102, http://dx.doi.org/10.1061/(ASCE)GT.1943-5606.0001803) selected as the "Editor's Choice"

18 Paper entitled, "Apparatus for measuring coupled membrane and diffusion behavior of unsaturated sodium bentonite," published in the *Vadose Zone Journal* (2017, 16(9), http://doi:10.2136/vzj2016.12.0140) selected for promotion in the *Crop, Soils, Agronomy News* magazine and/or social media accounts by the Agronomy, Crop Science, and Social Science Societies

17 Paper entitled, "Membrane behavior of compacted sand-bentonite mixture," published in the *Canadian Geotechnical Journal* (2017, 54(9), 1284-1299, http://dx.doi:10.1139/cgj-2016-078) selected as the "Editor's Choice" for Jan. 2018

16 *Fellow* of the American Society of Civil Engineers, Dec. 16, 2015

15 Paper entitled, "The ISSMGE Kerry Rowe Lecture: The role of diffusion in environmental geotechnics" published in the *Canadian Geotechnical Journal* (2014, 51(11), 1219-1242, http://dx.doi.org/10.1139/cgj-2013-0277) selected in 2015 as honorable mention for the *Prix R.M. Quigley Award* for the best paper published in the calendar year by the Canadian Geotechnical Society

14 2013 (first) *Kerry Rowe Honorary Lecture* on Environmental Geotechnics, awarded by the International Society for Soil Mechanics and Geotechnical Engineering

13 *2011 Faculty Award for Excellence in Research*, awarded by the Department of Civil and Environmental Engineering, Colorado State University

12 *2010 Outstanding Reviewer Award*, ASCE *Journal of Geotechnical and Geoenvironmental Engineering*, awarded by the Geo-Institute of the American Society of Civil Engineers, Reston, VA.

11 *Richard S. Ladd Standards Development Award*, for time and effort spent on preparing ASTM Standard Designation D7100, "*Standard Test Method for Hydraulic Conductivity Compatibility Testing of Soils with Aqueous Solutions That May Alter Hydraulic Conductivity*," awarded by ASTM Committee D18 on Soil and Rock, June 12, 2006, Toronto

10 *2005 Outstanding Faculty Performance Award*, awarded by the Department of Civil Engineering, Colorado State University, May 2005

9 Elected to the *Academy of Civil Engineers*, Missouri University of Science and Technology (formerly University of Missouri, Rolla), April 22, 2005

8 2003 *Gold Key Award* for Civil Engineering Professor of the Year, awarded by the CSU Chapter of *Chi Epsilon*

7 *2002 Faculty Award for Excellence in Research*, awarded by the Department of Civil Engineering, Colorado State University

AWARDS/HONORS/RECOGNITION (continued)

6 1996 *Dean's Council Award of Excellence*, awarded by the College of Engineering, Colorado State University
5 1995 *Walter L. Huber Civil Engineering Research Prize*, awarded by the American Society of Civil Engineers, Reston, VA
4 1992 *National Young Investigator* (NYI) *Award*, awarded by the National Science Foundation, Arlington, VA
3 Paper entitled "Disposal barriers that release contaminants only by molecular diffusion" selected as one of the "ten best papers" at 1987 Oak Ridge Model Conference, TN
2 *The Earth Technology Corporation Fellowship, 1985-87*, awarded by The Earth Technology Corporation, Long Beach, CA 90807 ($24,000 award)
1 Engineering Foundation Fellowship, 1984-85 and 1985-86, awarded by the University of Texas, Austin

ENGINEERING EXPERIENCE

Registered Professional Civil Engineer

- California, Registration # C42934 (continuous since August 21, 1987)
- Colorado, Registration # 0027510 (continuous since 1991)

Independent Consulting Work, 1985-Present

- Consultant to the International Atomic Energy Agency (IAEA) on *Technical Aspects Related to the Design of Engineered Containment Barriers for Environmental Contamination* (for the IAEA, Vienna, Austria, Aug. 21, 2012-June 12, 2015)
- Evaluation of the technical approach for the remediation of areas located within the Minciaredda Area, Syndial Site, Porto Torres, Sardinia, Italy (for Trevi S.p.A., 5819, via Dismano, 47023 Cesena, Italy, Aug. 21-Sept. 30, 2013)
- Subject Matter Expert (SME) on engineered barriers for Phase I evaluation of decommissioning and/or long-term stewardship at the West Valley Demonstration Project and the Western New York Nuclear Service Center, 10282 Rock Springs Road, West Valley, New York 14171-0191 (for Enviro Compliance Services, Inc., 1571 Parkway Loop, Suite B, Tustin, CA 92780; July 5, 2012-Aug. 12, 2016)
- Hydraulic conductivity testing of 8 compacted clay samples from the Larimer County Landfill phase 6A closure project (for Terracon Consultants, Inc., 301 North Howes Street, Fort Collins, CO 80521; Oct. 17-Dec. 15, 2011)
- Laboratory testing (wet and dry particle-size distributions, standard and modified compaction curves, Atterberg limits, moisture contents, hydraulic conductivity) of samples collected from seven test pads in support of the Dinwoody Degradation Study (for J.R. Simplot Co. & Subsidiaries, Boise, ID, c/o Smokey Canyon Mine, Afton, WY 83110; Oct.5, 2010-Oct. 26, 2011)
- Large-scale hydraulic conductivity testing of two block samples recovered from an alternative cover test pad (for J.R. Simplot Co. & Subsidiaries, Boise, ID, c/o Smokey Canyon Mine, Afton, WY 83110; July 21, 2010-Aug. 18, 2010)
- Large-scale hydraulic conductivity testing of block samples recovered from alternative cover test pads (for J.R. Simplot Co. & Subsidiaries, Boise, ID, c/o Smokey Canyon Mine, Afton, WY 83110; Sept. 18, 2009-March 15, 2010)

ENGINEERING EXPERIENCE (continued)

Independent Consulting Work, 1985-Present (continued)

- Hydraulic conductivity testing of a compacted soil-bentonite specimen for use as a liner for the treatment ponds at the Burlington WWTP (for CTL Thompson Inc., 4001 Automation Way, Fort Collins, CO 80525; Aug. 17, 2009)
- Hydraulic conductivity testing of 16 compacted clay samples from the Larimer County Landfill Cover (for CTL Thompson Inc., 4001 Automation Way, Fort Collins, CO 80525; Sept. 23, 2008)
- Expert witness for review of evaporation pond design and performance near Colstrip, MT (for Beck, Amsden & Ruggiero PLLC, Attorneys at Law, 1946 Stadium Drive, Suite 1, Bozeman, MT 59715; Nov. 6, 2006-April 29, 2008)
- Hydraulic conductivity testing of two compacted clay soils (for CTL Thompson Inc., 4001 Automation Way, Fort Collins, CO 80525; Nov. 2, 2007)
- Hydraulic conductivity of a compacted soil sample from soil stockpile at Connell Pit in Timnath, CO (for CTL Thompson Inc., 4001 Automation Way, Fort Collins, CO 80525; Sept. 10-21, 2006)
- External consultant for estimating hydraulic conductivity of drainage materials for US Highway 20 Project in Oregon (for H. W. Lockner, Inc., 5917 Sunset Drive, Cheyenne, WY 82005; Aug. 2006)
- External consultant for evaluation of potential impact on ground water resulting from leachate migration from the Kestrel Hawk Recycling and Disposal Facility, Racine, WI (for Republic Services, Inc., Kestrel Hawk RDF, 1989 Oakes Rd., Racine, WI 53406; Nov. 2003-Feb. 2005)
- Large-scale hydraulic conductivity testing of block samples recovered from three compacted clay liner test pads at the Rocky Mountain National Arsenal (for Foster Wheeler Environmental Corporation, Rocky Mountain Arsenal, Commerce City, CO; Sept. 2001 – March 2002)
- Evaluation of the potential effects of revised process water/leachate characteristics on the hydraulic conductivity of GCLs used for base liner at the Tailings Management Area (TMA) for the proposed Nicolet Mining Company's zinc/copper mine located near Crandon, Wisconsin (for Foth & Van Dyke, Green Bay, WI; Oct.-Nov. 2001)
- Technical consultant on the Tri-State permitting project (for GeoTrans, Inc., Westminster, CO; June 2001)
- Technical consultant on clay liner to leachate compatibility testing program for the enhanced hazardous waste landfill at the Rocky Mountain National Arsenal (for GeoTrans, Inc., Westminster, CO; June 2001)
- Large-scale hydraulic conductivity testing of conglomerate bedrock samples for the High Savery Dam Project in Wyoming (for Hollingsworth & Assoc., Inc., Sheridan, CO; April and Dec. 2000).
- Served as member of 5-year review panel for evaluation of solidification and cover system remedy at the Shattuck Chemical Superfund Site in Denver (for S. Cohen and Associates, Inc., McLean, VA; June-Nov.1999).
- Provided technical expertise in support of the GCL compatibility testing for base liner at the tailings management area for the proposed Nicolet Mining Company (NMC) zinc/copper mine located near Crandon, Wisconsin (for Foth & Van Dyke, Green Bay, WI: March-April 1999)
- Provided report on results of the testing of two soils being considered for use in the evaporation ponds at the Truba City, AZ, Uranium Mill Tailings Remedial Action disposal site as part of the groundwater remediation program (for MACTEC-ERS, 2597 B3/4 Rd., Grand Junction, CO; March-April 1999)
- Provided technical expertise for field and laboratory determination of infiltration model parameters for Arroyo Pasajero Flood Area (for Shepherd Miller, Inc., Fort Collins, CO; Feb. 1998-Aug. 1998).
- Provided technical review comments on Bozeman Superfund Solvent Site study (for Flow Technology, Bozeman, MT; April 1998)

ENGINEERING EXPERIENCE (continued)

Independent Consulting Work, 1985-Present (continued)

- GCL compatibility testing for base liner at the tailings management area for the proposed Nicolet Mining Company (NMC) zinc/copper mine located near Crandon, Wisconsin (for Foth & Van Dyke, Green Bay, WI; Dec. 1997-April 1998)
- Prepared report on "Design and Construction Recommendations for Proposed Evaporation Ponds at Lucky Mc Uranium Tailings Site, Wyoming" (for Pathfinder Mines Corp., Mills, WY; March 1997)
- Technical consultant on "Characterization of the Sodium Sulfate Solid Waste (Tailings) Disposal Facility, Owens Lake, CA" (for Shepherd Miller, Inc., Fort Collins, CO; 1996)
- Member of Technical Academic Review Group (TARG) for evaluation of Lockheed Idaho Technologies Buried Waste Integrated Demonstration (BWID) program (for Idaho National Engineering Laboratory, Idaho Falls, ID; Dec. 1994-Sept. 1995)
- Laboratory permeability study on chemically treated and untreated soil specimens (for EG&G Idaho National Engineering Laboratory, Idaho Falls, ID; Aug.-Sept. 1994)
- Evaluation of CQA for Closure of Berry Street Mall Landfill, Roseville, CA (for State of California, Sacramento, c/o Allen, Matkins, Leck, Gamble et al., Irvine CA, and GeoLogic Assoc., Diamond Bar, CA; June 1994)
- Technical consultant to Studio Geotecnico Italiano srl, Milan, Italy, to develop laboratory and analytical capabilities for contaminant transport testing (at SGI, Milan, Italy; Jan. 4-14 and June 8-Aug. 6, 1993)
- Review of design for the Gurulmundi Secure Landfill near Brisbane, Australia (for Woodward-Clyde Consultants, Denver, CO, and AGC Woodward-Clyde Pty. Ltd., Brisbane, Australia; 1992)
- Expert witness for review of permit application for the Guardian Landfill Site, Dallas County, Texas (for City of Wilmer, TX, through Sheehy, Lovelace, and Mayfield, Waco, TX; 1992)
- Expert panel member for review of macro-engineering approach for remediation of US DOE facility at Hanford, Washington (for A.T. Kearney, Richland, WA; 1992)
- External reviewer for EPA engineering bulletin on slurry walls (for Science Applications International Corporation, Cincinnati, OH; 1991)
- Expert witness for the geotechnical report on the permit application for the Otero County Regional Landfill expansion (for US Air Force, Holloman AFB, NM; 1991)
- Flexible-wall permeability/compatibility tests on sand/bentonite mixtures for proposed liner system (for Shepherd Miller, Inc., Fort Collins, CO; 1990)
- Contaminant transport analysis for BFI's proposed Livingston, Louisiana, hazardous waste facility (for David E. Daniel, Austin, TX; 1989)
- Report for compatibility of asphalt liner system, Rocky Mountain National Arsenal (for David E. Daniel, Austin, TX; 1987)
- Long-term (1 year), low-gradient (2-10), flexible-wall permeability tests on two soil samples using leachate from Exxon Minerals Company's Crandon Project (EMC 21110). Monitored sulfate concentrations using ion chromatography (for David E. Daniel, Austin, TX; 1986)
- Report on the effects of effective porosity, desiccation, and attenuation by clay minerals on clay liner performance for a study on the proposed Pyott Road Sanitary Landfill, McHenry County, Illinois (for David E. Daniel, Austin, TX; 1985)

ENGINEERING EXPERIENCE (continued)

Summer Research Intern, Oak Ridge National Laboratory, Oak Ridge, Tennessee, Summer, 1984

- Field electromagnetic and geohydrologic studies of contaminant plumes for the US Nuclear Regulatory Commission at two uranium tailings dam sites in Wyoming

Geotechnical Engineer, Ardaman & Associates, Inc., Orlando, Florida, 1983-1984

- Analyzed and designed foundations for commercial structures, with extensive experience writing consulting reports

Civil Design Engineer, Pacific Gas & Electric Company, San Francisco, 1980-1981

- Performed feasibility studies/quantity take-offs, structural analysis and design, earth slope stability analysis, and hydraulic analysis and design for company's nuclear (Diablo Canyon) and hydroelectric facilities

INVITED ACTIVITIES

Invited Conference/Workshop/Meeting Presentations

51 Invited lecture (webinar) on, "Membrane Behavior and Chemico-Osmosis in Clays," presented at the *International Webinar Series on Geoenvironmental Engineering*, Department of Civil, Materials, and Environmental Engineering, University of Illinois at Chicago, Nov. 3, 2022

50 Invited presentation on, "Semipermeable Membrane Behavior of Geosythetic Clay liners," presented at the International Geosynthetics Society (IGS) *7th European Geosynthetics Conference*, Warsaw, Poland, Sept. 4-7, 2022

49 Invited lecture (webinar) on, "Fundamental Considerations for Column Testing of Engineered, Clay-Based Barriers," presented at the International Society of Soil Mechanics and Geotechnical Engineerin (ISSMGE) *3rd International Symposium on Coupled Phenomena in Environmental Geotechnics* (CPEG2020), Kyoto, Japan, Oct. 21, 2021

48 Invited lecture (webinar) on, "Membrane Behavior and Chemico-Osmosis in Clays," presented at the International Faculty Development Programme on "Sustainable Developments and Practices in Geotechnical and Geoenvironmental Engineering," Rajagiri School of Engineering and Technology (Autonomous)," Kerala, India, Oct. 12, 2021

47 Invited lecture on, "Membrane Behavior and Chemico-Osmosis in Clays," presented at the meeting of the Southern British Columbia Section of the Canadian Geotechnical Society, Burnaby, British Columbia, Canada, June 6, 2019

46 Invited lecture on, "The Role of Diffusion in Environmental Geotechnics," presented at the meeting of the Northern Alberta & Territories Section of the Canadian Geotechnical Society, Edmonton, Alberta, Canada, June 5, 2019

