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## EDUCATION

University of Wisconsin-Madison, Doctor of Philosophy in Geological Engineering <i>Advisers: Craig Benson and Tuncer Edil</i>	2012
University of Wisconsin-Madison, Master of Science in Geological Engineering <i>Adviser: Craig Benson</i>	2009
Bucknell University, Bachelor of Science in Civil & Environmental Engineering	2007

## ACADEMIC AND PROFESSIONAL EXPERIENCE

Associate Professor (Tenured) in Department of Civil & Environmental Engineering Colorado State University, Fort Collins, Colorado, USA	2022 - present
Affiliate Faculty in Mining Engineering Colorado School of Mines, Golden, Colorado, USA	2022 - present
Independent Consultant Geoenvironmental Engineering	2016 - present
Assistant Professor in Department of Civil & Environmental Engineering Colorado State University, Fort Collins, Colorado, USA	2015 - 2022
Senior Associate in Environmental & Earth Sciences Practice Exponent Engineering & Scientific Consulting, Bellevue, Washington, USA	2012-2015
Senior Associate in Environmental & Earth Sciences Practice Exponent Engineering & Scientific Consulting, Natick, Massachusetts, USA	2012-2013
Graduate Teaching Assistant in Geological Engineering University of Wisconsin, Madison, Wisconsin, USA	2010
Graduate Research Assistant in Geological Engineering University of Wisconsin, Madison, Wisconsin, USA	2007-2012

## RESEARCH & SCHOLARSHIP

Site Director—**The Tailings Center**

Principal Investigator—**University Consortium for Field Focused Groundwater**

### Areas of Research

Geoenvironmental engineering (environmental geotechnics, contaminant hydrology)

Tailings & mine waste

Hydro-geotechnics (intersections of geotechnical, hydrologic, hydraulic, and groundwater engineering)

Research Awards

Robert and Mitchell Landreth Steward of the Environment Award	2021
Outstanding Faculty Performance Award, Department of Civil & Environmental Engineering, Colorado State University	2021
<i>Geosynthetics International</i> Best Paper Award for 2018	2018
Richard S. Ladd D18 ASTM Standards Development Award, ASTM International	2011
Outstanding Article on the Practice of Geotechnical Testing, <i>Geotechnical Testing Journal</i>	2010
Michael Baker Jr. Inc. Undergraduate Research in Civil Engineering Award	2006

Refereed Journal Articles

Note: Underlined co-author(s) designates undergraduate or graduate student advisee(s).

- J37. Taher, Z., Scalia, J., and Bareither, C. (IN REVIEW). One-dimensional modelling of saturated-unsaturated volume change behavior of tailings. *International Journal of Geotechnical Engineering*.
- J36. Fritz, C., Scalia, J., and Shackelford, C. (IN REVIEW). Limiting membrane behavior of compacted sand-bentonite mixture. *Journal of Rock Mechanics and Geotechnical Engineering*.
- J35. Fischer, S., Niemann, J., Scalia, J., Bullock, M., Proulx, H., Kim, B., Green, T., and Grazaitis, P (IN REVIEW). Assessing the influence of model inputs on performance of the EMT+VS soil moisture downscaling model for a large foothills region in northern Colorado. *Water Resources Research*.
- J34. Hort, H., Stockwell, E., Newell, C., Scalia, J., and Panday, S. (IN REVIEW). Modeling and evaluation of PFOS retention in unsaturated zone above the water table. *Groundwater Monitoring and Remediation*.
- J33. Bullock, M., Scalia, J., and Niemann, J. (RESUBMITTED). Predicting unsaturated soil strength for mobility assessments. *Journal of Terramechanics*.
- J32. Lund, A., Gates, T., and Scalia, J. (2023). Characterization and control of irrigation canal seepage losses: a field-focused review and perspective. *Agricultural Water Management*. DOI: 10.1016/j.agwat.2023.108516.
- J31. Karimi, S., Bareither, C., and Scalia, J. (2023). A critical review of municipal solid waste hydraulic conductivity: a mini review. *Waste Management & Research: The Journal for a Sustainable Circular Economy*. DOI: 10.1177/0734242X23120814
- J30. Aghazamani, N., Scalia, J., and Bareither, C. (2023). Effect of placement water content and dry density on water retention behavior of filtered tailings. *International Journal of Mining, Reclamation, and Environment*. DOI: 10.1080/17480930.2023.2260592.
- J29. Karimi, S., Bareither, C., and Scalia, J. (2023). Influence of oil and gas exploration and production waste on municipal solid waste hydraulic conductivity. *Waste Management*. DOI: 10.1016/j.wasman.2023.04.048.
- J28. Dong, J., Sitler, K., Scalia, J., Ge, Y., Bierta, P., Sihota, N., Hoelen, T., and Lowry, G. (2022). Application of transfer learning and convolutional neural networks for autonomous oil sheen monitoring. *J. of Applied Science*. DOI: 10.3390/app12178865.
- J27. Norris, A., Scalia, J., and Shackelford, C. (2023). Mechanisms controlling the hydraulic conductivity of anionic polymer-enhanced geosynthetic clay liners. *Geosynthetics International*. DOI: 10.1680/JGEIN.21.00051.
- J26. Aghazamani, N., Scalia, J., and Bareither, C. (2022). Phase relations for saline slurry-deposited tailings. *Geotechnical Testing Journal*, 45(3). DOI: 10.1520/GTJ20210183.
- J25. Norris, A., Aghazamani, N., Scalia, J., and Shackelford, C. (2022). Hydraulic performance of geosynthetic clay liners comprising anionic polymer-enhanced bentonites. *J. of Geotechnical and Geoenvironmental Engineering*, 148(6).

