

**Curriculum Vitae for  
CHARLES D. SHACKELFORD  
(latest update: 07/15/24)**

Department of Civil and Environmental Engineering  
Colorado State University  
Fort Collins, Colorado 80523-1372  
Phone: (970) 491-5049  
Fax: (970) 491-7727  
E-mail: charles.shackelford@colostate.edu



## 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<sup>1</sup>, 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<sup>2</sup>, 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)

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<sup>1</sup> Formerly, the University of Missouri-Rolla

<sup>2</sup> Name changed from Civil Engineering to Civil and Environmental Engineering on July 1, 2006

## AWARDS/HONORS/RECOGNITION

- 23 Co-authored 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 Co-authored 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](https://www.cgs.ca/cross_canada.php))
- 19 Co-authored 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](http://dx.doi.org/10.1061/(ASCE)GT.1943-5606.0001803)) selected as the "Editor's Choice"
- 18 Co-authored 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 Co-authored 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 Authored 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 Co-authored 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-Mar.. 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-Apr. 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 – Mar. 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; Apr. 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: Mar.-Apr. 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; Mar.-Apr.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; Apr. 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-Apr. 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; Mar. 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 Lecture/Conference/Workshop/Meeting Presentations**

- 57 Invited keynote on, "Physical-Chemical Properties Affecting the Performance of Bentonite-Based Chemical Containment Barriers," presented at *GeoenvironMeet 2024*, Portland, OR, Sept. 9, 2024
- 56 Invited lecture on, "Enhanced Bentonites for Sustainable Chemical Containment," presented at the *Conference for the Korean Society of Soil and Groundwater Environment*, Gangneung, South Korea, Oct. 12, 2023
- 55 Invited lecture on, "The Role of Diffusion in Environmental Geotechnics," presented at Hanbat National University, Daejeon, South Korea, Oct. 11, 2023
- 54 Invited lecture on, "The Role of Diffusion in Environmental Geotechnics," presented at Seoul National University, Seoul, South Korea, Oct. 10, 2023
- 53 Invited lecture on, "Membrane Behavior and Chemico-Osmosis in Clays," presented at the Korea Institute of Civil Engineering and Building Technology (KICT), Ilsanseo-gu, Goyang-si, Gyeonggi-do, 10223, South Korea, Oct. 10, 2023
- 52 Invited presentation on, "Review of Methods for Quantifying Polymer Loading of Enhanced-Bentonite Geosynthetic Clay Liners," at the International Geosynthetics Society (IGS) *12<sup>th</sup> International Geosynthetics Conference*, Rome, Italy, Sept. 17-21, 2023
- 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 Geosynthetic Clay liners," at the International Geosynthetics Society (IGS) *7<sup>th</sup> 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 Engineering (ISSMGE) *3<sup>rd</sup> 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

## INVITED ACTIVITIES (continued)

### Invited Conference/Workshop/Meeting Presentations (continued)

- 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
- 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 *8<sup>th</sup> 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

## INVITED ACTIVITIES (continued)

### Invited Conference/Workshop/Meeting Presentations (continued)

- 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 7<sup>th</sup> *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
- 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 18<sup>th</sup> *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, Mar. 13-16, 2011
- 24 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, Mar. 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," *21<sup>st</sup> 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



## INVITED ACTIVITIES (continued)

### Invited Conference/Workshop/Meeting Presentations (continued)

- 18 Invited keynote presentation on, "Environmental Issues in Geotechnical Engineering," presented at the *16<sup>th</sup> 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
- 15 Invited presentation on, "Research Activities at the Rocky Mountain Regional Hazardous Substance Research Center," presented at the Joint Conference of the *9<sup>th</sup> Billings Land Reclamation Symposium* and the *20<sup>th</sup> 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, Apr. 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 17<sup>th</sup> 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

## **INVITED ACTIVITIES (continued)**

### **Invited Conference/Workshop/Meeting Presentations (continued)**

- 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
- 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, Apr. 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, Apr. 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

## INVITED ACTIVITIES (continued)

### Invited Seminar Presentations (continued)

- 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, Apr. 24, 2003
- 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, Apr. 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, Apr. 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, Mar. 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, Mar. 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, Apr. 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