45 Invited lecture on, "The Role of Diffusion in Environmental Geotechnics," presented at the meeting of the Southern Saskatchewan Section of the Canadian Geotechnical Society, Regina, Saskatchewan, Canada, June 4, 2019

44 Invited lecture on, "Enhanced Bentonites for Sustainable Chemical Containment," presented at the meeting of the Southern Alberta Section of the Canadian Geotechnical Society, Calgary, Alberta, Canada, June 3, 2019

43 Invited lecture on, "Enhanced Bentonites for Sustainable Chemical Containment," presented at the meeting of the Manitoba Section of the Canadian Geotechnical Society, Winnipeg, Manitoba, Canada, May 30, 2019

INVITED ACTIVITIES (continued)

Invited Conference/Workshop/Meeting Presentations (continued)

42 Invited lecture on, "The Role of Diffusion in Environmental Geotechnics," presented at the meeting of the Northwestern Ontario Section of the Canadian Geotechnical Society, Thunder Bay, Ontario, Canada, May 29, 2019

41 Invited lecture on, "The Role of Diffusion in Environmental Geotechnics," presented at the meeting of the Eastern Ontario Section of the Canadian Geotechnical Society, Ottawa, Ontario, Canada, May 28, 2019

40 Invited lecture on, "The Role of Diffusion in Environmental Geotechnics," presented at the meeting of the Southeastern Ontario Section of the Canadian Geotechnical Society, Kingston, Ontario, Canada, May 27, 2019

39 Invited lecture on, "The Role of Diffusion in Environmental Geotechnics," presented at the meeting of the Western Québec Section of the Canadian Geotechnical Society, Montreal, Québec, Canada, May 24, 2019

38 Invited lecture on, "Enhanced Bentonites for Sustainable Chemical Containment," presented at the meeting of the Eastern Québec Section of the Canadian Geotechnical Society, Québec City, Québec, Canada, May 23, 2019

37 Invited lecture on, "The Role of Diffusion in Environmental Geotechnics," presented at the meeting of the New Brunswick Section of the Canadian Geotechnical Society, Fredericton, New Brunswick, Canada, May 22, 2019

36 Invited lecture on, "Membrane Behavior and Chemico-Osmosis in Clays," presented at the meeting of the Newfoundland and Labrador Section of the Canadian Geotechnical Society, St. John's, Newfoundland and Labrador, Canada, May 21, 2019

35 Invited lecture on, "Sustaining Chemical Containment with Enhanced Bentonite-Based Barriers," presented at the *2018 GEOMEAST International Congress and Exhibition, Sustainable Civil Infrastructures: Structural Integrity*, Cairo, Egypt, Nov. 24-28, 2018

34 Invited General Reporter on, "Engineered Barriers" and "Transport, Persistence and Fate of Pollutants," presented at the *8th International Congress on Environmental Geotechnics*, Hangzhou, China, Oct. 28-Nov. 1, 2018

33 Invited feature lecture on, "Coupled Membrane and Diffusion Testing of Active Clays for Barrier Applications," *International Workshop on Advances in Laboratory Testing & Modelling of Soils and Shales*, Villars-sur-Ollon, Switzerland, Jan. 18-20, 2017

32 Invited presentation on, "Research Challenges Related to Coupled Flows," for Session VIII: Coupled Phenomena at the NSF Workshop on *Geotechnical Fundamentals in the Face of New World Challenges*, National Science Foundation, Arlington, VA, July 17-19, 2016.

31 Invited *R. Kerry Rowe Honorary Lecture on Environmental Geotechnics* entitled, "The Role of Diffusion in Environmental Geotechnics," presented at the *7th International Congress on Environmental Geotechnics*, Melbourne, Australia, Nov. 9-14, 2014

30 Invited presentation on, "Coupled Membrane Behavior and Diffusion in Clay Barriers," for Workshop Focus Group 2: THCBM Couplings – Fundamental Processes at the NSF Workshop on *Education of the Future Geotechnical Engineers in Response to Emerging Multi-scale Soil-Environment Problems*, University of Cambridge, England, Sept. 5-6, 2014

INVITED ACTIVITIES (continued)

Invited Conference/Workshop/Meeting Presentations (continued)

29 Invited opening lecture on, "The Role of Diffusion in Environmental Geotechnics," presented at the Seminar on *The Contribution of Environmental Geotechnics to Subsoil Protection Against Contaminants* (*Il Contributo della Geotecnica alla Protezione del Sottosuolo Dagli Inquinanti*) sponsored by the Italian Geotechnical Society (Associazione Geotecnica Italiana or AGI) and the University Parthenope of Naples (Università degli Studi di Napoli Parthenope), Naples, Italy, July 18, 2014

28 Invited *R. Kerry Rowe Honorary Lecture on Environmental Geotechnics* entitled, "The Role of Diffusion in Environmental Geotechnics," presented at the *18th International Conference on Soil Mechanics and Geotechnical Engineering*, Paris, France, Sept. 3, 2013

27 Invited general reporter presentation on, " Membrane Behavior in Engineered Bentonite-Based Containment Barriers: State of the Art," presented at the ISSMGE TC215 Symposium on *Coupled Phenomena in Environmental Geotechnics, from Theoretical and Experimental Research to Practical Applications (CPEG 2013)*, Torino, Italy, July 1-3, 2013

26 Invited presentation on, "Membrane Behavior in Engineered Clay Barriers for Geoenvironmental Containment: State of the Art," presented at the ASCE Geo-Institute's Conference *Geo-Congress 2012:State of the Art and Practice in Geotechnical Engineering*, Oakland, CA, March 25-29, 2012

25 Invited presentation on, "Membrane Behavior in Geosynthetic Clay Membranes," presented at the ASCE Geo-Institute's Conference *Geo-Frontiers 2011*, Dallas, TX, March 13-16, 201124 Invited presentation on, "Critical Assessment of Radionuclide Transport through Engineered Barrier Systems for Long-Term Waste Containment," at the CRESP DOE Landfill Partnership Meeting, Bethesda, MD, Aug. 6, 2010

23 Invited presentation on, "Column Testing for Measurement of Contaminant Transport Properties," at the semi-annual meeting of ASTM Committee D18.04, Denver, CO, June 24, 2008

22 Invited keynote presentation on, "Remediation," at the *US-Japan Workshop on Geoenvironmental Engineering* held in conjunction with ASCE Geo-Institute's *GeoCongress 08: The Challenge of Sustainability in the Geoenvironment*, New Orleans, LA, March 7-9, 2008

21 Invited presentation on, "Liners for Anaerobic Animal Waste Lagoons," at the workshop on *Improving Communication between the Colorado Livestock Association* and Colorado State University, Colorado State University, Feb. 19, 2008

20 Invited presentation on, "Selected Issues Affecting the Use and Performance of GCLs in Waste Containment Applications," *21st Geotechnical Engineering Conference*, Politecnico di Torino, Torino, Italy, Nov. 27-28, 2007

19 Invited presentation on, "Geotechnical Implications of Slurry Injection Soil Mixing and Fracturing," 2007 Focus Meeting of the *University Consortium for Field Focused Groundwater Contamination Research*, Brown Palace Hotel, Denver, CO, Oct. 16-17, 2007

18 Invited keynote presentation on, "Environmental Issues in Geotechnical Engineering," presented at the *16th International Conference on Soil Mechanics and Geotechnical Engineering*, Osaka, Japan, Sept. 12-16, 2005

17 Invited presentation on, "Comparison of Model Predictions and Field Data for an Alternative Cover in a Semiarid Climate," presented at the *Symposium on Mines and the Environment*, Rouyn-Noranda, Quebec, Canada, May 15-18, 2005

16 Invited presentation on, "Resources of the Rocky Mountain Regional HSRC," presented at the *Workshop on Mining Impacted Native American Lands*, Reno, NV, Sept. 9-11, 2003

INVITED ACTIVITIES (continued)

Invited Conference/Workshop/Meeting Presentations (continued)

15 Invited presentation on, "Research Activities at the Rocky Mountain Regional Hazardous Substance Research Center," presented at the Joint Conference of the *9th Billings Land Reclamation Symposium* and the *20th Annual Meeting of the American Society of Mining and Reclamation*, Billings, MT, June 3-6, 2003

14 Invited presentation on, "Remediation of Mine Waste Sites through the Rocky Mountain Regional Hazardous Substance Research Center (RMRHSRC)," presented at *Hardrock Mining 2002: Issues Shaping the Industry*, Westminster, CO, May 7-9, 2002

13 Invited presentation on, "Rocky Mountain Regional Hazardous Substance Research Center (RMRHSRC)," sponsored by Montana Tech of the University of Montana, presented at the *Mine Design, Operations and Closure Conference*, Polson, MT, April 21-25, 2002

12 Invited keynote lecturer on "Coupled Solute Diffusion and Membrane Behavior of Clay Barrier Materials," presented at the International Workshop on *Clay Behaviour: Chemico-Mechanical Coupling*, Maratea, Italy, June 28-30, 2001

11 Invited keynote lecturer on "Geoenvironmental Engineering for *In Situ* Remediation," presented at the *International Conference on Geotechnical and Geological Engineering* (*GeoEng 2000*), sponsored by the International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE), the International Society for Rock Mechanics (ISRM), and the International Society for Engineering Geology and the Environment (IAEGE), Melbourne, Australia, Nov. 19-24, 2000

10 Invited presentation on "Measuring Chemico-Osmosis in Fine-Grained Soils," for the *International Symposium on Physical Modelling and Testing in Environmental Geotechnics*, sponsored by the Network of European Centrifuges for Environmental Geotechnics Research (NECER), La Baule, France, May 15-17, 2000

9 Invited presentation on "Modeling Contaminant Transport through Waste Containment Liners," for the 17th Geotechnical Conference of Torino, *Control and Management of Subsoil Pollutants*, Torino, Italy, Nov. 23-25, 1999

8 Invited state-of-the-art lecturer on "Remediation of Contaminated Land: An Overview," for the Plenary Session, *Environmental Geotechnics and Land Contamination Assessment and Remediation*, at the *XI Panamerican Conference on Soil Mechanics and Geotechnical Engineering*, Iguassu Falls, Brazil, Aug. 8-12, 1999

7 Invited state-of-the-art report on "Prevention Techniques: Models and Parameters," at the *Environmental Geotechnics Symposium* (SIGA '98) sponsored by the Sao Paulo Chapter of the *Brazilian Society for Soil Mechanics and Geotechnical Engineering*, Sao Paulo, Sept. 29 & 30, 1998

6 Invited state-of-the-art presentation on "Modeling and Analysis in Environmental Geotechnics: An Overview of Practical Applications," at the *2nd International Congress on Environmental Geotechnics, IS-Osaka '96*, Osaka, Japan, Nov. 5-8, 1996

5 Invited state-of-the-art presentation on "Geoenvironmental Design Considerations for Tailings Dams," at the *International Symposium on Seismic and Environmental Aspects of Dams Design: Earth, Concrete and Tailings Dams*, Santiago, Chile, Oct. 14-18, *Sociedad Chilena de Geotecnia*, 1996

4 Invited presentation on "Column Testing for Geoenvironmental Applications," for the conference on *Geoenvironmental Issues Facing the Americas*, sponsored by the National Science Foundation, University of Puerto Rico, Mayaguez, Sept. 21, 1994

3 Invited state-of-the-art presentation on "Waste-Soil Interactions that Alter Hydraulic Conductivity," ASTM *Symposium on Hydraulic Conductivity and Waste Contaminant Transport in Soil*, San Antonio, TX, Jan. 21-22, 1993

INVITED ACTIVITIES (continued)

Invited Conference/Workshop/Meeting Presentations (continued)

2 Invited presentation on "Contamination and Decontamination of Subsoil," for conference on *Geotechnical Aspects in the Design and Control of Waste Containment Systems*, sponsored by the Italian Geotechnical Society, held at Milazzo, Sicily, April 13-15, 1994

1 Invited conference presentation on "Laboratory Diffusion Testing for Waste Disposal," *26th Annual Clay Minerals Society Meeting,* Sacramento, CA, Sept., 25-28, 1989

Invited Seminar Presentations

36 Invited seminar on, "Enhanced Bentonites for Sustainable Chemical Containment," Department of Groundwater Resources, Government of Thailand, Bangkok, Thailand, Jan. 9, 2020

35 Invited seminar on, "Enhanced Bentonites for Sustainable Chemical Containment," Department of Civil and Infrastructure Engineering, School of Engineering & Technology, Asian Institute of Technology, Bangkok, Thailand, Jan. 8, 2020

34 Invited seminar on, "Semipermeable Membrane Behavior in Bentonite-Based Barriers," Department of Civil and Environmental Engineering, Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, Hong Kong, Aug. 24, 2016

33 Invited seminar on, "The Role of Diffusion in Environmental Geotechnics," Department of Civil Engineering, Queen's University and the Royal Military College, Kingston, Ontario, Canada, Jan. 22, 2014

32 Invited seminar on, "Research Accomplishments, Teaching Philosophy, and Vision in Civil Infrastructure and Environmental Engineering at Khalifa University," Khalifa University of Science, Technology, and Research, Abu Dhabi, United Arab Emirates, May 14, 2012

31 Invited seminar on, "Research in Geoenvironmental Engineering at Colorado State University," MWH, Inc. 3665 JFK Parkway, Suite 1-206, Fort Collins, CO, Feb. 23, 2012

30 Invited seminar on, "Collaborative and Interdisciplinary Research in Geoenvironmental Engineering at Colorado State University," Department of Civil and Environmental Engineering, Northeastern University, Boston, MA, Jan. 26, 2012

29 Invited seminar on, "Membrane Behavior in Clay Barriers for Geoenvironmental Containment: Background, Significance, and Relevance," Department of Civil Engineering, Queen's University, Kingston, Ontario, Canada, April 28, 2010

28 Invited seminar on, "Collaborative and Interdisciplinary Education and Research in Geoenvironmental Engineering at Colorado State University," Division of Engineering, Colorado School of Mines, Golden, CO, May 2005

27 Invited seminar on, "Clay Membrane Barriers-Properties and Performance," Department of Civil, Architectural and Environmental Engineering, University of Missouri-Rolla, Rolla, MO, Oct. 20, 2004

26 Invited seminar on, "Evaluation of Hydrologic Models for Alternative Covers at Mine Waste Sites," for the US EPA's *Environmental Research Seminar* at the US EPA Region 8 Headquarters, Denver, CO, May 12, 2004

25 Invited seminar on, "Research of the Rocky Mountain Regional Hazardous Substance Research Center," for the US EPA's *Environmental Research Seminar* at the US EPA Region 8 Headquarters, Denver, CO, May 12, 2004

24 Invited seminar on, "Clay Membrane Barriers-Properties and Performance," for the Environmental Science and Engineering Program (Center for Environmental Resource Management), University of Texas at El Paso, El Paso, TX, Nov. 19, 2003

23 Invited seminar on, "Clay Membrane Barriers-Properties and Performance," for the Department of Civil Engineering, Bucknell University, Lewisburg, PA, April 24, 2003

INVITED ACTIVITIES (continued)

Invited Seminar Presentations (continued)

22 Invited seminar on, "Long-Term Behavior of Geosynthetic Clay Liners (GCLs) Permeated with Low-Concentration Calcium Chloride Solutions," for the Department of Civil Engineering, Bucknell University, Lewisburg, PA, April 24, 2003

21 Invited seminar on, "Clay Membrane Barriers-Properties and Performance," for the Department of Soil and Crop Science, Colorado State University, Fort Collins, CO, April 3, 2003

20 Invited seminar on, "Flow and Transport through Clay Membrane Barriers," for the Geo-Engineering Program, University of Wisconsin-Madison, Madison, WI, May 22, 2002.