- J24. Gorakhki, M., Bareither, C., and Scalia, J. (2022). Hydraulic conductivity testing and destructive sampling of field-scale mine waste test piles. *Canadian Geotechnical Journal*. DOI: 10.1139/cgj-2021-0346.
- J23. Norris, A., Scalia, J., and Shackelford. (2022). Polymer quantification methods for geosynthetic clay liners enhanced with anionic polymers. *Geotechnical Testing Journal*, 45(2). <https://www.astm.org/gtj20210134.html>.
- J22. Lund, R., Martin, C., Gates, T., Scalia, J., and Babar, M. (2021). Field evaluation of a polymer sealant for canal seepage reduction. *Agricultural Water Management*. 252(30). DOI: 10.1016/J.AGWAT.2021.106898.
- J21. Gorakhki, M., Bareither, C., Scalia, J., and Aparicio, M. (2021). Hydrologic and environmental behavior of GeoWaste and waste rock in field experimental piles. (2021). *Mining, Metallurgy and Exploration*, Special Issue on Tailings. DOI: 10.1007/S42461-021-00419-6.
- J20. Taher, Z., Scalia, J., and Bareither, C. (2020). Comparative assessment of expansive soil stabilization by commercially available polymers. *Transportation Geotechnics*, 24(9). DOI: 10.1016/J.TRGEO.2020.100387.
- J19. Pauley, M., Niemann, J., Scalia, J., Green, T., Erskine, R., Jones, A., and Grazaitis, P. (2020). Enhanced hydrologic simulation may not improve downscaled soil moisture patterns without improved soil characterization. *Soil Science Society of America J.*, 84(3). DOI: 10.1002/SAJ2.20052.
- J18. Stock, C., Gorakhki, M., Bareither, C., and Scalia, J. (2020). Hydraulic comparison of prescriptive and water balance covers. *J. of Environmental Engineering*, 146(7). DOI: 11.1061/(ASCE)EE.1943-7870.0001733.
- J17. Bareither, C., Benson, C., Cook, E., and Scalia, J. (2020). Hydro-mechanical behavior of municipal solid waste and high-moisture waste mixtures. *Waste Management*, DOI: 10.1016/J.WASMAN.2020.02.030.
- J16. Fritz, C., Scalia, J., Shackelford, C., and Malusis, M. (2020). Determining maximum chemico-osmotic pressure difference across clay membranes. *J. of Geotechnical and Geoenvironmental Engineering*, DOI: 10.1061/(ASCE)GT.4943-5606.0002196.
- J15. Tian, Z., Bareither, C., and Scalia, J. (2020). Development and assessment of a seepage-induced consolidation test apparatus. *Geotechnical Testing J.*, DOI: 10.1520/GTJ20180375.
- J14. Malusis, M., Scalia, J., Norris, A., and Shackelford, C. (2020). Effect of chemico-osmosis on solute transport in clay barriers. *Environmental Geotechnics*, DOI: 10.1680/JENGE.17.00109.
- J13. Scalia, J., Benson, C., and Finnegan, M. (2019). Alternative procedures for swell index testing of granular bentonite from GCLs. *Geotechnical Testing J.*, 42(5). DOI: 10.1520/GTJ20180075.
- J12. Herweynen, W., Bareither, C., and Scalia, J. (2019). Shear strength of coal combustion product by vane shear. *Coal Combustion and Gasification Products*. DOI: 10.4177/CCGP-D-19-00001.1.
- J11. Scalia, J., Bohnhoff, G., Shackelford, C., Benson, C., Sample-Lord, K., Malusis, M., and Likos, W. (2018). Enhanced bentonites for containment of inorganic wastes by GCLs. *Geosynthetics International*. DOI: 10.1680/JGEIN.18.00024. **(Selected Best Paper in *Geosynthetics International* for 2018)**
- J10. Ghazi Zadeh, S., Bareither, C., Scalia, J., and Shackelford, C. (2018). Synthetic mining solutions for laboratory testing of geosynthetic clay liners. *J. of Geotechnical and Geoenvironmental Engineering*. DOI: 10.1061/(ASCE)GT.1943-5606.0001953.
- J9. Scalia, J., Bareither, C., and Shackelford, C. (2018). Advancing the use of geosynthetic clay liners as barriers. *Geotechnical Engineering J. of the SEAGS & AGSSEA*, 49(4).
- J8. Scalia, J., Benson, C., Albright, W., Smith, B., and Wang, X. (2017). Properties of barrier components in a composite cover after 14 years of service and differential settlement. *J. of Geotechnical and Geoenvironmental Engineering*, 143(9). DOI: 10.1061/(ASCE)GT.1943-5606.0001744.

- J7. Scalia, J., and Benson, C. H. (2017). Polymer fouling and hydraulic conductivity of mixtures of sodium bentonite and a bentonite-polymer composite. *J. of Geotechnical and Geoenvironmental Engineering*, 143(4). DOI: 10.1061/(ASCE)GT.1943-5606.0001628. **(Research Highlight, April 2017 Issue)**
- J6. Scalia, J., Benson, C., Bohnhoff, G., Edil, T., and Shackelford, C. (2014). Long-term hydraulic Conductivity of a bentonite-polymer composite permeated with aggressive inorganic solutions. *J. of Geotechnical and Geoenvironmental Engineering*, 140(3), 04013025.
- J5. Bradshaw, S., Benson, C., and Scalia, J. (2013). Hydration and cation exchange during subgrade hydration and effect on hydraulic conductivity of GCLs. *J. of Geotechnical and Geoenvironmental Engineering*, 139(4), 526-538.
- J4. Scalia, J. and Benson, C. (2011). Hydraulic conductivity of GCLs exhumed from landfill final covers with composite barriers. *J. of Geotechnical and Geoenvironmental Engineering*, 137(1), 1-13.
- J3. Scalia, J. and Benson, C. (2010). Preferential flow in GCLs exhumed from final covers with composite barriers. *Canadian Geotechnical J.*, 47, 1101-1111. DOI: 10.1139/T10-018.
- J2. Scalia, J. and Benson, C. (2010). Effect of permeant water on the hydraulic conductivity of exhumed GCLs. *Geotechnical Testing J.*, 33(3), 1-11.
- J1. Benson, C., Kucukkira, E., and Scalia, J. (2010). Properties of geosynthetics exhumed from a final cover at a solid waste landfill. *Geotextiles and Geomembranes*, 28, 546-556.

#### Refereed Conference Papers

Notes: Underlined co-author(s) designates undergraduate or graduate student advisee(s); \* designates speaker

- C33. Newell, C., Stockwell, E., Hort, H., White, J., Kulkarni, P., Adamson, D., Robinson, S., Panday, S., Scalia, J. (2024). Gas Sparging Directly in Aquifers to Remove or Retain PFAS: Literature, Experiments, and Modeling. 2024 Chlorinated Conference, Battelle, June 2-6, 2026, Denver, CO., ABSTRACT SUBMITTED.
- C32. Bindner, J., Scalia, J., Bariether, C. (2024). Prediction of tailings degree of saturation using hyperspectral imagery and machine learning. *Minexchange 2024*. Pheonix, AZ. ABSTRACT ACCEPTED.
- C31. Jacob, S., Scalia, J., Bareither, C. (2024). Evaluation of mineral-bentonite mixtures to concurrently achieve low hydraulic conductivity and high shear strength. *GeoenviromMeet 2024*. Portland, OR. ABSTRACT ACCEPTED.
- C30. Norris, A., Scalia, J., Benson, C., and Shackelford, C. (2024). Review of methods for quantifying polymer loading of enhanced-bentonite geosynthetic clay liners. Geosynthetics: Leading the Way to a Resilient Planet, G. Biondi, D. Cazzuffi, N. Moraci, and C. Soccodato, Eds., 12th International Conference, Rome, Italy, Sept. 17-21, 2023, CRC Press/Balkema, Boca Raton, FL, 1479-1484
- C29. Spencer, L., Bareither, C., Scalia, J.\*, Hatton, C., and Ward, K. (2022). Your opinion matters – the collective perceptions of tailings professionals. *Proceedings of Tailings & Mine Waste 2022*, Colorado State University, Fort Collins, CO.
- C28. Aghazamani, N.\*, Scalia, J., and Bareither, C. (2022). Use of climatic type settings to understand the potential for ARD from filtered tailings stacks. *Proceedings of Tailings & Mine Waste 2022*, Colorado State University, Fort Collins, CO.
- C27. Shackelford, C.\*, and Scalia, J. Semipermeable membrane behavior of geosynthetic clay liners. (2022). *Proceedings of 7<sup>th</sup> European Geosynthetics Conference*, September 6-9, 2020 (postponed to 2022), Warsaw, Poland. DOI: doi:10.1088/1757-899X/1260/1/012009.
- C26. Bareither, C.\*, Scalia, J., Aparicio, M., (2022). Case studies in commingling part 2: water balance observation from field-scale commingled and waste rock test piles in a sub-tropical highland climate. *Proceedings of the International Conference on Acid Rock Drainage*, Brisbane, Australia, 18-24 September 2022.