## **INVITED ACTIVITIES (continued)**

### **Invited Seminar Presentations (continued)**

- 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
- 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

## **INVITED ACTIVITIES (continued)**

### **Invited Course Instructor (continued)**

- 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
- 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 2<sup>nd</sup> 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

## INVITED ACTIVITIES (continued)

### Invited Conference/Workshop Participant (continued)

- 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
- s9 Invited participant, NSF workshop on *Emerging Geoenvironmental Technologies*, University of Illinois-Chicago, Chicago, IL, Sept. 18-19, 2003
- 8 Invited Discussor for the session on "Management of Contaminated Sites" at the 4<sup>th</sup> 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
- 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, 1994  
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	Fall	29			NA <sup>1</sup>	142	4.8
CIVE 455			2023	Spring	15			NA <sup>1</sup>		
CIVE 455			2019	Fall	10			NA <sup>1</sup>		
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	2024	Spring	10	NA <sup>1</sup>	43	NA <sup>1</sup>			
CIVE 458		2022	Fall	14	NA <sup>2</sup>					
CIVE 458		2019	Spring	19	NA <sup>1</sup>					
CE 496	Introduction to Environmental Geotechnics	1993	Spring	17	4.5	17	4.5			
				<b>1,947</b>	<b>4.2</b>	<b>1,947</b>	<b>4.2</b>			

<sup>1</sup> Quantitative student evaluations were discontinued by the University

<sup>2</sup> Quantitative student evaluations were discontinued by the University

**TEACHING - 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	23	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			
				<b>410</b>	<b>4.6</b>	<b>410</b>	<b>4.6</b>			



## TEACHING - COURSES DEVELOPED AND PROFESSIONAL COURSES

### 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 - COURSES DEVELOPED AND PROFESSIONAL COURSES (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<sup>1</sup>

### Impact of Publications (as of 07/15/24)

Data Base	Total Number of Citations	<i>h</i> -index*	<i>i10</i> -index**
Google Scholar	10,426	55	136
Web of Science (Thompson Reuters)	4,661	41	80

\* 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 54 means that 54 of the author's publications have been cited at least 54 times.

\*\* Number of publications with at least 10 citations

### Journal Papers

- 106 Fritz, C.J., Scalia, J., and Shackelford, C.D. (2024). "Limiting membrane behavior of compacted sand-bentonite mixture," *Journal of Rock Mechanics and Geotechnical Engineering*, CAS
- 105 Norris, A.S., Scalia, J., and Shackelford, C.D. (2023). "Mechanisms controlling the hydraulic conductivity of anionic polymer-enhanced GCLs," *Geosynthetics International*, IGS, 30(6), 628-650
- 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](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](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>

<sup>1</sup> Underlined co-author(s) designate graduate student advisee(s) or co-advisee(s)

## PUBLICATIONS (continued)

### Journal Papers (continued)

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- 3 Shackelford, C.D., Malusis, M.A., and Olsen, H.W. (2001). "Clay membrane barriers for geoenvironmental containment applications," *38<sup>th</sup> Annual Clay Minerals Society Meeting*, Madison, WI, June 16-20, 2001
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- 1 Shackelford, C.D. (1989). "Laboratory diffusion testing for waste disposal," *26<sup>th</sup> Annual Clay Minerals Society Meeting*, Sacramento, CA, Sept. 25-28, Dept. of Civil Engineering, California State University, Sacramento

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- 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)
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## 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
<b>Totals</b>	<b>47</b>	<b>\$8,747,340</b>

### Individually Funded Research Projects – PI

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

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

**RESEARCH (continued)**

**Individually Funded Research Projects – PI (continued)**

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

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<sup>1</sup> 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)**