19 Invited seminar on, "Flow and Transport through Clay Membrane Barriers," for the Department of Environmental Engineering and Science, Colorado School of Mines, Golden, CO, March 21, 2002

18 Invited seminar on, "Chemico-Osmotic Efficiency of a Geosynthetic Clay Liner," for the Department of Chemistry and Geochemistry, Colorado School of Mines, Golden, CO, Feb. 19, 2002

17 Invited seminar on, "Membrane Behavior and Solute Diffusion through Clay Barrier Materials," for the Saskatoon Geotechnical Group, Saskatoon, Saskatchewan, Canada, March 6, 2000

16 Invited seminar on, "Some Recent Research Regarding Containment Barrier Technology with Implications for Geoenvironmental Engineering Practice," Department of Civil and Environmental Engineering, University of Edinburgh, Edinburgh, Scotland, June 2, 1997

15 Invited seminar on, "Modeling and Analysis in Environmental Geotechnics: An Overview of Practical Applications," Department of Civil and Materials Engineering, University of Illinois-Chicago, Chicago, IL, Feb. 27, 1997

14 Invited seminar on, "A Cumulative Mass Approach for Column Testing," Universidad Catolica de Chile, Santiago, Chile, May 10, 1994

13 Invited seminar on, "Column Testing for Environmental Geotechnics: Applications, Methodologies, and Results," *Environmental Mechanics Seminar*, Department of Civil and Environmental Engineering, Duke University, Durham, NC, Dec. 7, 1993

12 Invited seminar on, "Column Testing for Environmental Geotechnics: Applications, Methodologies, and Results," *Department of Civil Engineering Seminar Series*, Texas Tech University, Lubbock, TX, Nov. 15, 1993

11 Invited seminar on, "Measurement of Solute Breakthrough Curves with a Flow Pump," *Geoenvironmental Engineering Seminar*, Department of Civil, Environmental, and Architectural Engineering, University of Colorado, Boulder, CO, April 8, 1993

10 Invited seminar on, "The Role of Diffusion in Contaminant Migration through Soil Barriers," presented at a meeting of the Italian Geotechnical Society (Northern Group) held at the Italian National Electricity Board, Hydraulic and Structural Research Center (ENEL-CRIS), Milan, Italy, Jan. 13, 1993

9 Invited seminar on, "Laboratory Testing for Flow and Transport Through Earthen Barriers: Some Implications for Applications," *Civil Engineering Colloquium*, Tufts University, Boston, MA, Sept. 15, 1992

8 Invited seminar on, "Some Practical and Theoretical Implications of Laboratory Testing for Waste Geotechnics," *Geotechnical Engineering Seminar*, Purdue University, West Lafayette, IN, Mar. 16, 1992

7 Invited seminar on, "Some Practical and Theoretical Implications of Laboratory Testing for Waste Geotechnics," *Geotechnical Engineering Seminar*, Virginia Polytechnic Institute and State University, Blacksburg, VA, Feb. 14, 1992

INVITED ACTIVITIES (continued)

Invited Seminar Presentations (continued)

6 Invited seminar on, "Some Practical and Theoretical Implications of Laboratory Testing for Waste Geotechnics," *Geotechnical Engineering Seminar*, University of Wyoming, Laramie, WY, Feb. 11, 1992

5 Invited seminar on, "Some Practical and Theoretical Implications of Laboratory Testing for Waste Geotechnics," *Geotechnical Engineering Seminar*, University of California, Davis, CA, Feb. 3, 1992

4 Invited seminar on, "Diffusion of Inorganic Chemical Wastes in Compacted Clay," *Water Resources Engineering Seminar*, Colorado State University, Fort Collins, CO, Spring, 1989

3 Invited seminar on, "Diffusion of Inorganic Chemical Species in Compacted Clay," *Agricultural and Chemical Engineering Seminar*, Colorado State University, Fort Collins, CO, Fall, 1988

2 Invited seminar on, "Diffusion of Inorganic Chemical Species in Compacted Clay," *Geotechnical Engineering Seminar*, University of Colorado, Boulder, CO, Spring, 1988

1 Invited seminar on, "Diffusion of Inorganic Chemical Wastes in Compacted Clay," *Geotechnical Engineering Seminar*, Massachusetts Institute of Technology, Boston, MA, Spring, 1987

Invited Course Instructor

10 Invited lecture presentation entitled, "Geotechnical Considerations for Redevelopment of Contaminated Sites Remediated with the ZVI-Clay Technology," for course entitled, "Ground Improvement Engineering" (CENG 452), Department of Civil and Environmental Engineering, Bucknell University, Lewisburg, PA, Apr. 23, 2009

9 Invited lecture presentation entitled, "Clay Membrane Testing Using a Flexible-Wall Apparatus," for course entitled, "Geotechnical Engineering I" (CENG 350), Department of Civil and Environmental Engineering, Bucknell University, Lewisburg, PA, Aug. 28, 2007

8 Invited lecture presentation on "Waste Containment Liners," for course entitled, "Manure Management and the Environment" (AN 448/SC448), Departments of Animal Sciences and of Soil and Crop Sciences, Colorado State University, Fort Collins, CO, Oct. 18, 2006

7 Invited presentation to the senior class on the demands and rewards of being a university faculty member (CE 210, Senior Seminar Class), Department of Civil, Architectural and Environmental Engineering, University of Missouri-Rolla, Rolla, MO, Oct. 20, 2004

6 Invited lecture presentation entitled, "Hydraulic Conductivity, Consolidation, and Membrane Behavior of Model Backfill-Slurry Mixtures for Vertical Cutoff Walls," for course entitled, "Environmental Geotechnology" (CENG 451), Department of Civil and Environmental Engineering, Bucknell University, Lewisburg, PA, Apr. 26, 2004

5 Invited lecture presentation entitled, "Liners for Ponds and Lagoons," for course entitled, "Manure Management and the Environment" (AN448/SC448), Departments of Animal Sciences and of Soil and Crop Sciences, Colorado State University, Fort Collins, CO, Oct. 13, 2002

4 Invited lecture presentations (3 days, 9 hours) for course entitled, "Pollutant Transport through Soils and Remediation of Contaminated Soil," at the Federal University (COPPE) of Rio de Janeiro, Rio de Janeiro , Brazil, Aug.17, 18, and 25, 2000

3 Invited lecture presentations (3 days, 15 hours) for course entitled, "Pollutant Transport through Soils and Remediation of Contaminated Soil" at the University of Sao Paulo, Sao Paulo , Brazil, Aug. 14-16, 2000

2 Invited visiting lecturer for seminar course entitled, "Soil Liners and Covers for Landfills", Engineering Department, National University of the South (Universidad Nacional Del Sur), Bahia Blanca, Argentina, Aug. 14-18, 1995

INVITED ACTIVITIES (continued)

Invited Course Instructor (continued)

1 Invited graduate course instructor entitled, "Contaminant Migration by Diffusion", *Geotechnical Aspects of Hazardous Waste Management*, University of Colorado-Denver, Denver, CO, Fall, 1988

Invited Panel Member

8 Invited member of the panel on *International Collaboration in Geoenvironmental Engineering: Opportunities and Challenges*, held at the ASCE Geo-Institute's *GeoCongress 08: The Challenge of Sustainability in the Geoenvironment*, New Orleans, LA, Mar. 10, 2008

7 Invited member of the *Committee on Assessing the Performance of Surface and Subsurface Engineered Barriers*, The National Academies, Division on Earth and Life Studies, Board on Earth Sciences and Resources, 500 Fifth Street, NW, Washington, DC 20001 (Aug. 2005-Apr. 30, 2007)

6 Invited member of expert panel for review of proposals for the *Canada Foundation for Innovation*, Toronto, Ontario, Canada, Oct. 23-24, 2003

5 Invited member of expert panel for review of proposals for the *Canada Foundation for Innovation*, Toronto, Ontario, Canada, Oct. 9-10, 2001

4 Invited panel member for Discussion Session No. 5.3 on "Recent Developments in Containment Techniques" at the *XV International Conference on Soil Mechanics and Geotechnical [Foundation] Engineering*, Istanbul, Turkey, Aug. 27-31, 2001

3 Invited featured panelist on "Landfills" for the 2nd British Geotechnical Society's *Geoenvironmental Engineering Conference*, Institute of Civil Engineers, London, Sept. 13-15, 1999

2 Invited featured workshop panelist on "Unsaturated and Saturated Moisture and Contaminant Transport" for the British Geotechnical Society's *Geoenvironmental Engineering Conference*, University of Wales, Cardiff, Wales, Sept. 16-18, 1997

1 Invited panel member for Discussion Session No. 6.1 on "Pollutants Containment via Passive Barriers" at the *XIV International Conference on Soil Mechanics and Geotechnical [Foundation] Engineering*, Hamburg, Germany, Sept. 6-12, 1997

Invited Conference/Workshop Participant

14 Invited participant, NSF Workshop on *Geotechnical Fundamentals in the Face of New World Challenges*, National Science Foundation, Arlington, VA, July 17-19, 2016

13 Invited participant, NSF Workshop on *Education of the Future Geotechnical Engineers in Response to Emerging Multi-scale Soil-Environment Problems*, University of Cambridge, England, Sept. 5-6, 2014

12 Invited participant, *CRESP (Consortium for Risk Evaluation with Stakeholder Participation) DOE Landfill Partnership Meeting*, Bethesda, MD, Aug. 6, 2010

11 Invited participant, US DOE Workshop on *Landfill Technology Development*, Oak Brook, IL, Oct. 7-8, 2008

10 Invited participant, US-Japan Workshop on *Geoenvironmental Engineering* held in conjunction with ASCE Geo-Institute's *GeoCongress 08: The Challenge of Sustainability in the Geoenvironment*, New Orleans, LA, Mar. 7-9, 2008

9 Invited participant, NSF workshop on *Emerging Geoenvironmental Technologies*, University of Illinois-Chicago, Chicago, IL, Sept. 18-19, 2003

8 Invited Discusser for the session on "Management of Contaminated Sites" at the 4th International Congress on Environmental Geotechnics (4ICEG), Rio de Janeiro, Brazil, Aug. 11-15, 2002

7 Invited leader for panel on *Barrier Performance Prediction* at the DOE/EPA/DuPont sponsored *Containment Workshop 1: Performance and Verification of Barriers through Prediction and Monitoring*, Baltimore, MD, June 30-July 2, 2002

INVITED ACTIVITIES (continued)

Invited Conference/Workshop Participant (continued)

6 Invited Discussion Facilitator for the "Workshop Education in Environmental Geotechnics: Overseas Practice" at the *3rd International Congress on Environmental Geotechnics,* Lisbon, Portugal, Sept. 7-11, 1998

5 Invited participant, DOE/EPA/DuPont sponsored *International Containment Technology Workshop*, Baltimore, MD, Aug. 28-31, 1995

4 Invited participant for *IFAI Professor Training Course for Geosynthetics*, Auburn University, Auburn, AL, July 31-Aug. 4, 1995

3 Invited participant, NSF and the Puerto Rico Industrial Development Bank Workshop on *Geoenvironmental Issues Facing the Americas*, University of Puerto Rico, Mayaguez, Puerto Rico, Sept. 21-24, 19942 Invited participant, Civil Engineering Research Foundation (CERF) Workshop on *Defining Geo-Engineering for the 21st Century*, Xerox Document University, Leesburg, VA, May 20-21, 1994

1 Invited participant, NSF US - Canada Workshop on *Recent Accomplishments and Future Trends in Geomechanics in the 21st Century*, University of Oklahoma, Norman, OK, Oct. 21-23, 1992

TEACHING

Undergraduate Courses

Course Prefix	Course Title	Year	Sem.	Sem. No.	Sem. Score	Total No.	Total Score
CE 256	Statics for Non-Engineers	1998	Fall	76	3.3	**145**	**4.0**
CE 256		1996	Fall	69	4.7		
CE 260	Engineering Mechanics: Statics	1999	Fall	72	4.2	**115**	**4.1**
CE 260		1989	Spring	43	3.8		
CE 261	Engineering Mechanics: Dynamics	2000	Spring	52	4.4	**121**	**4.5**
CE 261		1999	Spring	42	4.5		
CE 261		1989	Fall	27	4.5		
CE 262	Engineering Mechanics: Statics & Dynamics	1993	Fall	52	3.5	**52**	**3.5**
CE 350	Soil Mechanics for Non-Engineers	1991	Fall	54	2.5	**181**	**3.7**
CE 350		1990	Fall	68	4.2		
CE 350		1989	Fall	59	4.2		
CE 350		1988	Fall	87	NA		
CE 423	Groundwater Engineering	1991	Spring	30	4.1	**30**	**4.1**
CIVE 355	Introduction to Geotechnical Engineering	2013	Spring	41	4.5	**1085**	**4.2**
CIVE 355		2012	Spring	33	4.5		
CIVE 355		2011	Spring	39	4.1		
CIVE 355		2010	Spring	37	4.0		
CIVE 355		2009	Spring	35	4.1		
CIVE 450		2008	Spring	75	4.2		
CE 450		2007	Spring	73	4.3		
CE 450		2003	Spring	81	4.2		
CE 450		2001	Spring	67	4.6		
CE 450		2000	Spring	66	4.4		
CE 450		1999	Spring	62	4.3		
CE 450		1997	Spring	74	4.2		
CE 450		1995	Spring	97	3.6		
CE 450		1993	Spring	61	4.1		
CE 450		1992	Spring	88	4.4		
CE 450		1991	Spring	70	4.2		
CE 450		1990	Spring	86	3.9		
CIVE 455	Applications in Geotechnical Engineering	2023	Spring	15	NA[1]	**113**	**4.8**
CIVE 455		2019	Fall	10	NA[1]		
CIVE 455		2018	Spring	9	4.8		
CIVE 455		2017	Spring	20	4.8		
CIVE 455		2016	Spring	11	4.7		
CIVE 455		2015	Spring	14	4.9		
CIVE 455		2014	Spring	13	4.9		
CIVE 455		2013	Spring	10	4.7		
CIVE 455		2011	Fall	9	5.0		
CIVE 455		2010	Fall	4	4.8		
CIVE 455		2009	Fall	8	5.0		
CIVE 455		2008	Fall	6	4.8		
CIVE 458	Environmental Geotechnics	2022	Fall	14	NA[1]	**33**	**NA[1]**
CIVE 458		2019	Spring	19	NA[1]		
CE 496	Introduction to Environmental Geotechnics	1993	Spring	17	4.5	**17**	**4.5**
				1,908	**4.2**	**1,908**	**4.2**

[1] Quantitative student evaluations were discontinued by the University

TEACHING (continued)