- C25. Aghazamani, N.\*, Scalia, J., and Bareither, C. (2021). Assessing the generation of excess pore pressure during undrained compression of unsaturated filtered tailings. *Proceedings of Tailings & Mine Waste 2021*, Banff, Alberta, Canada. University of Alberta, Edmonton, Canada.
- C24. Sample-Lord, K.\* , Bohnhoff, G., Malusis, M., Scalia, J., and Shackelford, C. Comparison of coupled solute flux through sodium- and enhanced bentonite barriers leveraging two decades of experimental data. (2021) *Proceedings of the 3<sup>rd</sup> International Symposium on Coupled Phenomena in Environmental Geotechnics*, Japanese Geotechnical Society Special Publication, 9(2), 37-44. DOI: 10.3208/jgssp.v09.cpeg025.
- C23. Malusis, M.\* , Dominijanni, A., Scalia, J., Sample-Lord, K., Bohnhoff, G., Shackelford, C., Manassero, M., and Guarena, N. (2021). Assessing the influence of chemico-osmosis on solute transport in bentonite membranes based on combined phenomenological and physical modeling. *Proceedings of the 3<sup>rd</sup> International Symposium on Coupled Phenomena in Environmental Geotechnics*, Japanese Geotechnical Society Special Publication, 9(2), 37-44. DOI: 10.3208/jgssp.v09.cpeg023.
- C22. Spencer, D., Hatton, C. \* , Bareither, C., Ward, K., and Scalia, J. (2021). Deck hands needed! Experience necessary – addressing the intended qualified tailings professional resource shortage. *Proceedings of the Mine Waste & Tailings Conference 2021*, July 1-2, 2021, Brisbane, Australia, AusIMM, Brisbane, Australia.
- C21. Gorakhki, M.\*, Bareither, C., Scalia, J., and Butters, G. (2020). Hydrologic predictions of saturated and oxygen concentration in a GeoWaste test pile. *Proceedings of Tailings & Mine Waste 2020*, Colorado State University, Fort Collins, CO.
- C.20. Norris, A.\*, Aghazamani, N., Conzelmann, J., Scalia, J., and Shackelford, C. (2020). Hydraulic conductivity of geosynthetic clay liners to synthetic mine waste leachates. *Proceedings of Tailings & Mine Waste 2020*, Colorado State University, Fort Collins, CO.
- C19. Gorakhki, M., Bareither, C.\* , Scalia, J., Aparacio, M., and Jacobs, M. (2019). In situ hydraulic conductivity testing of a GeoWaste test pile. *Proceedings of Tailings & Mine Waste 2019*, Vancouver, British Columbia, Canada.
- C18. Gorakhki, M., Bareither, C., Scalia, J.\* , and Jacobs, M. (2019). Hydraulic conductivity and soil water retention of waste rock and tailings mixtures. *Proceedings of Geo-Congress 2019*, Philadelphia, Pennsylvania, USA. ASCE, Reston, Virginia, USA.
- C17. Norris, A., Scalia, J., and Shackelford, C. (2018). Fluid indicator test (FIT) for screening the hydraulic conductivity of enhanced bentonites to inorganic aqueous solutions. *Proceedings of the 8<sup>th</sup> International Congress on Environmental Geotechnics Volume 2*, Oct. 28-Nov. 1, 2018, Hangzhou, China.
- C16. Bareither, C.\* , Gorakhki, M., Scalia, J., and Jacobs, M. (2018). Compression Behavior of Filtered Tailings and Waste Rock Mixtures. *Proceedings of Tailings & Mine Waste 2018*, Keystone, Colorado, USA. CSU, Fort Collins, Colorado, USA.
- C15. Herweynen, W.\*, Bareither, C., and Scalia, J. (2017). Salinity effects on the consolidation behavior of kaolin. *Proceedings of Tailings & Mine Waste 2017*, Banff, Alberta, Canada. University of Alberta, Edmonton, Canada.
- C14. Bareither, C.\* , Ghazi Zadeh, S., Conzelmann, J., Scalia, J., and Shackelford, C. (2017). Evaluation of mechanical and hydraulic properties of geosynthetic clay liners for mining applications. *Proceedings of Tailings & Mine Waste 2017*, Banff, Alberta, Canada. University of Alberta, Edmonton, Canada.
- C13. Malusis, M., Scalia, J.\* , Norris, A., and Shackelford, C. (2017). Quantifying the significance of chemico-osmotic counter advection on solute transport through semipermeable clay barriers. *Proceedings of the 2<sup>nd</sup> International Symposium on Coupled Phenomena in Environmental Geotechnical*, Sept. 6-7, 2017. University of Leeds, Leeds, UK.
- C12. Evans, D.\* , Whysner, K., Scalia, J., and Bareither, C. (2017) Work area quantification process to guide CCR construction programs. *2017 World of Coal Ash (WOCA) Conference in Lexington, KY, May 9-11, 2017*, Lexington, Kentucky, USA.

- C11. Conzelmann, J.\*, Scalia, J., and Shackelford, C. (2017). Effect of backpressure saturation on the hydraulic conductivity of GCLs. *Proceedings of Geotechnical Frontiers 2017*, Orlando, Florida, USA. GSP No 276, ASCE, Reston, Virginia, USA.
- C10. Conzelmann, J.\*, and Scalia, J. (2016). Method and Equipment for Hydraulic Conductivity Measurement of Geosynthetic Clay Liners with Mine Waste Leachates. *Proceedings of Tailings & Mine Waste 2016*. Keystone, Colorado, USA. CSU, Fort Collins, Colorado, USA.
- C9. Scalia, J.\*, and Benson, C. (2016). Evaluation of Na-bentonite-polyacrylate mixtures to enhance the chemical resistance of geosynthetic clay liners. *Proceedings of Geo-Chicago 2016: Sustainable Geoenvironmental Systems*, Chicago, Illinois, USA. GSP No. 271, ASCE, Reston, Virginia, USA.
- C8. Shackelford, C.\* and Scalia IV, J. (2016). Semipermeable membrane behavior in bentonite-based barriers: Past, present, and future. *GeoVancouver 2016*, Oct. 2-5, 2016, Vancouver, Canada, Canadian Geotechnical Society, paper 4173.
- C7. Albright, W.\*, Scalia, J., Benson, C., and Smith, B. (2014). Effects of age and differential settlement on composite barrier components in a landfill final cover. *Proceedings of Waste Management 2014*, Phoenix, Arizona, USA. Waste Management Symposia Inc., Phoenix, Arizona, USA. **(Best Paper Award)**
- C6. Scalia, J.\*, and Benson, C. (2014). Barrier performance of bentonite-polyacrylate nanocomposite to artificial ocean water. *Proceedings of Geo-Congress 2014 Geo-Characterization and Modeling for Sustainability*. GSP No. 234, ASCE, Reston, VA.
- C5. Bohnhoff, G., Shackelford, C., Malusis, M.\*, Scalia, J., Benson, C., Edil, T., Di Emidio, G., Katsumi, T., and Mazzieri, F. (2013). Novel bentonites for containment barrier applications. *Proceedings of the 18<sup>th</sup> International Conference on Soil Mechanics and Geotechnical Engineering 2013*, Delange, P., Desrues, J., Frank, A., Puech, F., Schlosser, F., eds., Presses des Ponts, Paris; 4, 2997-3000.
- C4. Scalia, J.\*, Benson, C., and Edil, T. (2013). Bentonite-polyacrylate nanocomposites for containment of aggressive liquids. *Proceedings of the 5<sup>th</sup> International Young Geotechnical Engineers' Conference 2013*, Paris, France.
- C3. Scalia, J.\*, Benson, C., Edil, T., Bohnhoff, G., and Shackelford, C. (2011). GCLs containing bentonite-polymer nanocomposite, *GeoFrontiers 2011 Advances in Geotechnical Engineering*, Dallas, Texas, USA. GSP No. 211, ASCE, Reston, Virginia, USA.
- C2. Benson, C. and Scalia, J.\* (2010). Hydraulic conductivity of exhumed GCLs from composite barriers. *Proceedings of the 3<sup>rd</sup> International Symposium on Geosynthetic Clay Liners*, SKZ – ConSem GmbH, Wurzburg, Germany, 73-82.
- C1. Malusis, M., and Scalia, J.\* (2007). Hydraulic conductivity of an activated carbon-amended GCL. *New Peaks in Geotechnics*, Denver, Colorado, USA. GSP No. 163, ASCE, Reston, Virginia, USA.