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



**RESEARCH (continued)**

**Individually Funded Research Projects – Co-PI**

<b>No.</b>	<b>Project Title</b>	<b>Sponsor</b>	<b>Amount</b>	<b>Period</b>
8	<i>Determining PFAS Transport Mechanisms Within AFFF-Impacted Construction Materials to Develop Better In-Place and Re-Use Management Solution for the DoD</i>	DOD (SERDP)	\$549,992	06/17/24-08/30/26 <sup>1</sup>
7	<i>Evaluation of Long-Term Internal Shear Strength of Geosynthetic Clay Liners for Use in Mining Applications</i>	CETCO	\$164,141	06/01/14-05/31/16
6	<i>Instrumentation and Equipment for Experimental Research in Geoenvironmental Engineering</i>	Dept. of Civil and Environmental Engineering, CSU	\$19,861	11/06/13-05/31/14
5	<i>Development and Commercialization of Dupont's Method for Remediating Contaminated Soils</i>	DuPont	\$300,000	10/01/03-09/30/07
4 <sup>2</sup>	<i>Reactive Transport Modeling of Metal Removal from Anaerobic Biozones</i>	EPA	\$201,341	11/01/03-10/31/05
3	<i>Lumped Chemical Approach for Fate and Transport Modeling of Organic Pollutant Mixtures</i>	EPA	\$721,695	10/01/01-01/31/06
2	<i>Bioremediation in the Engineering Curriculum: A Module-Based Approach</i>	NSF	\$350,000	09/15/95-08/31/98
1	<i>Affiliation Program in Water Resources and Environmental Engineering</i>	United States Information Agency	\$98,820	09/01/93-08/31/97
<b>Total =</b>			<b>\$2,204,509</b>	

**Individually Funded Research Projects – Participant**

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

<sup>1</sup> Tentative dates

<sup>2</sup> 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	<i>Zeolite-Amended Backfills for Enhanced Metals Containment via Soil-Bentonite Vertical Cutoff Walls</i>	Aug. 2016
11	Kristin M. Sample-Lord	<i>Membrane Behavior and Diffusion in Unsaturated Sodium Bentonite</i>	May 2015
10	Gretchen L. Bohnhoff	<i>Membrane Behavior, Diffusion, and Compatibility of a Polymerized Bentonite for Containment Barrier Applications</i>	Dec. 2012
9	Jong-Beom Kang	<i>Membrane Behavior of Clay Liner Materials</i>	Dec. 2008
8	Jin-Chul Joo	<i>Lumped Approach for Sorption of Organic Compound Mixtures to Simulated Aquifer Sorbents</i>	Dec. 2007
7	Paulo S. Hemsí	<i>Computational Modeling of Bioremediation of Acid Mine Drainage in Biochemical Permeable Reactive Barriers</i>	Dec. 2005
6	Jae-Myung Lee	<i>Long-Term Hydraulic Performance of Geosynthetic Clay Liners Subjected to Inorganic Salt Solutions</i>	May 2004
5	Michael A. Malusis	<i>Membrane Behavior and Coupled Solute Transport through a Geosynthetic Clay Liner</i>	Aug. 2001
4	Ingdean Yan	<i>HCET: A Finite Element Model for Solute Transport Driven by Hydraulic, Chemical, Electrical, and Thermal Gradients</i>	Dec. 2000
3	Nabil H. Amer	<i>Influence of the Gradient Application Condition on Laboratory Measurement of the Hydraulic Conductivity of a Sand-Bentonite Mixture</i>	Dec. 1997
2	Te-Fu Chiu	<i>Capillary Barrier Effect for Constant Head Boundary Condition at High Initial Degree of Saturation</i>	May 1997
1	Farhat Javed	<i>Time and Scale Effects In Laboratory Permeability Testing of Compacted Clay Soil</i>	Dec. 1989

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

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

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

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

## ADVISING (continued)

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

No.	Name	Report Title	Graduation Date
4	Kristle V.P. Hawkins	<i>Analytical Transport Modeling using Microsoft Excel and Matlab</i>	Dec. 2011
3	Jeffrey G. Coleman	<i>Column Experiments to Evaluate the Effectiveness of Peat, Fly Ash and Iron Metal for Attenuating Uranium in Groundwater</i>	Dec. 2001
2	Steve Simpson	<i>Prediction of Hydraulic Conductivity of Coarse-Grained Soils Using the Kozeny-Carman Equation</i>	May 1990
1	Emmalee Blender	<i>Soil Stabilization and Improvement</i>	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 laboratory testing procedures for determining chemico-osmotic (semipermeable) membrane behavior of bentonite-based containment 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 Jiyang 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 Huaiquicho, 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 (Apr. 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 (Apr. 28, 2010)
- "The Waste and Low Grade Ore Stockpiles of Ranger Uranium Mine – A System Approach," by Gregory James Shirliff, 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 (Mar. 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 *ad 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 I 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-Mar. 31, 2024)
- 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-Apr.30, 2007)
- Chair, *ASCE Geo-Institute Awards Committee* (March 10, 2005-Sept. 30, 2007)
- Member, *ASCE Geo-Institute Awards Committee* (Oct. 1, 2002-Mar. 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