Graduate Courses

Course Prefix	Course Title	Year	Sem.	Sem. No.	Sem. Score	Total No.	Total Score
CE 550	Foundation Engineering	1994	Fall	30	4.3	**53**	**4.4**
CE 550		1992	Fall	23	4.5		
CIVE 558	Containment Systems for Waste Disposal	2013	Fall	10	4.7	**79**	**4.8**
CIVE 558		2012	Fall	7	4.8		
CIVE 558		2011	Fall	6	4.8		
CIVE 558		2010	Fall	8	4.7		
CIVE 558		2008	Fall	7	5.0		
CIVE 558		2007	Fall	6	4.8		
CE 558		2005	Fall	4	5.0		
CE 558		2004	Fall	6	5.0		
CE 558		2001	Fall	11	4.7		
CE 558		2000	Fall	14	4.9		
CE 592	Geotechnical Engineering Seminar	1998	Spring	12	4.8	**12**	**4.8**
CE 592		1991	Fall	?	NA		
CE 592		1989	Fall	11	NA		
CE 633	Groundwater Contaminant Transport Modeling	1992	Fall	13	4.8	**34**	**4.7**
CE 633		1991	Fall	21	4.7		
CIVE 655	Advanced Soil Mechanics	2012	Fall	6	3.3	**67**	**4.3**
CIVE 655		2010	Fall	7	4.9		
CIVE 655		2008	Fall	6	4.5		
CE 655		2006	Fall	5	4.4		
CE 655		2004	Spring	6	4.0		
CE 655		1999	Fall	2	5.0		
CE 655		1997	Fall	6	5.0		
CE 655		1994	Fall	9	4.5		
CE 655		1993	Fall	8	4.3		
CE 655		1990	Fall	12	3.8		
CE 657	Geoenvironmental Engineering Principles	1998	Fall	4	5.0	**30**	**4.5**
CE 657		1997	Fall	6	4.5		
CE 681		1996	Fall	6	4.6		
CE 681		1995	Fall	14	4.4		
CIVE 658	Remediation Systems for Subsurface Contamination	2011	Spring	7	5.0	**70**	**4.8**
CIVE 658		2009	Spring	7	5.0		
CE 658		2007	Spring	6	4.7		
CE 658		2006	Spring	8	4.7		
CE 658		2002	Spring	7	4.7		
CE 658		1998	Spring	8	4.8		
CE 680		1997	Spring	16	4.8		
CE 754		1996	Spring	11	4.8		
CE 680	Geotechnics of Waste Management	1994	Spring	13	4.8	**21**	**4.9**
CE 680		1992	Spring	8	5.0		
CE 696	Geotechnical Engineering for Waste Management	1990	Spring	11	3.9	**11**	**3.9**
CE 696	Environ. Geotech. for Waste Management	1989	Spring	13	4.9	**13**	**4.9**
CE 752	Physico-Chemical Aspects of Soil Engineering	1988	Spring	9	NA	**9**	**NA**
CE 754	Special Topics: Geotechnics of Unsaturated Soils	1998	Spring	9	4.0	**9**	**4.0**
				399	**4.6**	**399**	**4.6**

TEACHING (continued)

Courses Developed

- CIVE 455 – Applications in Geotechnical Engineering (Fall 2008)
- CIVE 458 – Environmental Geotechnics (Spring 2019)
- CE 496 – Introduction to Environmental Geotechnics (Spring 1993)
- CE 592 – Seminar: Technical Writing and Publications (Spring 1998)
- CIVE 558 (previously CE 558, CE 657 & CE 681) – Containment Systems for Waste Disposal (Fall 1997)
- CIVE 658 (previously CE 658, CE 680 & CE 754) – Remediation Systems for Subsurface Contamination (Spring 1998)
- CE 680 (previously CE 692) – Geotechnics of Waste Management (Spring 1992)
- CIVE 559 (previously CE 754) – Special Topics: Geotechnics of Unsaturated Soils (Spring 1998)

Professional Courses

- *IAEA Interregional Workshop: Use of Engineered Barriers in Environmental Remediation Works*, sponsored by International Atomic Energy Agency, Oct. 6-10, 2014, Vienna, Austria (with Bill Albright and Andy Fourie) (34 registrants)
- *Liners and Covers for Waste Containment Facilities*, sponsored by ASCE Geo-Institute (with Craig Benson, David Daniel, and Majdi Othman):
  - Nov. 14-16, 2001, Atlanta, GA (44 registrants)
  - Nov. 6-8, 2000, Los Angeles, CA (42 registrants)
  - Nov. 8-10, 1999, Denver, CO (41 registrants)
  - Oct. 26-28, 1998, Rosemont, IL (49 registrants)
- *Unsaturated Soils in Engineering Practice*, sponsored by ASCE Geo-Institute, Aug. 4, 2000, Denver, CO (with Craig Benson, Delwyn Fredlund, Sandra Houston, Fernando Marinho, and Ward Wilson)
- *Soil Liners and Covers for Landfills in South America*, through CoHemis, University of Puerto Rico, Mayaguez, Puerto Rico (sponsored by Caterpillar Inc.), June 12-30, 1995:
  - June 12-13, Mexico City, Mexico (with Craig Benson)
  - June 15-16, San Jose, Costa Rica (with Craig Benson)
  - June 20-21, Bogota, Columbia (with Craig Benson)
  - June 22-23, Quito, Ecuador
  - June 26-27, Santiago, Chile
  - June 29-30, Cordoba, Argentina
- *Soil, Geomembrane, and Composite Liners and Covers for Landfills,* College of Engineering, Department of Engineering Professional Development, University of Wisconsin, Madison (with Craig Benson and Joseph Fluet):
  - Oct. 20-22, 1997, Madison, WI
  - Oct. 28-30, 1996, Madison, WI
  - Nov. 13-15, 1995, Saratoga Springs, NY
  - May 23-25, 1995, University of Wisconsin, Madison, WI
  - Jan. 30-Feb. 1, 1995, UCLA, Los Angeles
  - May 23-25, 1994, University of Wisconsin, Madison, WI
  - Jan. 31-Feb. 2, 1994, UCLA, Los Angeles, CA
  - June 2-4, 1993, University of Wisconsin, Madison, WI
  - June 1-3, 1992, University of Wisconsin, Madison, WI
- *Design and Construction of Landfill Liners for Waste Containment*, May 12-13, 1994, Universidad Catolica de Chile, Santiago, Chile

TEACHING (continued)

Professional Courses (continued)

- *Soil Liners and Covers for Landfills*, Jan. 17-18, 1994, Department of Civil Engineering, Colorado State University, Ft. Collins, CO (with Craig Benson)
- *Soil Liners and Covers for Landfills*, College of Continuing Studies, Apr. 13-15, 1993, University of Alabama, Tuscaloosa, AL (with Craig Benson)
- *Advanced Sanitary Landfill Design and Management,* College of Engineering, Department of Engineering Professional Development, University of Wisconsin, Madison (with Craig Benson):
  - Oct. 17-19, 1994, for US EPA Region 6, Kansas City, MO
- *Principles of Contaminant Transport for Geotechnical Engineers and Other Waste Management Professionals*, American Society of Civil Engineers, New York:
  - Sept. 18, 1992, at New York, NY
  - Oct. 3, 1992, at San Francisco, CA
- Session on "Waste Containment Liners" for *Tailings, Engineering, and Management*, Nov. 26-30, 1990, Department of Civil Engineering, Colorado State University, Fort Collins, CO

PUBLICATIONS[1]

Impact of Publications (as of 03/12/23)

Data Base	Total Number of Citations	*h*-index*	*i10*-index**
Google Scholar	9139	50	126
Scopus (Elsevier)	5903	42	94
Web of Science (Thompson Reuters)	4179	38	73

* The *h*-index is a measure of the impact of an author's scholarly publications, and represents the number of publications that have been cited at least the same number of times. For example, an *h*-index of 50 means that 50 of the author's publications have been cited at least 50 times.
** Number of publications with at least 10 citations

Journal Papers

105 Norris, A.S., Scalia, J., and Shackelford, C.D. (2022). "Mechanisms controlling the hydraulic conductivity of anionic polymer-enhanced GCLs," *Geosynthetics International*, IGS, published online on 10/03/22

104 Norris, A.S., Aghazamani, N., Scalia, J., and Shackelford, C.D. (2022). "Hydraulic performance of geosynthetic clay liners comprising anionic polymer-enhanced bentonites," *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, 148(6), 04022039

103 Norris, A.S., Scalia, J., and Shackelford, C.D. (2022). "Polymer quantification methods for geosynthetic clay liners enhanced with anionic polymers," *Geotechnical Testing Journal*, ASTM, 45(2), GTJ20210134

102 Pu, H., Fox, P.J., Shackelford, C.D., and Qiu, J. (2021). "Assessment of consolidation-induced contaminant transport for in-situ capping of subaqueous contaminated sediments," *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, 147(8), 04021056, https://doi.org/10.1061/(ASCE)GT.1943-5606.0002564

101 Joo, J.C., Shackelford, C.D., Reardon, K.F., and Lee, W.T. (2021). "Electromagnetically-vibrated solid-phase microextraction for analysis of miscible organic compound transport in soil columns," *Chemosphere*, Elsevier, Amsterdam, 263, 127941, https://doi.org/10.1016/j.chemosphere.2020.127941

100 Shackelford, C.D. and Hong, C.S. (2020). "Comparative analyses of alternative breakthrough curves from cumulative mass column testing of soil-bentonite backfills," *Canadian Geotechnical Journal*, NRC, 57(8), 1197-1214, http://dx.doi.org/10.1139/cgj-2019-0468

99 Sample-Lord, K.M., Zhang, W., Tong, S., and Shackelford, C.D. (2020). "Apparent salt diffusion coefficients for soil-bentonite backfills," *Canadian Geotechnical Journal*, NRC, 57(5), 623-634, http://dx.doi.org/10.1139/cgj-2019-0058

98 Fritz, C.J., Scalia IV, J., Shackelford, C.D., and Malusis, M.A. (2020). "Determining maximum chemico-osmotic pressure difference across clay membranes," *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, 146(1), 06019018, https://doi.org/10.1061/(ASCE)GT.1943-5606.0002196

97 Malusis, M.A., Scalia, J., Norris, A.S., and Shackelford, C.D. (2020). "Effect of chemico-osmosis on solute transport in clay barriers," *Environmental Geotechnics*, ICE, 7(7), 447-456, https://doi.org/10.1680/jenge.17.00109

[1] Underlined co-author(s) designate graduate student advisee(s) or co-advisee(s)

PUBLICATIONS (continued)

Journal Papers (continued)

96 Hong, C.S. and Shackelford, C.D. (2019). "Mixed metals migration through zeolite-amended backfills for vertical cut-off walls," *Environmental Geotechnics*, ICE, 6(4), 225-241, http://dx.doi.org/10.1680/jenge.17.00041)

95 Fehervari, A., Gates, W.P., Bouazza, A., and Shackelford, C.D. (2019). "Assessment of bentonite compatibility with salinity using centrifugation-based water retention," *Geotechnical Testing Journal*, ASTM, 42(2), 275-295, GTJ20170207, https://doi.org/10.1520/GTJ20170207

94 Scalia IV, J., Bareither, C.A., and Shackelford, C.D. (2018). "Advancing the use of geosynthetic clay liners as barriers," *Geotechnical Engineering Journal of the SEAGS & AGSSEA*, 49(4), 100-114

93 Scalia, J., Bohnhoff, G.L., Shackelford, C.D., Benson, C.H., Sample-Lord, K.M., Malusis, M.A., and Likos, W.J. (2018). "Enhanced bentonites for containment of inorganic wastes by GCLs," *Geosynthetics International*, IGS, 25(4), 392-411, https://doi.org/10.1680/jgein.18.00024

92 Ghazizadeh, S., Bareither, C.A., Scalia, J., and Shackelford, C.D. (2018). "Synthetic mining solutions for laboratory testing of geosynthetic clay liners," *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, 144(10), 06018011, http://dx.doi.org/10.1061/(ASCE)GT.1943-5606.0001953

91 Pu, H., Fox, P.J., and Shackelford, C.D. (2018). "Benchmark problem for large strain consolidation-induced solute transport," *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, 144(3), 06018001, http://dx.doi.org/10.1061/(ASCE)GT.1943-5606.0001826

90 Sample-Lord, K.M. and Shackelford, C.D. (2018). "Membrane behavior of unsaturated sodium bentonite," *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, 144(1), 04017102, http://dx.doi.org/10.1061/(ASCE)GT.1943-5606.0001803

89 Sample-Lord, K.M. and Shackelford, C.D. (2017). "Apparatus for measuring coupled membrane and diffusion behavior of unsaturated sodium bentonite," *Vadose Zone Journal*, SSSA, 16(9), http:// doi:10.2136/vzj2016.12.0140

88 Meier, A.J. and Shackelford, C.D. (2017). "Membrane behavior of compacted sand-bentonite mixture," *Canadian Geotechnical Journal*, NRC, 54(9), 1284-1299, http://dx.doi.org/10.1139/cgj-2016-0708

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5 Sleep, B.E., Shackelford, C.D., and Parker, J.C. (2006). Modeling of fluid transport through barriers (Chapter 2), *Barrier Systems for Environmental Contaminant Containment and Treatment*, C.C. Chien, H.I. Inyang, and L.G. Everett, Eds., CRC Press, Taylor and Francis Group, LLC, Boca Raton, FL, 71-141

4 Shackelford, C.D. (2002). Geoenvironmental engineering, *Encyclopedia of Physical Science and Technology*, *Third Edition*, Academic Press, San Diego, Vol. 6, 601-621

3 Rabideau, A.J., Andrews, C.B., Chiang, C., Grathwohl, P., Hayworth, J.S., Culligan-Hensley, P., Manassero, M., Mercer, J.W., Mott, H., Schroeder, P.R., Shackelford, C.D., Teutsch, G., van Meurs, G.A.M., Wilhem, R., and Zheng, C. (1996). Contaminant transport modeling (Section 10), *Assessment of Barrier Containment Technologies*, R.R. Rumer and J.K. Mitchell, Eds., National Technical Information Service, Springfield, Virginia, 247- 299

2 Shackelford, C.D. (1993). Contaminant transport (Chapter 3), *Geotechnical Practice for Waste Disposal*, D.E. Daniel, Ed. Chapman and Hall, London, 33-65

1 Daniel, D.E. and Shackelford, C.D. (1989). Containment of landfill leachate with clay liners (Chapter 5.3), *Sanitary Landfilling: Process, Technology, and Environmental Impact,* T.H. Christensen, R. Cossu, and R. Stegmann, Eds., Academic Press, London, 323-341

Book Forwards

1 Lu, N. and Likos, W.J. (2004). *Unsaturated Soil Mechanics*, John Wiley and Sons, Inc., Hoboken, NJ, xvii-xviii

Editor (Books and Special Journal Issues)

5 *Geoenvironmental Engineering, Honoring David E. Daniel*, Geotechnical Special Publication No. 274, C.H. Benson and C.D. Shackelford, Eds., Chicago, IL, August 15, 2016, ASCE, Reston, VA, 2016.