#### Conference Presentations (Abstract-Only)

Notes: *Underlined co-author(s) designates undergraduate or graduate student advisee(s); \* designates speaker*

- Pr16. Scalia, J.\*, Rhoades, A., and Centola, T. (2023). Assimilative capacity of subsurface media: an under-used tool that deserves more attention. University Consortium for Field-Focused Groundwater Research, Fall Focus Meeting. September 29-29, 2023, Denver, CO, USA.
- Pr15. Bullock, M.\*, Niemann, J., Scalia, J., Fisher, S., Proulx, H., Binder, J., Green, T., and Erskine, R. (2023). Prediction of strength of surface soils using temporally varying landscape attributes. *43<sup>rd</sup> AGU Hydrology Days*, March 21-22, 2023, Fort Collins, CO, USA.
- Pr14. Fischer, S.\*, Niemann, J., Scalia, J., Bullock, M., Proulx, H., Kim, B., and Green, T. (2023). Evaluating the accuracy of soil moisture downscaling for a large study region in Northern Colorado. *43<sup>rd</sup> AGU Hydrology Days*, March 21-22, 2023, Fort Collins, CO, USA.

- Pr13. Lund, R.\*, Gates, T., and Scalia, J. (2022). A green alternative to synthetic polymer sealants for canal seepage mitigation. *United States Committee on Irrigation and Drainage Annual Conference*. October 25-28, 2022, Fort Collins, CO, USA.
- Pr12. Scalia, J.\* (2022). Mining: issues and tools. University Consortium for Field-Focused Groundwater Research, Annual Progress Meeting, June 7-9, 2022, Guelph, Ontario, Canada.
- Pr11. VanTilburg, C.\*, Scalia, J., and Sale, T. (2022). Internet-of-things-based solid-state pH sensors for soil and groundwater. University Consortium for Field-Focused Groundwater Research, Annual Progress Meeting, June 7-9, 2022, Guelph, Ontario, Canada.
- Pr10. Karimi, S.\*, Bareither, C., and Scalia, J. (2022). Influence of wet waste on solid waste hydraulic conductivity. Global Waste Management Symposium (GWMS) 2022, February 13-16, 2022, Indian Wells, CA, USA.
- Pr9. Scalia, J.\* (2021). Internet of things monitoring of biogeochemical conditions within an oleophilic bio-barrier. *Geo-Institute Web-Conference, Geoenvironmental Engineering*, Dec. 5, 2021.
- Pr8. Anthony, M.\*, Scalia, J., and Sale, T. (2021). Forecasting benzene concentrations in legacy petroleum impacted aquifers. *Hydrology Days 2021*, March 30-31, 2021, Fort Collins, Colorado, USA. Virtual.
- Pr7. Gates, T.\*, Lund, R., Scalia, J., and Babar, M. (2020). Effective and affordable canal seepage control using polymer sealants. *American Water Resources Association Colorado – Colorado Groundwater Association Annual Symposium*, Aug. 31 to Sept 2, 2020. Virtual.
- Pr6. Binder, J.\*, Scalia, J., Niemann, J. (2020). Developing a method to measure and predict moisture-variable soil strength. *Hydrology Days 2020*, Fort Collins, Colorado, USA.
- Pr5. Scalia, J.\*, and Sale, T. (2019). Advantages and limitations of the observational method in remediation. University Consortium for Field-Focused Groundwater Research, Annual Progress Meeting, June 4-6, 2019, Guelph, Ontario, Canada.
- Pr4. Pauly, M.\*, Niemann, J., Scalia, J., Green, T., and Erskine, R. (2019). Assessing impacts of soil hydrology on patterns of soil moisture and surface soil strength. *Hydrology Days 2019*, Fort Collins, Colorado, USA.
- Pr3. Scalia, J.\*, and Benson, C. (2018). Evaluation of the Effect of Subgrade Water Content on GCL Hydration and Hydraulic Conductivity. *Geo-Institute Web-Conference, Geoenvironmental Engineering*, Aug. 23, 2018.
- Pr2. Stock, C.\*, Bareither, C., and Scalia, J. (2017). Water balance cover for landfills and current research at Larimer County Landfill. *2017 Colorado SWANA Annual Conference*, Sept. 13-17, 2017, Steamboat Springs, Colorado, USA.
- Pr1. Conzelmann, J.\*, and Scalia, J. (2017). Hydraulic conductivity of geosynthetic clay liners in mining applications. *Hydrology Days 2017*, Fort Collins, Colorado, USA.

#### Posters

- Po4. Jones, A.\*, Andales, A. Burzynski, A., Chavez, J., David, O., Fletcher, S., Forsythe, J., Goodliff, M., Grazaitis, P., Kidder, S. Kliever, A., McGovern, C., Niemann, J., Pauly, M., Scalia, J., and Smith, G. (2020). Integrative hydrometeorological applications using precipitation, soil moisture, and water vapor using phone apps, GIS, and data assimilation. *AMS Annual Meeting, 34th Conference on Hydrology*, Jan. 12-16, 2020, Boston, MA, poster 1102.
- Po3. Gorakhi, M., Kent, T., Bareither, C., and Scalia, J. (2019). Field columns to evaluate hydrological behavior of water-balance covers consisting of mixtures of mine tailings and waste rock. Smart Mining: Resources for a Connected World, Society of Mining Engineers, Denver, Colorado, USA.
- Po2. Scalia, J. (2018). Research focus areas. 2<sup>nd</sup> US University Council on Geotechnical Engineering Education (USUCGER) Career Workshop for Junior Faculty, Case Western Reserve University, Cleveland, Ohio, USA.

- Po1. Shackelford, C., Bohnhoff, G., Benson, C., Scalia, J., Edil, T., Xu, H., Darlington, J., and Olsta, J. (2009). Bentonite-polymer nanocomposites for geoenvironmental applications. *NSF CMMI Research and Innovation Conference 2009*, NSF, Arlington, Virginia, USA.

#### Book Chapters

- B3. Thiel, R., Scalia, J., and Yesiller, N. Final covers for landfills and waste piles. (IN PRESS). ASCE, Geo-Institute, *Geoenvironmental Engineering Practice Manual*.
- B2. Scalia, J., and Shackelford, C. Contaminant fate & transport of liquids and gases. (IN PRESS). ASCE, Geo-Institute, *Geoenvironmental Engineering Practice Manual*.
- B1. Benson, C. and Scalia, J. (2010). Chapter 10: Hydrologic performance of final covers containing GCLs, in *Geosynthetic Clay Liners for Waste Containment Facilities*, A. Bouazza and J. Bowders, eds., CRC Press, Boca Raton, FL, 203-211.