- Moderator, Discussion Session on "Current Status and Future Directions of Enhanced (Polymerized) Bentonites for Chemical Containment Barriers" at the *9<sup>th</sup> International Congress on Environmental Geotechnics (9ICEG)*, Chania, Greece, June 25-28, 2023
- Member, Technical Committee for the *8<sup>th</sup> International Congress on Environmental Geotechnics (8<sup>th</sup> 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

## PROFESSIONAL ACTIVITIES AND SERVICE (continued)

### Conference Service (continued)

- 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
- 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, Mar. 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 12<sup>th</sup> *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, Mar. 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, Apr. 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 5<sup>th</sup> *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 39<sup>th</sup> *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

## PROFESSIONAL ACTIVITIES AND SERVICE (continued)

### Conference Service (continued)

- 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
- 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 2<sup>nd</sup> 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, 1 paper in 2023)
- *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, 2 papers in 2023)
- *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, 3 papers in 2023, 1 paper in 2024).
- *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)

## PROFESSIONAL ACTIVITIES AND SERVICE (continued)

### Paper Reviews for Journals (continued)

- *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)
- *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, 2 papers in 2023)
- *Journal of Geotechnical and Geological Engineering*, Springer (1 paper in 2009, 1 paper in 2014, 1 paper in 2023)
- *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 Rock Mechanics and Geotechnical Engineering* (1 paper in 2024)
- *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

- 9<sup>th</sup> International Congress on Environmental Geotechnics, Chania, Greece (Crete), June 25-28, 2023 (4 papers in 2023)
- 3<sup>rd</sup> International Symposium on Coupled Phenomena in Environmental Geotechnics, Kyoto, Japan, Mar. 17-19, 2021 (5 papers in 2020)
- 8<sup>th</sup> International Congress on Environmental Geotechnics, Hangzhou, China, Oct. 28-Nov. 1, 2018 (5 papers in 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).
- 7<sup>th</sup> 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)
- 3<sup>rd</sup> International Symposium on Geosynthetic Clay Liners, GBR-C 2k10, 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<sub>2</sub>GEO: 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 & 12<sup>th</sup> 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)
- 14<sup>th</sup> *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 in 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 (Apr. & 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 16<sup>th</sup> 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

- Dr. Akram N. Alshwabkeh, George A. Snell Professor of Engineering and Director of the Puerto Rico Testsite for Exploring Contamination Threats (PRoTECT) Center, Department of Civil and Environmental Engineering, 400 Snell Engineering Center, Northeastern University, 360 Huntington Avenue, Boston, MA 02115, (617) 373-3994, [aalsha@coe.neu.edu](mailto:aalsha@coe.neu.edu)
- Dr. Craig H. Benson, Wisconsin Distinguished Professor Emeritus, University of Wisconsin-Madison, 3299 Saracen Way, Verona, WI 53593, (608) 444-0007 (mobile), [chbenson@virginia.edu](mailto:chbenson@virginia.edu)
- Dr. David E. Daniel, President Emeritus, The University of Texas-Dallas, 6539 Lakehurst Ave., Dallas, TX 75230, (214) 213-5013 (mobile), [dedaniel7@gmail.com](mailto:dedaniel7@gmail.com)
- Dr. Patrick J. Fox, Dean, Russ College of Engineering and Technology, 155 Stoker Center, Ohio University, Athens, OH 45701, (740) 593-1479, [pfox@ohio.edu](mailto:pfox@ohio.edu)
- Dr. Mario Manassero, Professor of Engineering (Prof. Ing.), Dipartimento di Ingegneria Strutturale, Edile e Geotecnica (DISEG), Politecnico Di Torino, Corso Duca degli Abruzzi, 24, I 10129 Torino, Italy, +39-011-564-7705, [manassero@polito.it](mailto:manassero@polito.it)