4 *Coal and Fly Ash: Characterization and Utilization*, C.D. Shackelford, Ed., *Journal of Hazardous Materials*, Elsevier, Vol. 76, Nos. 2-3, Sept. 15, 2000

PUBLICATIONS (continued)

Editor (Books and Special Journal Issues) (continued)

3 *Advances in Unsaturated Geotechnics*, C.D. Shackelford, S.L. Houston, and N.-Y. Chang, Eds., Denver, Colorado, Aug. 5-7, 2000, ASCE, Reston, VA, 2000

2 *Uncertainty in the Geologic Environment: From Theory to Practice*, Geotechnical Special Publication No. 58, C.D. Shackelford, P. P. Nelson, and M. J. S. Roth, Eds., Madison, WI, July 31 - Aug. 2, 1996, ASCE, Reston, VA, 1996

1 *Proceedings, US - Scandinavian Workshop on Geotechnical Research Collaboration*, K.G. Senneset, C.D. Shackelford, and J.M. Strout, Eds., Norwegian Institute of Technology, Trondheim, Norway, June 8-10, 1994

Abstracts

4 Shackelford, C.D. and Malusis, M.A. (2002). "Steady-state solute diffusion through a semi-permeable clay membrane," *39th Annual Clay Minerals Society Meeting: Bolder Clays*, Boulder, CO, June 8-13, 2002

3 Shackelford, C.D., Malusis, M.A., and Olsen, H.W. (2001). "Clay membrane barriers for geoenvironmental containment applications," *38th Annual Clay Minerals Society Meeting*, Madison, WI, June 16-20, 2001

2 Shackelford, C.D. (1993). "Measurement of solute breakthrough curves through processed kaolin at low flow rates," *30th Annual Clay Minerals Society Meeting*, San Diego, CA, Sept. 25-30, Dept. of Geological Sciences, San Diego State University, San Diego

1 Shackelford, C.D. (1989). "Laboratory diffusion testing for waste disposal," *26th Annual Clay Minerals Society Meeting*, Sacramento, CA, Sept. 25-28, Dept. of Civil Engineering, California State University, Sacramento

Professional Reports

15 Shackelford, C.D. and Lee, J.M. (2002). "Large-scale hydraulic conductivity testing results for block samples from Rocky Mountain Arsenal (RMA) enhanced hazardous waste landfill test pads," Foster Wheeler Environmental Corporation, 72nd Avenue at Quebec Street, Commerce City, CO 80022-1748 (Feb. 6)

14 Shackelford, C.D. (2001). "Potential effect of revised process water/leachate characteristics on hydraulic conductivity of GCLs used for base liner at the tailings management area for the proposed Nicolet Mining Company's zinc/copper mine located near Crandon, Wisconsin," Foth & Van Dyke and Associates, Inc., 2737 S. Ridge Road, P.O. Box 19012, Green Bay, WI 54307-9012 (Nov. 23)

13 Shackelford, C. D. and Lee, J.M. (2000). "Large-scale hydraulic conductivity testing of conglomerate bedrock samples," Hollingsworth Assoc., Inc., 2895 W. Oxford Ave., Suite 4, Sheridan, CO 80110 (Dec. 15)

12 Hill, T.H. and Shackelford, C.D. (2000). "Large-scale hydraulic conductivity testing, High Savery Dam project, Wyoming, USA," Hollingsworth Assoc., Inc., 2895 W. Oxford Ave., Suite 4, Sheridan, CO 80110, (Apr. 13)

11 Shackelford, C.D. (1999). "Testing of two soils for evaporation ponds, Tuba City, Arizona," MACTEC-ERS, 2592 B3/4 Rd., Grand Junction, CO 81503.

10 Shackelford, C.D. (1998). "GCL compatibility testing for base liner at the tailings management area for the proposed Nicolet Minerals Company zinc/copper mine near Crandon, Wisconsin," Foth & Van Dyke and Assoc., Inc., 2737 South Ridge Road, P. O. Box 19012, Green Bay, WI 54307-9012

PUBLICATIONS (continued)

Professional Reports (continued)

9 Shackelford, C.D. and Rowe, R.K. (1997). "Contaminant transport modeling, Chapter 2 (SC2)," *Report of the ISSMFE Technical Committee TC 5 on Environmental Geotechnics*, 1st (Draft) Edition, Ruhr-Universität Bochum, Germany, Sept., 5-22

8 Shackelford, C.D. (1997). "Design and construction recommendations for proposed evaporation ponds at Luck Mc uranium tailings site," Pathfinder Mines Corp., 935 Pendell Boulevard, P. O. Box 730, Mills, WY 82644

7 Shackelford, C.D., Chiu, T.F., and Malusis, M. A. (1995). "A capillary barrier cover system for the alternative landfill cover demonstration at Sandia National Laboratory," Sandia National Laboratories, Environmental Restoration Technologies, Department 6621, Albuquerque, NM 87185

6 Shackelford, C.D. and Malusis, M.A. (1994). "Use of Floridin clay products for stabilization applications (Phase I)," Floridin Company, 1101 N. Madison St., Quincy, FL 32351

5 Shackelford, C.D. (1992). "An evaluation of the leachability of heavy metals from fly ash liner materials," National Science Foundation, Washington, DC

4 Shackelford, C.D. (1992). "Macro-engineering concept for remediation of the Hanford Facility, Hanford, Washington," A.T. Kearney, Richland, WA

3 Shackelford, C.D. (1991). "Technical evaluation of the geotechnical report for the permit application for the Otero County Regional Landfill expansion," US Air Force, Holloman AFB, NM

2 Shackelford, C.D. (1990). "An evaluation of the leachability of heavy metals from fly ash liner materials," National Science Foundation, Washington, DC

1 Daniel, D.E., Shackelford, C.D., Liao, W.P., and Liljestrand, H.M. (1989). "Rate of flow of leachate through clay soil liners," US EPA, Cincinnati, OH

RESEARCH

Research Interests

- Chemical Diffusion in Soils
- Engineered Liquid and Chemical Containment Barriers
- Environmental Geotechnics and Geoenvironmental Engineering
- Hydraulic Conductivity and Compatibility of Fine-Grained Soils
- Liquid Flow and Chemical Transport through Saturated and Unsaturated Porous Media
- Membrane Behavior of Clays and Coupled Flow Processes
- Physico-Chemical Properties of Soils
- Soil and Waste Stabilization

Summary of Research Funding

Role	No. of Funded Proposals	Funded Amount
Principal Investigator (PI)	38	$6,212,831
Co-Principal Investigator (Co-PI)	8	$2,204,509
Other	1	$330,000
Totals	**47**	**$8,747,340**

Individually Funded Research Projects – PI

No.	Project Title	Sponsor	Amount	Period
38	*Critical Assessment of Radionuclide Transport through Engineered Barrier Systems for Long-Term Containment*	DOE via Vanderbilt and the University of Wisconsin-Madison	$17,121	06/01/14-09/30/14
37	*Critical Assessment of Radionuclide Transport through Engineered Barrier Systems for Long-Term Containment*	DOE via Vanderbilt and the University of Wisconsin-Madison	$26,840	02/01/14-05/31/14
36	*Critical Assessment of Radionuclide Transport through Engineered Barrier Systems for Long-Term Containment*	DOE via Vanderbilt and the University of Wisconsin-Madison	$3,699	09/01/13-01/31/14
35	*Critical Assessment of Radionuclide Transport through Engineered Barrier Systems for Long-Term Containment*	DOE via Vanderbilt and the University of Wisconsin-Madison	$22,551	06/01/13-08/31/13
34	*Critical Assessment of Radionuclide Transport through Engineered Barrier Systems for Long-Term Containment*	DOE via Vanderbilt and the University of Wisconsin-Madison	$18,750	02/01/13-05/31/13

RESEARCH (continued)

Individually Funded Research Projects – PI (continued)

No.	Project Title	Sponsor	Amount	Period
33	*Instrumentation and Equipment for Experimental Research in Geoenvironmental Engineering*	Dept. of Civil and Environmental Engineering, CSU	$25,000	11/08/12-05/31/13
32	*Instrumentation and Equipment for Experimental Research on Flow and Contaminant Transport through Engineered Soil Barriers*	Dept. of Civil and Environmental Engineering, CSU	$18,900	10/06/11-05/31/12
31	*Critical Assessment of Radionuclide Transport through Engineered Barrier Systems for Long-Term Containment*	DOE via Vanderbilt and the University of Wisconsin-Madison	$15,054	09/30/11-01/31/12
30	*Water De-Aeration System and Vacuum Supply and Filter Presses in Support of Experimental Research on Flow and Contaminant Transport through Engineered Soil Barriers*	Dept. of Civil and Environmental Engineering, CSU	$10,300	11/08/10-05/31/11
29	*Critical Assessment of Radionuclide Transport through Engineered Barrier Systems for Long-Term Containment*	DOE via Vanderbilt and the University of Wisconsin-Madison	$103,187	10/01/10-09/29/11
28	*Experimental and Computational Investigations for Consolidation-Induced Contaminant Transport for High Water Content Geo-Materials*	NSF	$210,000	07/01/10-06/30/13
27	*Laboratory Apparatuses for Measuring Hydraulic Behavior of Bentonite Polymer Nanocomposites*	Dept. of Civil and Environmental Engineering, CSU	$8,280	11/10/09-05/31/08
26	*Critical Assessment of Coupled Flow Behavior in Unsaturated Clay Barriers*	NSF	$228,258	09/15/09-08/31/13
25	*Laboratory Apparatus for Measuring Membrane Behavior of Clay Soils*	Dept. of Civil and Environmental Engineering, CSU	$11,736	11/09/08-05/31/07
24	*Bentonite-Polymer Nanocomposites for the Geoenvironment*	NSF	$221,397	08/01/08-07/31/13

RESEARCH (continued)

Individually Funded Research Projects – PI (continued)

No.	Project Title	Sponsor	Amount	Period
23	*Enhanced Clay Membrane Barriers for Sustainable Waste Containment*	NSF	$198,648	10/01/06-09/30/10
22[1]	*Evaluation of Hydrologic Models for Alternative Covers at Mine Waste Sites*	EPA	$236,163	11/01/02-10/31/06
21	*Rocky Mountain Regional Hazardous Substance Research Center*	EPA	$3,750,000	11/01/01-10/31/06
20	*Membrane Behavior of Clay Soil Barrier Materials*	NSF	$229,681	08/01/01-07/31/06
19	*Assessing the Use of Geosynthetic Clay Liners (GCLs) for Animal Waste Containment Lagoons*	AES (USDA), CSU	$148,000	07/01/01-06/30/04
18	*Long-Term Performance of GCLs Permeated with Aqueous Inorganic Solutions*	NSF	$170,412	08/15/99-06/30/03
17	*Evaluation of Clay Liners at Uranium Mill Sites*	UMETCO, Grand Junction, CO	$10,000	03/05/98-05/31/99
16	*Contaminant Transport by Diffusion in Partially Saturated Soils*	UMETCO, Grand Junction, CO	$10,000	08/22/97-05/31/99
15	*Coupled Solute Migration through Clay Barrier Materials*	NSF	$136,667	09/15/96-08/31/99
14	*Research Experience for Undergraduates*	NSF	$5,000	05/15/96-08/15/96
13	*Microbial Transport in Soils*	Camp Dresser & McKee, Denver	$12,500	05/17/96-05/01/97
12	*Equipment for Flow and Transport Testing*	Trautwein Soil Testing Equipment Co., Houston	$26,170	1995

[1] Project 22 was funded by the *Rocky Mountain Regional Hazardous Substance Research Center* (i.e., Project 21), so the funded amount shown is not included in the total funding as PI

RESEARCH (continued)

Individually Funded Research Projects – PI (continued)

No.	Project Title	Sponsor	Amount	Period
11	*Alternative Landfill Cover Demonstration*	Sandia National Laboratories (DOE)	$73,929	01/10/95-09/30/95
10	*U. S. - Scandinavian Workshop on Geotechnical Research Collaboration*	NSF	$40,073	04/15/94-03/31/96
8	*Use of Floridin Clay Products for Stabilization and Compatibility (Environmental) Applications*	Floridin Co., Quincy, FL	$25,013	04/30/93-04/29/94
7	*Research Experience for Undergraduates*	NSF	$4,250	05/15/93-08/15/93
6	*Equipment for Flow and Transport Testing*	Trautwein Soil Testing Equipment Co., Houston	$13,655	1992
5	*A Comparison of Steady-State and Transient Methods for Measuring Effective Diffusion Coefficients for Waste Disposal*	NSF	$106,340	10/01/92-09/30/96
4	*National Young Investigator Award*	NSF	$232,470	10/01/92-04/30/97
3	*Recycled Diatomaceous Earth for Waste Containment*	Graduate School-CSU Faculty Research Grant	$3,500	01/01/92-12/31/92
2	*Research Experience for Undergraduates*	NSF	$4,150	05/15/91-08/15/91
1	*An Evaluation of the Leachability of Heavy Metals from Fly Ash Liner Materials*	NSF	$60,000	09/01/89-08/31/92
		Total =	**$6,195,710**	

RESEARCH (continued)

Individually Funded Research Projects – Co-PI

No.	Project Title	Sponsor	Amount	Period
8	*Determining PFAS Transport Mechanisms Within AFFF-Impacted Construction Materials to Develop Better In-Place and Re-Use Management Solution for the DoD*	DOD (SERDP)	$549,992	05/01/23-04/30/26[1]
7	*Evaluation of Long-Term Internal Shear Strength of Geosynthetic Clay Liners for Use in Mining Applications*	CETCO	$164,141	06/01/14-05/31/16
6	*Instrumentation and Equipment for Experimental Research in Geoenvironmental Engineering*	Dept. of Civil and Environmental Engineering, CSU	$19,861	11/06/13-05/31/14
5	*Development and Commercialization of Dupont's Method for Remediating Contaminated Soils*	DuPont	$300,000	10/01/03-09/30/07
4[2]	*Reactive Transport Modeling of Metal Removal from Anaerobic Biozones*	EPA	$201,341	11/01/03-10/31/05
3	*Lumped Chemical Approach for Fate and Transport Modeling of Organic Pollutant Mixtures*	EPA	$721,695	10/01/01-01/31/06
2	*Bioremediation in the Engineering Curriculum: A Module-Based Approach*	NSF	$350,000	09/15/95-08/31/98
1	*Affiliation Program in Water Resources and Environmental Engineering*	United States Information Agency	$98,820	09/01/93-08/31/97
		Total =	**$2,204509**	

Individually Funded Research Projects – Participant

No.	Project Title	Sponsor	Amount	Period
1	*Methodologies for Design of Soil Covers of Waste Disposal Sites*	Nuclear Regulatory Commission	$330,000	09/91-01/94
		Total =	**$330,000**	

[1] Tentative dates

[2] Project 4 was funded by the *Rocky Mountain Regional Hazardous Substance Research Center* (i.e., Project 21 under PI funding), so the funded amount shown is not included in total funding as Co-PI

ADVISING

Graduate Studies: Advisor, Ph.D.