#### Articles

- A4. Scalia, J. (2022). Sandcastle engineering – a geotechnical engineer explains how water, air and sand create solid structures. *The Conversation*, August 19, 2022. <https://theconversation.com/sandcastle-engineering-a-geotechnical-engineer-explains-how-water-air-and-sand-create-solid-structures-188208>.
- A3. Spencer, D., Bareither, C., Scalia, J., Hatton, C., and Ward, K. (2022). Characterizing tailings professional labor demand. *Mining Engineering*, 74(277), 16-25. <https://me.smenet.org/issueIndex.cfm?issueID=374>.
- A2. Henderson, M., and Scalia, J. (2022). We're in this together; building capacity to manage tailings. *Mining Engineering*, 74(6), 65-67.
- A1. Bigham, G., Mohsen, F., Mesard, P., and Scalia, J. (2013). Promise and pitfalls of modeling for environmental litigators, *Exponent Environmental Perspectives* (Volume 1). Available online at: [http://www.exponent.com/files/Uploads/Documents/Newsletters/EP\\_2013\\_Vol\\_1.pdf](http://www.exponent.com/files/Uploads/Documents/Newsletters/EP_2013_Vol_1.pdf).

#### Reports

*Notes: Underlined co-author(s) designates undergraduate or graduate student advisee(s).*

- R6. Bareither, C., Karimi, S., Scalia, J., Benson, C. Evaluation and management of wet waste disposal in municipal solid waste landfills. Environmental Research and Education Foundation. IN REVISION.
- R5. Taher, Z., Scalia, J., and Bareither, C. Expansive soil mitigation for transportation earthworks by polymer amendment. Mountain Plains Consortium Final Report. IN REVIEW.
- R4. Scalia, J., Cammarere, M., Niemann, J., Jones, A., and Gemeinhart, K. (2018). Annex D – Soil strength Estimation Overview in Next Generation NATO Reference Mobility Model. NATO STO AVT-248 Final Report.
- R3. Bareither, C., Scalia, J., Gorakhki, M., Borja Castillo, R., and Kent, T. (2017). Evaluation of hydraulic conductivity and moisture retention characteristics of GeoWaste. Colorado State University, Fort Collins, CO.
- R2. Benson, C., Albright, W., Fratta, D., Tinjum, J., Kucukkirca, E., Lee, S., Scalia, J., Schlicht, P., and Wang, X. (2011). Engineering covers for waste containment changes in engineering properties & implications for long-term performance assessment, NUREG/CR-7028, Office of Research, U.S. Nuclear Regulatory Commission, Washington.
- R1. Benson, C., Kucukkirca, E., and Scalia, J. (2008). Properties of geosynthetics exhumed from the seven Mile Creek Landfill Eau Claire, Wisconsin, Geo Engineering Report No. 08-22, University of Wisconsin, Madison, Wisconsin.

#### Standards & Standard Operating Procedures

- S4. Lyverse, M., Scalia, J., and Sale, T. (2019). Bank stabilization – installation guidance, SMO Standard Operating Procedure, Chevron.



- S3. Lyverse, M., Scalia, J., and Sale, T. (2019). Oleophilic bio barrier (OBB) installation, SMO Standard Operating Procedure, Chevron.
- S2. Lyverse, M., Sale, T., and Scalia, J. (2018). Environmental management technology Q&A: oleophilic biobarrier evaluation, testing, design, and implementation, Technology Standard, Chevron.
- S1. Bradshaw, S., Scalia, J., Benson, C., and Rauen, T. (2010). Standard D7503, Standard test method for measuring the exchange complex and cation exchange capacity of inorganic fine-grained soils, *Annual Book of Standards*, ASTM Intl., 04.09.

#### Patents

- P1. Sale, T., Ham, J., Gallo, W., Askarani, K., Fierrie, Z., Scalia, J. (2021). Devices and methods for measuring temperature, oxidation reduction potential, and water-level within a subsurface formation. Patent No 10,901,117. Issued 2021-01-26.

#### Invited Presentations & Short Courses

##### *Universities*

Colorado School of Mines (mining engineering & civil engineering × 2 seminars), University of Colorado-Boulder, University of Wisconsin-Madison

##### *Conferences*

Panelist, Current Status and Future Directions of Enhanced (Polymerized) Bentonites for Chemical Containment Barriers, 9<sup>th</sup> International Congress on Environmental Geotechnics, Chania, Crete, June 25-28, 2023.

Invited Young Lecture, 8<sup>th</sup> International Congress on Environmental Geotechnics, Hangzhou, China, Oct. 28 - Nov. 1, 2018. (Declined due to coinciding birth of child)

##### *Short Courses & Workshop Presentations*

Introduction to Filtered Tailings Geotechnics, Filtered Tailings Management – Planning, Design, Construction, and Operation, Tailings and Mine Waste 2023, Vancouver, Canada, November 3, 2023.

Filtered Tailings, TAILENG, Fundamentals of Tailings Engineering, Virtual, March 14, 2023.

CCR Pond Geotechnics, EUCI, CCR Conference Draining & Stabilizing Fly Ash Workshop, Virtual, March 30, 2022

Future of Tailings Management Panel, TAILENG, Fundamentals of Tailings Engineering, Virtual, March 29, 2022.

Filtered Tailings, TAILENG, Fundamentals of Tailings Engineering, Virtual, March 29, 2022.

Tailings Continuum, Tailings Center, Fundamentals of Tailings Short Course 1 – Introduction to Tailings Engineering, Virtual, August 26, 2021.

Financial Assurance for TSF Closure Panel Session Moderator, Tailings Center, Fundamentals of Tailings Short Course 6 – Fundamentals of Tailings, Virtual, July 8, 2021.

Designing for TSF Closure Panel Session Moderator, Tailings Center, Fundamentals of Tailings Short Course 6 – Fundamentals of Tailings, Virtual, July 1, 2021.

Introduction to Tailings Geotechnics, Tailings Center Tailings for Regulators (ADEQ), June 14, 2021.

Geosynthetics Conference Geosynthetics Learning Zone Introduction Series, Virtual, Environmental Applications, Houston, Texas USA, Feb. 10-13, 2019.

#### External Sponsored Research

*Total raised research dollars as Principal Investigator (PI) = \$2,115,000 and as Co-PI = \$1,319,000*

##### *Tailings and Mine Waste*

Lessons Learned from Legacy Tailings Storage Facilities, Tailings Center, with C. Bareither (Co-PI), 2024

Compressibility and Hydraulic Conductivity Testing of Mine Tailings, AECOM, with C. Bareither (co-PI), 2018-2020.  
Preliminary Geotechnical Work Area Quantification, RECON Inc., with C. Bareither (co-PI), 2018.  
Evaluation of Hydraulic Conductivity and Moisture Retention Characteristics of GeoWaste, GoldCorp, with C. Bareither (PI), 2017.

#### *Geoenvironmental Engineering*

Determining PFAS Transport Mechanisms Within AFFF-Impacted Construction Materials to Develop Better In-Place and Re-Use Management Solutions for the DoD. U.S. Department of Defense Strategic Environmental Research and Development Program (SERDP), with GSI Environmental (lead) and C. Shackelford (co-PI), 2024-2026.  
Gas Sparging Directly in Aquifers to Remove or Sequester PFAS. U.S. Department of Defense Strategic Environmental Research and Development Program (SERDP), with GSI Environmental (lead), 2022-2025.  
Environmental Sensor-Based Monitoring, Chevron, with Tom Sale (PI), 2019-2022.  
Advancing Oleophilic BioBarrier (OBB), & Non-Tidal OBB Remedies, Chevron, with Tom Sale (co-PI), 2019-2022.  
Identification and Validation of Remotely Operated Screening Methods for Assessment of Embedded Oil in Sediments, Chevron, with Tom Sale (co-PI), 2019-2021.  
Evaluation and Management of High-Moisture Waste Disposal in Municipal Solid Waste Landfills, Environmental Research & Education Foundation (EREF), with C. Bareither (co-PI) and C. Benson (co-PI), 2018-2021.  
Advancing Natural Source Zone Depletion (NSZD) Remedies, Chevron, with Tom Sale (PI), 2018-2021.