No.	Name	Dissertation Title	Graduation Date
12	Catherine Soo-Jung Hong	*Zeolite-Amended Backfills for Enhanced Metals Containment via Soil-Bentonite Vertical Cutoff Walls*	Aug. 2016
11	Kristin M. Sample-Lord	*Membrane Behavior and Diffusion in Unsaturated Sodium Bentonite*	May 2015
10	Gretchen L. Bohnhoff	*Membrane Behavior, Diffusion, and Compatibility of a Polymerized Bentonite for Containment Barrier Applications*	Dec. 2012
9	Jong-Beom Kang	*Membrane Behavior of Clay Liner Materials*	Dec. 2008
8	Jin-Chul Joo	*Lumped Approach for Sorption of Organic Compound Mixtures to Simulated Aquifer Sorbents*	Dec. 2007
7	Paulo S. Hemsi	*Computational Modeling of Bioremediation of Acid Mine Drainage in Biochemical Permeable Reactive Barriers*	Dec. 2005
6	Jae-Myung Lee	*Long-Term Hydraulic Performance of Geosynthetic Clay Liners Subjected to Inorganic Salt Solutions*	May 2004
5	Michael A. Malusis	*Membrane Behavior and Coupled Solute Transport through a Geosynthetic Clay Liner*	Aug. 2001
4	Ingdean Yan	*HCET: A Finite Element Model for Solute Transport Driven by Hydraulic, Chemical, Electrical, and Thermal Gradients*	Dec. 2000
3	Nabil H. Amer	*Influence of the Gradient Application Condition on Laboratory Measurement of the Hydraulic Conductivity of a Sand-Bentonite Mixture*	Dec. 1997
2	Te-Fu Chiu	*Capillary Barrier Effect for Constant Head Boundary Condition at High Initial Degree of Saturation*	May 1997
1	Farhat Javed	*Time and Scale Effects In Laboratory Permeability Testing of Compacted Clay Soil*	Dec. 1989

ADVISING (continued)

Graduate Studies: Advisor, M.S.-Thesis Option

No.	Name	Thesis Title	Graduation Date
25	Amara Meier	*Membrane and Diffusion Behavior of a Compacted Sand-Bentonite Mixture for Hydraulic and Chemical Containment Applications*	May 2016
24	Shan Tong	*Standardized Hydraulic Conductivity Testing of Compacted Sand-Bentonite Mixtures*	Aug. 2015
23	Gustavo Vianna	*Consolidation Behavior of Mixtures of Sand, Bentonite, and Zero-Valent Iron in Large-Scale Columns*	May 2009
22	Kristin M. Sample	*One-Dimensional Consolidation of Bentonite-Zero Valent Iron Slurry Mixed Sand*	Dec. 2007
21	David Castelbaum	*Laboratory Simulation of In Situ Soil Mixing for Remediation with Zero-Valent Iron and Bentonite Slurry*	Dec. 2007
20	Aaron S. Ogorzalek	*Evaluation of Hydrologic Models for Alternative Soil Covers*	Dec. 2005
19	L. Clint Brown	*Hydraulic Performance and Solute Migration through a Geosynthetic Clay Liner for Anaerobic Waste Lagoons*	May 2004
18	Sang-Sik Yeo	*Hydraulic Conductivity, Consolidation, and Membrane Behavior of Model Backfill-Slurry Mixtures for Vertical Cutoff Walls*	Dec. 2003
17	Leonard (Toby) M. Wright	*Characterization of Permeant Fluid Compatibility and Leachability of Metals of Fly Ash and Fly Ash-Soil Mixtures*	May 2000
16	Craig A. Burger	*Moisture Characteristics of Diatomaceous Earth and Sand-Diatomaceous Earth Mixtures*	Dec. 1999
15	Jorge C. Troncoso	*Uranium Transport in Unsaturated Soil Beneath Two Evaporation Ponds*	Aug. 1999
14	Mitchell J. Majeski	*Hydraulic Conductivity of GCLs Permeated with Calcium Chloride Solutions*	May 1999

ADVISING (continued)

Graduate Studies: Advisor, M.S.-Thesis Option (continued)

No.	Name	Thesis Title	Graduation Date
13	N. John Bingham	*Hydraulic Conductivity of Sand-Bentonite Mixtures using Double-Ring Rigid-Wall Permeameters*	Aug. 1997
12	Martin L. Skyrman	*Adsorption of Zinc, Lead, and Cadmium with Kaolinite and Bentonite Using Batch-Equilibrium Methods*	May 1997
11	Roslyn T. Stern	*Hydraulic Conductivity of Sand Admixed with Processed Clay Mixtures Permeated with Calcium Chloride Solutions*	May 1997
10	Melanie M. Davis	*Zinc Chloride Diffusion in Confined Specimens of a Sand-Attapulgite Clay Mixture*	Dec. 1996
9	Jennifer L. Howell	*Hydraulic Conductivity Testing of Sand Mixed with Attapulgite, Bentonite, or Attapulgite/Bentonite*	Aug. 1996
8	Michael A. Malusis	*Stabilization of Metal Bearing Wastes Using Chain-Structured Clay Admixtures*	Aug. 1995
7	Todd E. Cotten	*Zinc Diffusion in Unconfined Soil Specimens of a High pH Soil*	May 1995
6	Chung-Kan Chang	*Evaluation of Moisture-Characteristic Functions for One-Dimensional Unsaturated Flow through Capillary Barriers*	May 1994
5	Tamar di Franco	*Horizontal Wells for Dewatering Thin Unconfined Aquifers*	Aug. 1993
4	Patrick L. Redmond	*Measurement of Solute Breakthrough Curves with the Flow - Pump Permeameter*	Aug. 1993
3	Abdalla El-Saka	*Permeability, Compatibility, and Leachate Quality of Recycled Diatomaceous Earth*	Dec. 1992
2	Michael J. Glade	*Influence of Cation Exchange Capacity on Metals Leaching from Soil Amended Fly Ash*	Dec. 1992
1	Daniel N. Creek	*Effect of Flow Rate on Leaching of Metals from Fly Ash and Stabilized Fly Ash*	May 1991

ADVISING (continued)

Graduate Studies: Advisor, M.S.-Report Option

No.	Name	Report Title	GraduationDate
4	Kristle V.P. Hawkins	*Analytical Transport Modeling using Microsoft Excel and Matlab*	Dec. 2011
3	Jeffrey G. Coleman	*Column Experiments to Evaluate the Effectiveness of Peat, Fly Ash and Iron Metal for Attenuating Uranium in Groundwater*	Dec. 2001
2	Steve Simpson	*Prediction of Hydraulic Conductivity of Coarse-Grained Soils Using the Kozeny-Carman Equation*	May 1990
1	Emmalee Blender	*Soil Stabilization and Improvement*	May 1989

Graduate Studies: Visiting Doctoral Student

- Andrea Dominijanni (2003-04). Visited with research group for a period of five months (Oct. '03 – Mar. '04) to learn about laborartory testing procedures for determining chemico-osmotic (semipermeable) membrane behavior of bentonite-based conatinament barriers in support of his dissertation at the Politecnico di Torino in Italy
- Francesca Verga (1994-95). Performed all of laboratory work for Ph.D. research under my supervision during this period as part of the requirements for her dissertation at the Politecnico di Torino in Italy

Graduate Studies: External Evaluator or Committee Member – Ph.D. Dissertations

- "Hydraulic Performance of Liners in Tailings Storage Facilities," by Jiying Fan, Department of Civil Engineering, Queen's University, Kingston, Ontario, Canada K7L 3N6 (Sept. 28, 2021)
- "Sustainable Tailings Management: Improvement of Tailings Geotechnical Engineering Behaviour Bio-additives," by Hernan Rodrigo Cifuentes Huaiquicheo, School of Civil Engineering, The University of Queensland, St. Lucia, Queensland 4072, Australia (Feb. 21 & May 20, 2021)
- "Performance of Geosynthetics for Remediation of Hydrocarbons and Emerging Contaminants," by Vanessa DiBattista, Department of Civil Engineering, Queen's University, Kingston, Ontario, Canada K7L 3N6 (Sept. 16, 2020)
- "Constitutive Modeling of Coupled Bio-Chemo-Hydro-Thermal Reactive Transport Considering Methane Oxidation and Vegetation," by Song Feng, Department of Civil and Environmental Engineering, The Hong Kong University of Science and Technology, Clear Water Bay, Kowloon, Hong Kong (Aug. 24, 2016)
- "Performance of Geosynthetic Clay Liners in Cover, Subsurface Barrier, and Basal Liner Applications," by Mohamed Said Hussein Housney, Department of Civil Engineering, Queen's University, Kingston, Ontario, Canada K7L 3N6 (Jan. 22, 2014)
- "Bentonite-Polymer Composites for Containment Applications," by Joseph Scalia IV, Department of Geological Engineering, University of Wisconsin-Madison, Madison, WI 53706 (Aug. 9, 2012)
- "Limited Water Flow Through Unsaturated, Compacted Soils," by Joonyong Lee, Department of Department of Civil, Environmental, and Architectural Engineering, University of Colorado-Boulder, Boulder, CO 80309 (April 5, 2011)

ADVISING (continued)

Graduate Studies: External Evaluator or Committee Member – Ph D Dissertations (continued)

- "Diffusive Transport of Volatile Organic Compounds through Geomembranes," by Rebecca Sheila Anne McWatters, Department of Civil Engineering, Queen's University, Kingston, Ontario, Canada K7L 3N6 (April 28, 2010)
- "The Waste and Low Grade Ore Stockpiles of Ranger Uranium Mine – A System Approach," by Gregory James Shirtliff, Quaternary and Reogolith Studies, The Australian National University, Canberra, ACR 0200, Australia (July 2008)
- "Rehabilitation Studies on Tailings Storage Facilities in an Arid Hypersaline Region," by Daniel J. Stolberg, Division of Civil Engineering, School of Engineering, The University of Queensland, Brisbane, QLD 4072, Australia (Nov.-Dec. 2005)
- "Unsaturated Flow Under Increased Gravitational Fields," by Eduardo Dell'Avanzi, Department of Civil, Environmental, and Architectural Engineering, University of Colorado-Boulder, Boulder, CO 80309 (Aug. 2004)
- "Evaluation and Analysis of Acid Sulphate Soils Impacts via Tidal Restoration," by William C. Glamore, Faculty of Engineering, University of Wollongong, NSW 2522, Australia (Feb. 2004)
- "Cation Exchange and Long-Term Hydraulic Conductivity of a Geosynthetic Clay Liner (GCL) Permeated with Inorganic Salt Solutions," by Ho Young Jo, Department of Geological Engineering, University of Wisconsin, Madison, WI 53706 (May 2003)
- "The Role of Unsaturated Soil Property Functions in the Practice of Unsaturated Soil Mechanics," by Murray Fredlund, Department of Civil Engineering, University of Saskatchewan, Saskatoon, Saskatchewan, Canada S7N 5A4 (March 7, 2000)
- "Modeling Water Flow in an Unsaturated Compacted Soil," by Katia Vanessa Bicalho, Department of Civil, Environmental, and Architectural Engineering, University of Colorado-Boulder, Boulder, CO 80309 (Aug. 1999)
- "Transport of Contaminants in Vertical Barriers: Enhancement of Barrier Performance with Sorptive and Reactive Additives," by Ashutosh Khandewal, Department of Civil, Structural and Environmental Engineering, State University of New York at Buffalo, Buffalo, NY 14260 (Jan. 1999)
- "A Laboratory Method for Investigation of Diffusion and Transformation of Volatile Organic Compounds in Low Permeability Media," by Susan Lynee Gordon, Department of Earth Sciences, University of Waterloo, Waterloo, Ontario, Canada N2L 3G1 (Dec. 8, 1998)

Undergraduate Studies: NSF Research Experience for Undergraduates (REU)

- Description: Provides financial assistance in the form of a monthly stipend (~ $1,100/mo) to undergraduate students for work performed on existing NSF funded projects supervised by PI during summer months (May 15-Aug. 15). Students supervised are as follows:
  - John Vasquez (Summer, 1996)
  - Roslyn Force (Summer, 1993)
  - Mary DiMartini (Summer, 1992)
  - Todd Cotten (Summer, 1992)
  - Jamie Reichler (Summer, 1991)

Undergraduate Studies: Senior Honors Thesis

- Mary E. Williams (March 26, 1990), "A Great Place to Meet Men (or Why Aren't More Women Studying Engineering?)"

ADVISING (continued)

Undergraduate Studies: Senior Design Project Advising

- "The Las Animas Landfill:"
  - CE 469 - Design Practice I, Fall, 1996 (5 students)
  - CE 470 - Design Practice II, Spring, 1997 (5 students)
- "Contaminant Transport Modeling of the Larimer County Landfill:"
  - CE 469 - Design Practice I, Fall, 1992 (6 students)
  - CE 470 - Design Practice II, Spring, 1993 (6 students)
- "Evaluation and Design of an Expansion of the Larimer County Landfill:"
  - CE 469 - Design Practice I, Fall, 1989 (8 students)
  - CE 470 - Design Practice II, Spring, 1990 (7 students)

Undergraduate Studies: General Advising

- Curriculum Advising - from 8 to 16 students per semester

UNIVERSITY ACTIVITIES AND SERVICE

University Committee Memberships/Participation

- Committee on Strategic and Financial Planning (2014-20)
- Faculty Research Grants Committee, Graduate School (1998-99)
- Academic Standards Committee, Faculty Council (1994-96)
- University Faculty Council (1990-93)

College Committee Memberships/Participation

- Chair of a*d hoc* staff search committee for Program Manager (Fall 2016)
- *Ad hoc* Dean's Think Tank Committee (2007-10)
- *Ad hoc* search committee for CE Department Head (2000)
- College Curriculum Committee (1995-96)
- Faculty Focal Group, Visions Committee 2020 (1993)

Department Committee Memberships/Participation

- Department Code Committee (2014-present)
- Department Executive Committee (since Jan. 2012)
- Graduate Applications Committee (2012-13)
- *Ad hoc* faculty search committee for Geoengineering (2011-12)
- *Ad hoc* faculty search committee for Structural l Engineering (2011-12)
- *Ad hoc* faculty search committee for Structural Engineering (2010)
- Internal Advisory Committee (2006-13)
- Strategic Planning Committee (2006-13)
- Departmental Tenure Committee (1997-2001; Chair: 2000-01; 2005-10)
- Departmental Promotion Committee (1999-2004; Chair 2003-04; 2005-10; 2011-16)
- Chair of *ad hoc* faculty search committee for Geotechnical Engineering (2003-04)
- Graduate Initiatives Committee (2003)
- *Ad hoc* Strategic Initiatives Committee (2003)
- Chair of *ad hoc* faculty search committee for Geotechnical Engineering (2002-03)
- Member of *ad hoc* committee for evaluation of internal equipment proposals (2003, 2004)
- *Ad hoc* faculty search committee for Environmental Engineering (2000-01)

PROFESSIONAL ACTIVITIES AND SERVICE

Department Committee Memberships/Participation (continued)

- *Ad hoc* faculty search committee for Environmental Engineering (1997-98)
- *Ad hoc* faculty search committee for Structural Engineering (1997-98)
- Program Review Committee (1995-96)
- Awards Committee (1992-94; Chair 1994-95)
- Chi-Epsilon Faculty Advisor, Dept. of Civil Engineering (1991-93)
- Graduate Instruction Committee, Dept. of Civil Engineering (Member: 1988-91; Chairman: 1991-92; 1994)
- 5-Year Program (CE) Review Committee, College of Engineering (1989-90)
- Library Liaison, Dept. of Civil Engineering (1988-89)

Editorial Services: Journals and Periodicals

- Co-Editor, *Geotextiles and Geomembranes*, Elsevier Publ., Amsterdam, The Netherlands (Jan. 1, 2022-present)
- Associate Editor, *Geotextiles and Geomembranes*, Elsevier Publ., Amsterdam, The Netherlands (Jan. 1, 2021-Dec. 31, 2021)
- Associate Editor, *Canadian Geotechnical Journal*, National Research Council, Ottawa, Ontario, Canada (July 13, 2012-present)
- Editorial Board Member, *Geotextiles and Geomembranes*, Elsevier Publ., Amsterdam, The Netherlands (Oct. 29, 2008-Dec. 31, 2020)
- Editor, *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, Reston, VA (Oct. 1, 1999-Dec. 31, 2003)
- Editor, *Journal of Hazardous Materials*, Elsevier Publ., Amsterdam, The Netherlands (Oct. 1, 1998-Dec. 31, 2007)
- Editorial Board Member, *Journal of Geotechnical and Geoenvironmental Engineering,* ASCE, Reston, VA (Aug. 1, 1996-Sept. 30, 1999)
- Co-Editor, "Environmental Geotechnics" section, *Geotechnical News* magazine, Bi-Tech Publishers, Ltd., Vancouver, British Columbia (June 1988-June 1995)

Professional Society Memberships

- American Society of Civil Engineers (ASCE) [Fellow; Life Member]
- American Society for Testing and Materials (ASTM)
- Canadian Geotechnical Society (CGS)
- Clay Minerals Society (CMS)
- International Geosynthetics Society (IGS)
- International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE)

International Committee Memberships/Participation

- Executive Member, *Environmental Geotechnics Committee TC215*, International Society for Soil Mechanics and Geotechnical Engineering (2009-present)
- Member, *Environmental Geotechnics Committee TC5*, International Society for Soil Mechanics and Geotechnical Engineering (2005-09)
- Co-Chair, *Environmental Geotechnics Committee TC5*, International Society for Soil Mechanics and Geotechnical Engineering (2001-05)
- Secretary, *Environmental Geotechnics Committee TC5*, International Society for Soil Mechanics and Geotechnical Engineering (1991-01)

PROFESSIONAL ACTIVITIES AND SERVICE (continued)

National Committee Memberships/Participation

- Member, *ASCE Geo-Institute Nominations and Elections Committee* (since Jan. 2016)
- Member, *Committee to Assess the Performance of Engineered Barriers*, The National Academies, Division on Earth and Life Studies, Board on Earth Sciences and Resources, 500 Fifth Street, NW, Washington, DC 20001 (Aug. 2005-April 30, 2007)
- Chair, *ASCE Geo-Institute Awards Committee* (March 10, 2005-Sept. 30, 2007)
- Member, *ASCE Geo-Institute Awards Committee* (Oct. 1, 2002-March 10, 2005)
- Member, *Soil Properties and Modeling Committee*, ASCE Geo-Institute (since May 5, 1998)
- Member, TRB Committee A2L03, Committee on *Physicochemical Phenomena in Soils* (1994)
- Member, ASTM D 18.04 *Committee on Hydrologic Properties of Soil & Rock*, American Society for Testing & Materials (since Oct. 1998)
- Member, *Geoenvironmental Engineering Committee* (formerly *Environmental Geotechnics Committee*), ASCE Geo-Institute (continuous since Oct. 1, 1989)
- Secretary, Board of the *United States Universities' Council for Geotechnical Engineering Research (USUCGER)* (2001-03)
- Member, Geo-Institute *Technical Coordination Council* (TCC) (Oct. 1, 2000-Sept. 30, 2002)
- Member, Board of the *United States Universities' Council for Geotechnical Engineering Research (USUCGER)* (1999-2001)
- Member, *Awards Committee*, ASCE Geo-Institute (Oct. 1998-Sept. 1999)
- Chair, *Environmental Geotechnics Committee*, ASCE Geo-Institute (Oct. 1, 1992-Sept. 30, 1996)
- Member, *Environmental Geotechnics Committee*, ASCE Geo-Institute (Oct. 1, 1988-Sept. 30, 1992)

State Committee Memberships/Participation

- Colorado Transportation Research Coordination Committee (1990)

Conference Service

- Member, Technical Committee for the *8th International Congress on Environmental Geotechnics* (8th ICEG), Hangzhou, China, Oct. 29-Nov. 2, 2018
- Moderator of keynote/feature lecture session, *International Workshop on Advances in Laboratory Testing & Modelling of Soils and Shales*, Villars-sur-Ollon, Switzerland, Jan. 18-20, 2017
- Co-organizer, *Geoenvironmental Engineering: Inception, Evolution, and The Future*, mini-symposium honoring the career of Geo-Legend David E. Daniel at the ASCE Geo-Institute's *Geo-Chicago 2016: Sustainability, Energy, and the Environment*, Chicago, IL, Aug. 14-18, 2016
- Moderator, session on "Innovations in Engineered Barriers for Geoenvironmental Containment" at the ASCE Geo-Institute's annual conference, *Geo-Congress 2014: Geo-Characterization and Modeling for Sustainability*, Atlanta, GA, Feb. 23-26, 2014
- Moderator, session on "Hydraulic Properties and Hydrology of Waste Containment Systems" at the ASCE Geo-Institute's annual conference, *Geo-Congress 2012 – State of the art and Practice in Geotechnical Engineering*, Oakland, CA, Mar. 25-29, 2012
- Member, Organizing Committee, conference on *Tailings and Mine Waste '12*, Oct., 2012, Colorado State University, Fort Collins, CO
- Moderator, panel on "Prediction in Geoenvironmental Engineering: State-of-Practice and Needs for the Future" at the ASCE Geo-Institute's annual conference, *GeoFlorida – Advances in Analysis, Modeling & Design*, West Palm Beach, FL, Feb. 20-24, 2010

PROFESSIONAL ACTIVITIES AND SERVICE (continued)

Conference Service (continued)

- Session co-organizer for two sessions on "Mechanical and Chemical Soil Behavior" at the ASCE Geo-Institute's annual conference, *GeoCongress 08 – The Challenge of Sustainability in the Geoenvironment*, New Orleans, LA, March 9-12, 2008
- Session co-organizer for session on "Chemical Compatibility Issues for Geosynthetic Clay Liners (GCLs)" for *GeoAmericas 2008 – The First Pan American Geosynthetics Conference and Exhibition*, Cancun, Mexico, March 2-5, 2008
- Member, International Advisory Committee for the *12th International Conference of the International Association for Computer Methods and Advances in Geomechanics*, Goa, India, Oct. 1-6, 2008
- Member of the Organizing Committee and Co-Chair for Short Courses, at the ASCE Geo-Institute's annual conference, *GeoCongress 08 – The Challenge of Sustainability in the Geoenvironment*, New Orleans, LA, March 9-12, 2008
- Member of the Organizing Committee, and Chair of the Technical Committee for the ASCE Geo-Institute's annual conference, *Geo-Denver 2007*, Denver, CO, Feb. 18-21, 2007
- Member, Technical Committee for the *Fourth International Conference on Unsaturated Soils (UNSAT'06)*, Carefree, AZ, April 2-5, 2006
- Session organizer and co-chair for session on "Innovative Barriers and Barrier Materials" to be held at ASCE Geo-Institute's *Geo-Frontiers 2005*, Austin, TX, Jan. 24-26, 2005
- Member, International Advisory Committee for the *5th International Congress of Environmental Geotechnics*, University of Wales, Cardiff, UK, June 26-30, 2006
- Chair, Organizing Committee, conference on *Tailings and Mine Waste '04*, Vail Cascade Resort and Spa, Vail, CO, Oct. 10-13, 2004
- Moderator, breakout session on "Contaminant Transport and Multiphase Flows", *Soil and Rock America Conference*, MIT, Cambridge, MA, June 22-26, 2003
- Member, Organizing Committee, conference on *Tailings and Mine Waste '03*, Vail Cascade Resort and Spa, Vail, CO, Oct. 12-15, 2003
- Member, Session Organizing Committee for session on "Clay Membrane Processes" held at the *39th Annual Meeting of the Clay Minerals Society: Bolder Clays*, Boulder, CO, June 8-13, 2002
- Organized and moderated session on, "The Rocky Mountain Regional Hazardous Substance Research Center", at *Tailings and Mine Waste '02*, Colorado State University, Fort Collins, CO, Jan. 27 – 30, 2002
- Member, Organizing Committee, conference on *Tailings and Mine Waste '02*, Jan. 27-30, 2002, Colorado State University, Fort Collins, CO
- Member, Session Organizing Committee for session on "Montmorillonites in Geoenvironmental Engineering" held at the *2001 Clay Minerals Society Annual Meeting*, June 16-20, Madison, WI
- Member, Session Organizing Committee for session on "modeling" held at the 2001 *International Containment & Remediation Technology Conference and Exhibition*, Orlando, FL, June 10-13
- Member, Organizing Committee, conference on *Tailings and Mine Waste '01*, Jan. 15-18, 2001, Colorado State University, Fort Collins, CO
- Member, Conference Organizing Committee, and Sub-Committee Chair of Pre-Conference Short Courses for the ASCE Geo-Institute's annual conference, *GeoDenver 2000*, Denver, CO, Aug. 5-8, 2000
- Session organizer and moderator, sessions MOC21 and MOD21 on "Unsaturated Soils, Flow and Transport, I and II" at the ASCE Geo-Institute's annual conference *GeoDenver 2000*, Denver, CO, Aug. 7, 2000

PROFESSIONAL ACTIVITIES AND SERVICE (continued)

Conference Service (continued)

- Member of the International Advisory Board for the *International Symposium on Physical Modelling and Testing in Environmental Geotechnics*, sponsored by the Network of European Centrifuges for Environmental Geotechnics Research (NECER), La Baule, France, May 15-17, 2000
- Member, Organizing Committee, conference on *Tailings and Mine Waste '00*, Colorado State University, Fort Collins, CO, Jan. 23-26, 2000
- Moderator, 2 sessions at the 2nd British Geotechnical Society's Conference on *Geoenvironmental Engineering, Ground Contamination: Pollutant Management and Remediation*, London, UK, Sept. 13-15, 1999
- Member, Organizing Committee, conference on *Tailings and Mine Waste '99*, Colorado State University, Fort Collins, CO, Jan. 24-27, 1999
- Member, International Organizing Committee for the *4th International Symposium on Environmental Geotechnology and Global Sustainable Development*, Boston, MA, Aug. 9-12, 1998
- Member, Organizing Committee, conference on *Tailings and Mine Waste '98*, Colorado State University, Fort Collins, CO, Jan. 26-28, 1998
- Moderator, Session GEO4 on "In Situ Containment Technologies", ASCE Spoke Conference on *In Situ Remediation of the Geoenvironment*, Minneapolis, MN, Oct. 5-8, 1997
- Moderator, Session 4 on "Modeling II: Transport through Barriers", *1997 International Containment Technology Conference and Exhibition*, St. Petersburg, FL, Feb. 9-12, 1997
- Member, Organizing Committee, conference on *Tailings and Mine Waste '97*, Colorado State University, Fort Collins, CO, Jan. 13-17, 1997
- Member, Organizing Committee for ASCE Geotechnical Engineering Division Specialty Conference*, Uncertainty in the Geologic Environment: From Theory to Practice*, University of Wisconsin, Madison, WI, July 31-Aug. 2, 1996
- Member, Organizing Committee, conference on *Tailings and Mine Waste '96*, Colorado State University, Fort Collins, CO, Jan.16-19, 1996
- Moderator, Session 3-B on "Chemical Interactions and Remediation", ASCE Specialty Conference on *Geoenvironment 2000*, New Orleans, LA, Feb. 24-26, 1995
- Member, Organizing Committee, conference on *Tailings and Mine Waste '95*, Colorado State University, Fort Collins, CO, Jan. 17-20, 1995
- Member, Organizing Committee, conference on *Tailings and Mine Waste '94*, Colorado State University, Fort Collins, CO, Jan. 19-21, 1994
- Organizer and Moderator for Session on "Site Remediation: Waste Extraction" at the *Symposium on Environmental Geotech*, ASCE National Convention, New York, NY, Sept. 16-17, 1992.

Paper Reviews for Journals

- *Acta Geotechnica* (1 paper in 2008, 1 paper in 2017, 1 paper in 2018)
- *Advances in Environmental Research* (1 paper in 2000)
- *Advances in Water Research*, Elsevier Science, Amsterdam (1 paper in 2005)
- *Applied Clay Science*, Elsevier Science, Amsterdam (1 paper in 1997, 1 paper in 2003, 1 paper in 2005, 1 paper in 2005, 1 paper in 2011, 1 paper in 2017)
- *Applied Geochemistry*, Elsevier Science, Amsterdam (1 paper in 2005, 2 papers in 2017)
- *Applied Radiation & Isotopes*, Elsevier Science, Amsterdam (reviewed 1 paper in 2005)

PROFESSIONAL ACTIVITIES AND SERVICE (continued)

Paper Reviews for Journals (continued)

- *Canadian Geotechnical Journal*, CGS, Ottawa (3 papers in 1992 and 1994, 1 paper in 1996, 1 paper in 2005, 1 paper in 2008 with re-review in 2009, 3 papers in 2009, 1 paper in 2010, 3 papers in 2011, 2 papers in 2014, 2 papers in 2015, 2 papers in 2017, 1 paper in 2018, 2 papers in 2019, 2 papers in 2021, 1 paper in 2022)
- *Cement and Concrete Research*, Elsevier Science, Amsterdam (1 paper in 2017)
- *Chemical Engineering Communications*, Taylor and Francis, London (1 paper in 2009)
- *Clays and Clay Minerals*, Clay Minerals Society, Aurora, CO (1 paper in 1994, 1 paper 2004, 2 papers in 2005)
- *Computers and Geotechnics* Elsevier Science, Amsterdam (1 paper in 2020)
- *Engineering Geology*, Elsevier Science, Amsterdam (1 paper in 1999, 1 paper in 2000, 3 papers in 2007, 1 paper in 2008, 3 papers in 2011, 1 paper in 2014, 1 paper in 2015)
- *Environmental and Engineering Geoscience*, Association of Environmental & Engineering Geologists and the Geological Society of America (1 paper in 2011)
- *Environmental Engineering Science*, Mary Ann Liebert, Inc. (1 paper in 2020)
- *Environmental Geotechnics*, Institute of Civil Engineers (1 paper in 2019, 1 paper in 2020, 1 paper in 2021, 1 paper in 2022)
- *Environmental Science &Technology*, ACS (1 paper in 1997, 1 paper in 2000, 1 paper in 2003, 2 papers in 2004, 1 paper in 2006, 1 paper in 2007, 1 paper in 2009, 1 paper in 2010, 1 paper in 2011)
- *Environmental Science &Technology Letters*, ACS (1 paper in 2014, 1 paper in 2015, 2 papers in 2016)
- *Geochemica et Cosmochimica Acta*, Elsevier Science, Amsterdam (1 paper in 2001, 1 paper in 2002, 1 paper in 2004, 1 paper in 2005, 1 paper in 2020)
- *Geomechanics and Engineering*, Techno Press, Korea (1 paper in 2009, 1 paper in 2015)
- *Geomechanics and Geoengineering: An International Journal*, Taylor and Francis, London (1 paper in 2007, 1 paper in 2008)
- *Geosynthetics International*, Institution of Civil Engineers, London (1 paper in 2000, 2 papers in 2003, 1 paper in 2014, 1 paper in 2018, 1 paper in 2020, 3 papers in 2021, 1 paper in 2022)
- *Geotechnical and Geological Engineering*, Kluwer Academic Publ., The Netherlands (reviewed 1 paper in 1998, 1 paper in 2009, 1 paper in 2015, 2 papers in 2017)
- *Geotechnical Testing Journal*, ASTM, West Conshohoken, PA (~ 2 to 3 papers/yr in 1992-2004, reviewed 1 paper in 2005, 1 paper in 2010, 1 paper in 2012, 1 paper in 2016, 1 paper in 2021)
- *Geotechnique*, Institution of Civil Engineers, London (1 paper in 2004, 1 paper in 2012)
- *Geotextiles & Geomembranes*, Elsevier Science, Amsterdam (1 paper in 1999, 2 papers in 2008, 1 paper in 2009, 2 papers in 2010, 2 papers in 2011, 2 papers in 2012, 2 papers in 2013, 1 paper in 2014, 3 papers in 2016, 3 papers in 2017, 1 paper in 2018, 1 paper in 2019, 2 papers in 2020)
- *International Journal for Numerical and Analytical Methods in Geomechanics*, John Wiley & Sons, Inc., New York (1 paper in 2001, 1 paper in 2005, 1 paper in 2008, 3 papers in 2009, 1 paper in 2022).
- *International Journal of Solids and Structures* (1 paper in 2001)
- *Journal of Aquatic Geochemistry*, Springer-Science + Business Media B.V., Dordrecht, The Netherlands (1 paper in 2004)
- *Journal of Contaminant Hydrology*, Elsevier Science, Amsterdam (1 paper in 1997, 1 paper in 1995, 1 paper in 1999, 1 paper in 2001, 1 paper in 2002, 4 papers in 2003, 1 paper in 2004, 1 paper in 2005, 1 paper in 2005, 1 paper in 2006, 1 paper in 2007)
- *Journal of Environmental Engineering*, ASCE, Reston, VA (~1 paper/yr during 1999-2009, 2 papers in 2010, 1 paper in 2011, 1 paper in 2014)