#### *Geotechnical Engineering*

Representative Testing of Expansive Soil Treatment Technologies for Transportation Earthworks, U.S. Department of Transportation (DOT) Mountain Plains Consortium (MPC), with C. Bariether (co-PI), 2017-2021.  
Expansive Soil Mitigation by Commercial Polymers, U.S. Department of Transportation (DOT) Mountain Plains Consortium (MPC), with C. Bariether (co-PI), 2016-2019.

#### *Hydro-Geotechnics*

Terrain Strength Estimation Using Remote Sensing for Route Planning and Real Time Autonomous Mobility, Phase I, U.S. Department of Defense, with Augmtr (lead) and J. Niemann (co-PI), 2022-2023.  
Lab and Field Evaluation of Biopolymers to Reduce Seepage in Colorado Irrigation Canals, U.S. Department of Agriculture National Institute for Water Resources (NIWR), with R. Lund (PI) and T. Gates (co-PI), 2022-2023.  
Surficial Soil Moisture and Soil Strength Predictions Using Multi-Scale Remote Data Products, U.S. Department of Defense Army Research Office, with J. Niemann (PI), 2021-2023  
Developing Best Practices for Managing Canal Seepage Using Biopolymer Sealants, Colorado Agricultural Experiment Station, T. Gates (co-PI), 2020-2023.  
Map Based Terrain Mobility Analysis Tool, U.S. Department of Defense Army Research Office, with J. Niemann (PI), 2018-2021.  
Determination of Terrain Ponding for Logistics Emplacement and Planning – Phase II, U.S. Department of Defense Army Research Office, with J. Niemann (PI), 2018.  
Terrain Ponding Integration with PAWTL, U.S. Department of Defense Army Research Office, with J. Niemann (PI), 2017-2018.

#### Internal Research Support

*Total raised research dollars = \$828,000 (includes proceeds from Tailings & Mine Waste conferences)*

Geotechnical and Geoenvironmental Engineering Research Related to Tailings and Mine Waste, Tailings & Mine Waste Conference, with C. Bareither, 2022-2023.  
Multi-Depth Soil Moisture Measurement System, Borland Committee, CEE, CSU, with J. Niemann, 2022.  
OHAUS Bead Mill Homogenizer, CEE, CSU, with A. Rhoades, Borland Committee, 2022.  
Geotechnical and Geoenvironmental Engineering Research Related to Tailings and Mine Waste, Tailings & Mine Waste Conference, with C. Bareither, 2021-2022.  
Borland Research Equipment Proposal: A Boat, Borland Committee, CEE, CSU, with T. Gates, 2021.

- Borland Research Equipment Proposal: Anaerobic/Aerobic Bench Scale / Pilot Scale Respirometer, Borland Committee, CEE, CSU, with S. Sharvelle, S. De Long, K. Carlson, C. Bareither, 2021.
- Borland Research Equipment Proposal: Nitrogen Evaporator, Borland Committee, CEE, CSU, with J. Blotevogel, A. Hanson, T. Tong, and T. Sale, 2021.
- Borland Research Equipment Proposal: StreamPro Acoustic Doppler Current Profiler, Borland Committee, CEE, CSU, with T. Gates and K. Venayamoorthy, 2020.
- Geotechnical and Geoenvironmental Engineering Research Related to Tailings and Mine Waste, Tailings & Mine Waste Conference, with C. Bareither, 2019-2020.
- Geotechnical and Geoenvironmental Engineering Research Related to Tailings and Mine Waste, Tailings & Mine Waste Conference, with C. Bareither, 2017-2019.
- Borland Research Equipment Proposal: Experimental Research in Geoenvironmental Engineering Using HYDRUS, Borland Committee, CEE, CSU, with C. Bareither, 2017.
- Borland Research Equipment Proposal: Monitoring Indoor Air Quality due to Contaminated Tap Water Use and/or Infiltration through Foundation of the Buildings due to Contaminated Groundwater and Soil, Borland Committee, CEE, CSU, with K. Carlson, P. Omur-Ozbek, and E. Carther, 2017.
- Geotechnical and Geoenvironmental Engineering Research Related to Tailings and Mine Waste, Tailings & Mine Waste Conference, with C. Bareither, 2015-2017.
- Borland Research Equipment Proposal: Experimental Research in Geoenvironmental Engineering, Borland Committee, CEE, CSU, with C. Bareither, 2015.

## TEACHING & ADVISING

### Areas of Teaching

Geotechnical Engineering  
 Geoenvironmental Engineering  
 Tailings & Mine Waste

### Teaching Awards and Honors

Colorado State University Engineering College Council Funniest Professor Award	2023
Nominated for 2020 Best Teacher Award, sponsored by the Colorado State University Alumni Association (1 of 3 teachers in college nominated)	2020
Faculty Award for Excellence in Teaching, Department of Civil & Environmental Engineering, Colorado State University	2018
ASCE Excellence in Civil Engineering Education (ExCEED) Fellow	2016

### Courses Taught

Total number of students taught: 836

Course Number	Course Title	Year	Semester	Number of Students	Semester Score <sup>1</sup>
CIVE 355 & CIVE 356	Introduction to Geotechnical Engineering & Introduction to Geotechnical Engineering Lab	2016	Spring	56	4.89
		2017	Spring	46	4.85
		2018	Spring	52	4.92
		2018	Fall	72	4.93
		2019	Spring	76	--- <sup>2</sup>
		2019	Fall	71	--- <sup>2</sup>

<sup>1</sup> Based on response to question #23 of standard student course survey: "How do you rate this instructor?" where 5 = excellent, 4 = above average, 3 = average, 2 = below average, 1 = poor.

<sup>2</sup> CSU discontinued quantitative student course surveys in Spring 2019.

Course Number	Course Title	Year	Semester	Number of Students	Semester Score <sup>1</sup>
		2021	Spring	74	--- <sup>2</sup>
		2022	Spring	69	--- <sup>2</sup>
		2023	Spring	59	--- <sup>2</sup>
		2024	Spring	56	--- <sup>2</sup>
CIVE 558	Environmental Containment Systems	2015	Fall	9	4.75
		2017	Fall	14	5.00
		2019	Fall	20	--- <sup>2</sup>
		2022	Spring	25	--- <sup>2</sup>
CIVE 559	Special Topics (Unsaturated Soil Geotechnics)	2018	Fall	15	4.86
		2022	Fall	15	--- <sup>2</sup>
CIVE 559	Special Topics (Fundamentals of Soil Behavior)	2021	Fall	28	--- <sup>2</sup>
CIVE 559	Special Topics (Closure, Water, and Social Aspects of Tailings Management)	2024	Spring	20	--- <sup>2</sup>
CIVE 638	Contaminant Transport	2020	Fall	7	--- <sup>2</sup>
		2023	Spring	11	--- <sup>2</sup>
CIVE 657	Oral Communications in Geo-Engineering	2020	Spring	10	--- <sup>2</sup>
		2022	Spring	9	--- <sup>2</sup>
		2023	Spring	4	--- <sup>2</sup>
		2024	Spring	3	--- <sup>2</sup>
CIVE 658	Remediation and Subsurface Containment	2016	Fall	15	5.00

#### Short Courses Organized

Filtered Tailings Management – Planning, Design, Construction, and Operation, Tailings and Mine Waste 2023, Vancouver, Canada, November 3, 2023.

Tailings Center – Fundamentals of Tailings, Short Course 6, TSF Closure and Reclamation, November 14, 2022, to November 30, 2022

Cost Effective Filtered Tailings Systems – Just a (No) Pipe Dream? Tailings and Mine Waste 2022, Denver, USA, November 6, 2022.

Tailings Center – Fundamentals of Tailings, Short Course 6, TSF Closure and Reclamation, December 6, 2021, to December 16, 2021

Tailings Center – Fundamentals of Tailings, Short Course 1, TSF Introduction to Tailings Engineering, August 23, 2021 (30 students)

Tailings Center – Fundamentals of Tailings, Short Course 6, TSF Closure and Reclamation, June 28, 2021, to July 8, 2021 (43 students)

Tailings Center – Tailings for Regulators, Introduction to Tailings Geotechnics, June 14-18, 2021 (26 students)

#### Pedagogical Training

2<sup>nd</sup> US University Council on Geotechnical Engineering Education (USUCGER) Career Workshop for Junior Faculty, Case Western Reserve University, Cleveland, Ohio, USA (2018)

Walter Scott, Jr. College of Engineering Master Teaching Initiative Workshops (regular attendee; 2017-present)

IGS-NA Educate the Educator (EtE), Kingston, Ontario, Canada (2017)

ASCE Excellence in Civil Engineering Education (ExCEED), West Point, NY (2016)

Funded Teaching Initiatives

Total raised for teaching initiatives = \$20,000

Initiative	Funder	Funding Period
<i>Enhancing Undergraduate Dam Education via Instrumented Physical Models</i>	Engineering Student Technology Committee (ESTC)	2016 (complete)
<i>Data Acquisition Upgrade for Undergraduate Geotechnical Engineering Lab</i>	Engineering Student Technology Committee (ESTC)	2016 (complete)

Graduate Students Supervised

*PhD Graduates (3 total)*

**Sajjad Karimi**, PhD in Civil Engineering 2022

Dissertation: *Influence of co-disposing oil and gas exploration and production waste and municipal solid waste on hydraulic conductivity*

**Neelufar Aghazamani**, PhD in Civil Engineering, 2022

Dissertation: *Unsaturated fluid flow and volume change behavior of filtered tailings*

Co-advised with Christopher A. Bareither

**Anna Norris**, PhD in Civil Engineering, 2021

Dissertation: *Mechanisms of interaction between bentonite and anionic polymers in enhanced geosynthetic clay liners*

*MS Graduates (23 total)*

**Kendall Monley**, MS in Civil Engineering, 2024

Thesis: *Exploration of passive desaturation of in place tailings using wicking geosynthetics*

**Sami Fischer**, MS in Civil Engineering, 2023

Thesis: *Assessing the influence of model inputs on performance of the EMT+VS soil moisture downscaling model for a large foothills region in Northern Colorado*

Co-advised with Jeffrey Niemann

**Matt Bullock**, MS in Civil Engineering, 2023

Thesis: *Predicting unsaturated soil strength for mobility assessments*

Co-advised with Jeffrey Niemann

**Theresa Centola**, MS in Civil Engineering, 2023

Report: *Assimilative capacity: a sustainable remediation approach*

Co-advised with Andrea Rhoades

**Garret Martin**, MS in Civil Engineering, 2023

Thesis: *Predicting water content and saturation in mine tailings with an electromagnetic soil moisture sensor*

Co-advised with Christopher Bareither

**Heath Orcutt**, MS in Civil Engineering, 2023

Thesis: *Influence of geochemical processes on geotechnical stability of tailings storage facilities*

Co-advised with Christopher Bareither

**Kevin Wickham**, MS in Civil Engineering 2023

Thesis: *Assessing potential relationships between topographic attributes and soil texture characteristics for granitic soils of North-Central Colorado*

Co-advised with Jeffrey Niemann

**Charlie VanTilburg**, MS in Civil Engineering, 2022

Thesis: *Development of IoT pH sensor*

**Donovan Sweeney**, MS in Civil Engineering 2022

Report: *Acid rock drainage treatment systems: now and in the future*

**Dorothy Louise Spencer**, MS in Civil Engineering 2021

Thesis: *Characterizing tailings professional labor demand*

Co-advised with Christopher A. Bareither

**Marina DeBiasi**, MS in Civil Engineering, 2021

Thesis: *Enhanced oleophilic bio-barriers for non-tidal settings*

**Joseph Bindner**, MS in Civil Engineering, 2020

Thesis: *Procedure for measurement of surficial soil strength by bevameter*

**Wesley Hogan**, MS in Civil Engineering, 2020

Thesis: *Internet of things monitoring of the oxidation reduction potential in an oleophilic bio-barrier*

**Kimberley Vander Vis**, MS in Civil Engineering 2020

Thesis: *Electroosmotic dewatering of mine tailings*

Co-advised with Christopher A Bareither

**Katie Sitler**, MS in Civil Engineering, 2020

Thesis: *Identification and validation of screening methods for assessment of the sheening potential of embedded oil in sediments.*

**Matthew Pauley**, MS in Civil Engineering, 2019

Thesis: *Modeling and field evaluation of the strength of surface soils for vehicle mobility*

**Wesley Herweynen**, MS in Civil Engineering, 2018

Thesis: *Shear strength of coal combustion products using the vane shear test.*

Co-advised with Christopher A. Bareither

**Anthony Keene**, MS in Civil Engineering, 2019

Thesis: *Estimating interstitial discharge and velocity in flow in riprap and gabion engineering applications*

Co-advised with Christopher I. Thornton

**Monika Aprianti Popang**, MS in Civil Engineering, 2018

Thesis: *Selected factors affecting measurement of the hydraulic conductivity of geosynthetic clay liners (GCLs)*

**Zhengguang Tian**, MS in Civil Engineering, 2017

Thesis: *Development of a seepage induced consolidation apparatus for mine tailings.*

Co-advised with Christopher A. Bareither

**Zana Taher**, MS in Civil Engineering, 2017

Thesis: *Effectiveness of polymer for mitigation of expansive soils*

**Cameron Fritz**, MS in Civil Engineering, 2017

Thesis: *Limiting clay membrane behavior in waste containment applications.*

**Joel Conzelmann**, MS in Civil Engineering, 2017

Thesis: *Effect of backpressure saturation on geosynthetic clay liner (GCL) hydraulic conductivity testing*

*ME Graduates (1 total)*

**Benjamin Taylor**, ME in Civil Engineering

Graduate Students in Progress

*PhD Students (4 total)*

**Rehman Lund**, Civil Engineering

**Zana Taher**, Civil Engineering

**Joseph Bindner**, Civil Engineering

Student Showcase, 1<sup>st</sup> Place, 2023 AGU Hydrology Days, Colorado State University

**Jui Hsiang Lo**, Civil Engineering. Co-advised with Kathleen Smits (SMU)

Great Minds in Research Award (from Graduate School and Office of the Vice President for Research), 2<sup>nd</sup> Place, 2023 Colorado State University Graduate Student Showcase

*MS Students (5 total)***Samuel Jacobs**, Civil Engineering**Emily Jagerhorn**, Civil Engineering.**Holly Proulx**, Civil Engineering. Co-Advised with Jeffrey Niemann**Jordan White**, Civil EngineeringUndergraduate Students