PROFESSIONAL ACTIVITIES AND SERVICE (continued)

Paper Reviews for Journals (continued)

- *Journal of Environmental Engineering and Science*, Institution of Civil Engineers, London (1 paper in 2001, 1 paper in 2003)
- *Journal of Environmental Radioactivity* (1 paper in 2018)
- *Journal of Environmental Quality* (1 paper in 2000)
- *Journal of Geophysical Research – Solid Earth*, American Geophysical Union, Washington, D. C. (1 paper in 2004, 1 paper in 2005, 1 paper in 2013)
- *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, Reston, VA (2 to 10 papers/yr since 1988-2004; 6 papers in 2004, 9 papers in 2005, 7 papers in 2007, 7 papers in 2008, 6 papers in 2009, 5 papers in 2010, 4 papers in 2011, 4 papers in 2012, 3 papers in 2013, 3 papers in 2014, 2 papers in 2015, 4 papers in 2017, 2 papers in 2018, 4 papers in 2019, 3 papers in 2020, 3 papers in 2021, 4 papers in 2022)
- *Journal of Geotechnical and Geological Engineering*, Springer (1 paper in 2009 and 1 paper in 2014)
- *Journal of Ground Water*, National Ground Water Association, OH (1 paper in 2004)
- *Journal of Hydrology*, Elsevier Science, Amsterdam (2 papers in 1994)
- *Journal of Infrastructure Systems*, ASCE (1 paper in 1994)
- *Journal of Material Cycles and Waste Management*, Japan Society of Waste Management Experts (1 paper in 2001)
- *Journal of Soil Contamination* (1 paper in 1998)
- *Journal of Soil and Sediment Contamination: An International Journal* (1 paper in 2002, 1 paper in 2003)
- *Journal of the Transportation Review Board*, TRB (2 papers in 2000 and 2 papers in 2001).
- *Nature*, Nature Publishing Group, London (1 paper in 2015)
- *Nature Communications*, Nature Publishing Group, London (1 paper in 2016)
- *Pedosphere*, Elsevier Science, Amsterdam (1 paper in 2020)
- *Practice Periodical of Hazardous, Toxic, and Radioactive Waste Management*, ASCE, Reston, VA (1 paper in 2001)
- *Separation Science and Technology*, Marcel Dekker, New York (1 paper in 2002).
- *Soil Science* (1 paper in 1996)
- *Soils and Foundations*, Elsevier Science, Amsterdam (formerly Japanese Geotechnical Society, Tokyo), (1 paper in 2003, 1 paper in 2011, 1 paper in 2012, 1 paper in 2013, 1 paper in 2018)
- *Soils and Rocks*, Associacao Brasileira de Mecanica dos Solos, Brazil (1 paper in 2015, 1 paper in 2020)
- *Transport in Porous Media*, Kluwer Academic Publ., The Netherlands (1 paper in 1991, 1 paper in 2005, 1 paper in 2007, 1 paper in 2011)
- *Water Environment Research*, Water Environment Federation, Alexandria, VA (1 paper in 2000, 1 paper in 2002, and 1 paper in 2003)
- *Waste Management*, Pergamon Press Publ., NY (1 paper in 1991, 1 paper in 1997, 1 paper in 1998, 1 paper in 2009)
- *Water Resources Research*, American Geophysical Union, Washington, D.C. (2 papers in 2004, 2 papers in 2008, 2 papers in 2011)

PROFESSIONAL ACTIVITIES AND SERVICE (continued)

Paper Reviews for Conferences

- *9th International Congress on Environmental Geotechnics*, Chania, Greece (Crete), June 25-28, 2023 (4 papers in Jan. and Feb., 2023)
- *3rd International Symposium on Coupled Phenomena in Environmental Geotechnics*, Kyoto, Japan, Mar. 17-19, 2021 (5 papers in April, 2020)
- *8th International Congress on Environmental Geotechnics*, Hangzhou, China, Oct. 28-Nov. 1, 2018 (5 papers in May and June, 2018)
- ASCE Geo-Institute's *PANAM-UNSAT 2017, Second Pan-American Conference on Unsaturated Soils: Unsaturated Soil Mechanics for sustainable Geotechnics*, Dallas, TX, Nov. 12-15, 2017 (1 paper in 2017)
- *Geoenvironmental Engineering: Emergence, Evolution, and The Future*, special symposium honoring David E. Daniel, *Geo-Chicago 2016: Sustainability, Energy, and the Geoenvironment*, Chicago, IL, Aug. 14-18, 2016 (6 papers as co-editor of the symposium proceedings).
- *7th International Congress on Environmental Geotechnics*, Melbourne, Australia, Nov. 10-14, 2014 (5 abstracts in 2013 and 3 papers in 2014)
- ASCE Geo-Institute's *Geo-Congress 2012: State of the Art and Practice in Geotechnical Engineering*, Oakland, CA, Mar. 25-29, 2012 (4 papers in 2011)
- ASCE Geo-Institute's *Geo-Frontiers 2011: Advances in Geotechnical Engineering*, Dallas, TX, Mar. 13-16, 2011 (2 papers in 2010)
- *3rd International Symposium on Geosynthetic Clay Liners*, *GBR-C 2k1*0, Würzburg, Germany, Sept. 15-16, 2010 (2 papers in 2010)
- ASCE Geo-Institute's *GeoFlorida 2010: Advances in Analysis, Modeling & Design*, West Palm Beach, Feb. 20-24, 2010 (2 papers in 2009)
- ASCE Geo-Institute's *GeoCongress 2008: The Challenge of Sustainability in the Geoenvironment*, New Orleans, Mar. 9-12, 2008 (3 papers in 2007)
- Industrial Fabrics Association Internal (IFAI) "*GeoAmericas 2008 – The First Pan American Geosynthetics Conference and Exhibition*, Cancun, Mexico, Mar. 2-5, 2008 (4 papers in 2007)
- *Fifth International Congress on Environmental Geotechnics (5ICEG)*, International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE), Cardiff, UK, June 26-30, 2006 (19 papers in 2005)
- *UNSAT06,* ASCE Geo-Institute, Carefree, AZ, Apr. 2-5, 2006 (7 papers in 2005)
- *Geo-Frontiers 2005*, ASCE Geo-Institute, Austin, TX, Jan. 24-26, 2005 (10 papers in 2004)
- 2004 Biennial Colorado Geotechnical Seminar, *H_2GEO: Geotechnical Engineering for Water Resources*, Denver, CO, Oct. 22, 2004 (1 paper in 2004)
- *2004 Annual Meeting of the Transportation Research Board (TRB)*, Washington, D.C., Jan. 2004 (1 paper in 2003)
- *SARA (Soil and Rock America) Conference & 12th Panamerican Conference*, Boston, June 22-26, 2003 (reviewed 2 papers).*GeoEng 2000*, Melbourne, Australia, Nov. 19-24, 2000 (4 papers)
- *Geosynthetics '99*, IFAI, Boston, MA, Apr. 28-30, 1999 (4 papers)
- *Filtration and Drainage in Geotechnical/Geoenvironmental Engineering*, ASCE National Convention, Boston, MA, Oct. 1998 (1 paper)
- *GeoEnvironment 97: 1st Australia - New Zealand Conference on Environmental Geotechnics*, Melbourne, Nov. 26-28, 1997 (3 papers)
- ASCE Specialty Conference on *In Situ Remediation of the Geoenvironment*, Minneapolis, MN, Oct. 5-8, 1997 (7 papers)

PROFESSIONAL ACTIVITIES AND SERVICE (continued)

Paper Reviews for Conferences (continued)

- *1997 International Containment Technology Conference and Exhibition*, St. Petersburg, Florida, Feb. 9-12, 1997 (6 papers)
- *14th International Conference on Soil Mechanics and Foundation Engineering* at Hamburg, Germany (served on *ad hoc* committee to review all abstracts and submitted papers from the US National Society of ISSMFE: Apr. and July, 1996)
- ISSMFE *2nd International Congress on Environmental Geotechnics, IS-Osaka '96*, Osaka, Japan, Nov. 5-8, 1996 (10 papers in 1996)
- ASCE Specialty Conference on *Uncertainty in the Geologic Environment: From Theory to Practice*, Madison, WI, Aug. 1-3, 1996 (6 papers in 1995-96)
- ASCE Specialty Conference on *The Geoenvironment 2000*, New Orleans, Feb. 24-26, 1995 (7 papers in 1994)
- ISSMFE *1st International Congress on Environmental Geotechnics*, Edmonton, Alberta, Canada, July 10-15, 1994 (2 papers in 1993)
- ASTM *Symposium on Hydraulic Conductivity and Waste Contaminant Transport in Soil*, San Antonio, Jan. 21-22, 1993 (4 papers in 1992)
- *13th International Conference on Soil Mechanics and Foundation Engineering* at New Delhi, India, 1992 (2 abstracts and 2 papers in 1992)*Session on Geo-Environmental Properties of Soil and Rock*, 71st Annual Meeting of the Transportation Research Board, National Research Council, Washington, DC, Jan. 1992 (3 papers in 1991)
- ASCE Geotechnical Special Publication No. 26 on *Waste Containment Systems: Construction, Regulation, and Performance*, ASCE National Convention, San Francisco, CA, Nov. 6-7, 1990 (1 paper in 1990)

Book (Published) Reviews

- Bai, M.B. and Elsworth, D. (2000). *Coupled Processes in Subsurface Deformation, Flow and Transport*, ASCE, Reston, VA (reviewed in 1999)
- Sharma, H.D., and Lewis, S.P. (1994). *Waste Containment Systems, Waste Stabilization, and Landfills*, John Wiley and Sons, Inc., New York. (reviewed in Nov., 1993)

Proposal Reviews

- *National Science Foundation*, Arlington, VA:
  - External reviewer for unsolicited proposals (Jan. 2000, Jan. 2001, Sept. 2001, Jan. 2003, March 2003, March 2004, March 2005, Nov. 2005, Feb. 2007, Nov. 2008, Dec. 2008, Nov. 2012, Jan. 2013, May and Dec. 2017, Dec. 2018)
  - Proposal review panel member for unsolicited proposals submitted to Engineering for Civil Infrastructure (Sept. 2019)
  - Proposal review panel member for unsolicited proposals submitted to Engineering for Civil Infrastructure (May 2018)
  - Proposal review panel member for unsolicited proposals on geotechnical engineering and materials (June 2015)
  - Proposal review panel member for unsolicited proposals on geotechnical engineering and geomechanics (April & May 2012)

PROFESSIONAL ACTIVITIES AND SERVICE (continued)

Proposal Reviews (continued)

- Proposal review panel member for unsolicited proposals on geoenvironmental engineering (Jan. 2011):
  - Proposal review panel member for unsolicited proposals on sustainability (June 2008)
  - Proposal review panel member for Career Development Program, *GeoEnvironmental Engineering and GeoHazards Mitigation Program*, Civil, Mechanical and Manufacturing Innovation (2006)
  - Proposal review panel member for unsolicited proposals (May 2002)
  - Proposal review panel member for unsolicited proposals (1998)
  - Proposal review panel member for Career Development Program (1997)
  - Proposal review panel member for Career Development Program (1995)
  - Proposal review panel member for National Young Investigator Program (1993)
  - At large proposal evaluations (~4 per year, 1989 – 1994)
- *Natural Sciences and Engineering Research Council* of Canada, Ottawa, Canada:
  - External reviewer for Discovery Grant proposal (Jan. 2022)
  - External reviewer for a Collaborative Research and Development or Industrial Research Chair proposal (Mar. 2017)
  - External reviewer for Discovery Grant proposal (Dec. 2014)
  - External reviewer for Discovery Grant proposals (2 in Jan. 2009)
  - External reviewer for unsolicited proposals (Jan. 2001, Aug. 2001, Aug. 2002)
  - External reviewer for Collaborative Research and Development Grants–Project Application (Aug. 2004)
  - External reviewer for E. W. R. Steacie Memorial Fellowship (Oct. 2004)
- The *Research Grants Council (RGC) of Hong Kong* (Mar. 2017)
- The *Swiss National Science Foundation*, Bern, Switzerland (Nov. 2014, Dec. 2015, July 2016, July 2017)
- The *University of Missouri Research Board*, Columbia, MO (Nov. 2014)
- The US *Civilian Research and Development Foundation* (CRDF), Arlington, VA (Nov. 2007)
- *The Petroleum Research Fund*, American Chemical Society, Washington, DC (May 2006)
- *Kentucky Science and Engineering Foundation R&D Excellence Program Proposals* (Feb. 2003)
- *2003 Victoria Fellowship*, State Government of Victoria, Australia (Apr. 2003)
- Phase I of *Business Technology Transfer (STIR) Programs*, U.S. Department of Energy (May 2003)
- *Women's International Science Collaboration (WISC) Program 2001 – 2003* of the American Association for the Advancement of Science (Aug. 2003)
- *Canadian Foundation for Innovation* (Oct. 2001, Oct. 2003)
- University of Wisconsin *Water Resources Institute* (Dec. 2001, Dec. 2002, Dec. 2003)
- *The Petroleum Research Fund*, American Chemical Society, 1155 16th Street, NW, Washington, DC 20036 (Nov. 1997 & May 2006)
- Environmental Sciences Branch, US Army Research Office, Research Triangle Park, NC 27709-9943 (1992)
- State of Louisiana, Board of Regents (1992)

ASTM Standards Review

- Reviewer for draft of ASTM 5084 standard on, "Standard Test Method for Determination of Hydraulic Conductivity of Saturated Soils with Aqueous Liquids Using a Flexible-Wall Permeameter" (Dec. 2003 – Oct. 2004)

PROFESSIONAL ACTIVITIES AND SERVICE (continued)

Professional/Research Report Reviews

- Reviewed draft report on: *Tank Wastes Planned for Onsite Disposal at Three Department of Energy Sites: The Savannah River Site*, Nuclear and Radiation Studies Board, National Research Council, Washington, D.C. (June 2005)
- Reviewed draft report on: *Remedial Action at the Moab Site-Safety Now and for the Long Term*, Board on Radioactive Waste Management, National Research Council, Washington, D.C. (May 2002)
- Water Resources Institute, West Virginia University (1992)

COMMUNITY SERVICE

- Advisory Council Member, Colorado Science and Engineering Fair (1988-1989)
- Volunteer Science Fair Judge, Long's Peak Science Fair, U. of Northern Colorado, Greeley, CO (1988, 1989)

PERSONAL REFERENCES

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