Tito Salcido Rascon (SURE)	Spring 2024 to present
Lydia Iliev (SURE) – Developing Next Generation Barriers	Spring 2024 to present
Kaylee Romero (SURE) – Various projects	Spring 2023 to present
Holly Ho – Various projects	Summer 2023 to present
Alec Shields – Various projects	Summer 2023 to present
Celie Brockett (SURE) – Various projects	2021, 2023 to present
Gisel Rueda Perez (SURE) – Development of tailings dam physical models	Spring 2022
Angelita Chavez Cazarez (SURE) – Canal seepage mitigation by polymer sealants	Spring 2021
Theresa O'Donnell-Sloan – Anionic polymer adsorption on bentonite	Spring 2021
Thomas Mayer – Oil-particulate aggregate sheen screening column testing	2019-2020
Riley McCullough – Particle size distributions of field-produced GeoWaste	2019-2020
Evans, Sarah – Enhanced bentonite hydraulic behavior	2018
Thompson, Justin – Engineering dam education	Summer 2016

Exchange Students

Saeed, Fizah – MS student from Mehran University of Engineering and Technology (MUET) in Jamshoro, Pakistan; U.S.-Pakistan Center for Advanced Studies in Water exchange program	2019
Memon, Awais – MS student from MUET in Jamshoro, Pakistan; exchange as part of U.S.-Pakistan Center for Advanced Studies in Water	2019
Nizamani, Nadir – MS student from MUET in Jamshoro, Pakistan; exchange as part of U.S.-Pakistan Center for Advanced Studies in Water	2018

**SERVICE**Service Awards and Honors

Outstanding Faculty Service Award, Department of Civil & Environmental Engineering, Colorado State University	2023
ASTM International Emerging Professional (EP)	2018
Early Career Geotech Faculty Workshop Selected Participant, Case Western Reserve University	2018
U.S. Delegate, 5 <sup>th</sup> International Young Geotechnical Engineering Conference, Paris, France	2013
Severson Outstanding Geotechnical Graduate Student Award, University of Wisconsin	2012
U.S. Representative, 1 <sup>st</sup> U.S.-India Workshop on Global Geoenvironmental Engineering Challenges, New Dehli, India	2010

Professional Societies

American Society of Civil Engineers (ASCE) Geo-Institute of ASCE (2009-present)	2004 - present
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<ul style="list-style-type: none"> <li>Geoenvironmental technical committee (2016-present)</li> <li style="padding-left: 20px;">Awards Sub-Committee Chair (2019-2021)</li> <li>International Activities Committee (IAC), Strategic Plan Working Group (2017)</li> <li>CSU Graduate Student Organization (GSO) Faculty Advisor (2018-2020)</li> </ul>	
ASTM International	2016 - present
<ul style="list-style-type: none"> <li>D18 Soil and Rock (voting member)</li> <li style="padding-left: 20px;">D18.04 Hydrologic Properties of Soil &amp; Rock</li> <li>D35 Geosynthetics (voting member)</li> <li style="padding-left: 20px;">D35.04 Geosynthetic Clay Liners</li> </ul>	
International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE)	2015 - present
Order of the Engineer	2012 - present
Society for Mining, Metallurgy & Exploration (SME)	2020 - present
<ul style="list-style-type: none"> <li>Tailings Technical Committee (2020-present)</li> <li style="padding-left: 20px;">Filtered Tailings Technical Sub-Committee (2021-present)</li> <li style="padding-left: 20px;">Tailings Workforce Sub-Committee (2023-present)</li> <li>CSU Student Chapter Faculty Advisor (2020-present)</li> <li>Colorado Section Awards Committee (2021-present)</li> <li>Tailings Workforce Ad-Hoc Committee (2022-2023)</li> </ul>	
United States Universities Council on Geotechnical Engineering (USUCGER)	2015 - present

Editorial Roles

Associate Editor, <i>Journal of Geotechnical &amp; Geoenvironmental Engineering</i>	2022 - present
Associate Editor, <i>Geotextile and Geomembranes</i>	2021 - present
Associate Editor, <i>Environmental Geotechnics</i>	2020 - 2023
Editorial Board Member, <i>Canadian Geotechnical Journal</i>	2017 - present
Editorial Board Member, <i>Geosynthetics International</i>	2019 - present
Reviewer for over 20 international journals, including:	2009 - present
<ul style="list-style-type: none"> <li><i>Applied Clay Sciences</i></li> <li><i>Coal Combustion &amp; Gasification Products</i></li> <li><i>Engineering Geology</i></li> <li><i>Environmental Geotechnics</i></li> <li><i>Geomechanics for Energy and the Environment</i></li> <li><i>Géotechnique Letters</i></li> <li><i>Geotechnical &amp; Geological Engineering</i></li> <li><i>Geotechnical Testing Journal</i></li> <li><i>Geotextiles &amp; Geomembranes</i></li> <li><i>International Journal of Mining</i></li> <li><i>Reclamation &amp; Environment</i></li> </ul>	<ul style="list-style-type: none"> <li><i>Journal of Geotechnical &amp; Geoenvironmental Engineering</i></li> <li><i>Journal of Environmental Engineering</i></li> <li><i>Journal of Hazardous Materials</i></li> <li><i>Journal of Materials in Civil Engineering</i></li> <li><i>Materials &amp; Manufacturing Processes</i></li> <li><i>Separation Science &amp; Technology</i></li> <li><i>Soil Science Society of America Journal</i></li> <li><i>Soils &amp; Foundation Journal</i></li> <li><i>Vadose Zone Journal</i></li> <li><i>Waste Management</i></li> </ul>

Conference Organization

*Major Role*

4<sup>th</sup> International Symposium on Coupled Phenomena in Environmental Geotechnics, Fort Collins, Colorado, 2025, **Conference Co-Chair** (PLANNING).

GeoAmericas 2024, Toronto, Canada, April 28-May 1, **Conference Co-Chair** (PLANNING).

Tailings and Mine Waste '24, Denver, Colorado, USA. Nov 8-10, 2024, **Conference Co-Chair** (PLANNING).



9<sup>th</sup> International Congress on Environmental Geotechnics, Chania, Greece, June 25-28, 2023, Technical Committee.

Tailings and Mine Waste '22, Denver, Colorado, USA. Nov. 6-9, 2022.

Tailings and Mine Waste '20, Keystone, Colorado, USA, Nov. 15-18, 2020.

Tailings and Mine Waste '18, Keystone, Colorado, USA, Sept. 30 - Oct. 2, 2018.

Tailings and Mine Waste '16, Keystone, Colorado, USA, Oct. 3-5, 2016.

*Minor Role*

Geosynthetics Conference, Other Environmental Topics session co-chair, Houston, Texas USA, Feb. 10-13, 2019.

Geotechnical Frontiers, Bentonite Barrier Materials session co-chair, Orlando, Florida USA, March 12-15, 2017.

Geo-Chicago 2016: Sustainability, Energy and the Geoenvironment, Bentonite Barrier Materials session co-chair, Chicago, Illinois, USA, Aug. 15-17, 2016.

University Service

*University Level*

Advocate and Allies, Colorado State University 2021 - present

*College Level*

College of Engineering Strategic Plan Development Committee (SPDC), Walter Scott, Jr. 2021  
College of Engineering, CSU

College of Engineering Technology Committee (CETC), Walter Scott, Jr. College of Engineering, CSU 2017 - 2019

Engineering Student Technology Committee (ESTC) faculty representative, Walter Scott, Jr. 2017 - 2019  
College of Engineering, CSU

Walter Scott, Jr. College of Engineering Diversity, Equity, and Inclusion (DEI) Committee 2020 - 2022

*Department Level*

Accreditation Committee 2022 - present

Diversity, Equity, and Inclusion (DEI) Committee 2019 - present  
Committee Chair (2019-2022)

Graduate Instruction Committee 2017 - 2018

Graduate Admissions Committee 2016 - 2020

Undergraduate Instruction Committee 2015 - 2016, 2020 - present

External Service

University of Wisconsin-Madison, Board of Visitors for Geological Engineering Program 2018 - present