

Logan Uselman, Ph.D.

Project Scientist



Education and Credentials

Ph.D., Geology, University of Utah, Salt Lake City, Utah, 2018

B.A., Geosciences, Skidmore College, Saratoga Springs, New York, 2013

Continuing Education and Training

Hazardous Materials Operations 40-Hour Certification (2008; annual refresher 2009–2018)

EMT-B and CPR Certified (2009; refreshers 2013, 2017, 2020)

Wildland Firefighter (2016; refreshers 2017, 2018, 2019)

Professional Affiliations

Member of Geologic Society of America

Professional Profile

Dr. Logan Uselman is an environmental scientist with a focus on fate and transport of contaminants in both surface and subsurface settings. She has experience with environmental remediation, environmental quality monitoring, data analysis, and inorganic and organic chemistry. She has 2 years of environmental consulting experience and 6 years of experience assessing mobility and source identification of trace elements in aquatic settings. Dr. Uselman is proficient in ArcGIS, Surfer, and other data visualization software. She has organized and led field sampling campaigns, laboratory analysis, and data interpretation. Dr. Uselman has a passion for effective science communication and has presented her work at both national and international scientific meetings and amongst stakeholder groups.

Relevant Experience

Former Wood Treatment Facility, Columbus, Mississippi— Assisted with the development and organization of feasibility studies, sampling campaigns, and technical memoranda for a former wood treatment and storage facility in Columbus, Mississippi, which is contaminated with creosote and pentachlorophenol. Assisted with project management including reviews of budgets, statements of work, and invoices. Provided technical expertise in ArcGIS and Leapfrog 3D modeling. Organized and performed surface soil sampling for site-related chemical constituents.

Former Wood Treatment Facility, Meridian, Mississippi— Authored corrective measures study reports for a former wood treatment and storage facility in Meridian, Mississippi, contaminated with creosote and pentachlorophenol. Provided technical expertise in ArcGIS, Surfer, and Leapfrog 3D modeling.

Blackwell Zinc Site, Blackwell, Oklahoma— Assisted with various aspects of a groundwater remediation project at a former zinc smelter site in Blackwell, Oklahoma. Completed weekly composite calculations of wastewater treatment plant influent for laboratory analysis and verified that weekly results were below threshold criteria. Using Surfer software, monitored monthly groundwater elevation data of aquifer drawdown and potential sewer vulnerability. Coordinated and performed permit sampling at



wastewater treatment plant. Assisted with completion of 5-year report and annual monitoring reports.

Gold King Mine Spill, Four Corners Region, U.S.—Performed water quality sampling subsequent to the Gold King Mine spill (2015) and analyzed historical water quality samples to determine the percent of particulate metals/metalloids from mining versus non-mining sources in the tributaries of the San Juan River. Analyzed water quality samples and sediment samples for lead isotopes, particle size, particle shape, total and filtered metals (via inductively coupled plasma atomic mass spectroscopy), and total suspended solids. Performed statistical and spatial analysis to determine metal source. Participated in academic and stakeholder meetings to share findings. Source identification work culminated in a peer-reviewed publication.

US Magnesium Superfund Site, Grantsville, Utah—Technical advisor on behalf of the Friends of the Great Salt Lake stakeholder group for the US Magnesium Superfund Site. Interpreted site documents generated by EPA and US Magnesium, including Phase 1 and Phase 2 site assessments, ecological risk assessments, and human health risk assessments. Generated quarterly reports and presentations with pertinent site progress. Participated in stakeholder meetings and public meeting regarding progress of the Superfund site.

Mining-Sourced Heavy Metals in Rivers, Southern Ecuador—Co-organized field campaigns in 2014, 2016, and 2017 to Southern Ecuador to assess impacts of improper mine-waste disposal to local rivers and streams. Assisted with the construction and monitoring of a lateral channel to promote passive filtration. Participated in international meetings with collaborators from government and academic institutes. Aided in the interpretation scientific findings in both Spanish and Quechua.

Publications

(L. Uselman also published as L. Frederick)

Frederick, L., W. Johnson, T. Cerling, D. Fernandez, and J. VanDerslice. 2019. Source identification of particulate metals/metalloids deposited in the San Juan River delta of Lake Powell, USA. *Water Air Soil Pollut.* 230:128.

Frederick, L., A. Brunelle, M. Morrison, P. Crespo, and W. Johnson. 2018. Reconstruction of the mid-Holocene paleoclimate of the Ecuadorian Andean páramo at Tres Lagunas, Ecuador. *The Holocene* 28(7):1131-1140.

Grace, K., L. Frederick, M. Brown, L. Boukerrou, and L. Brent. 2017. Examining the interrelated impacts of water quality and food availability: A study of very young children's health outcomes in Burkina Faso, West Africa. *Population and Environment* 39(1):26-46.

Frederick, L., J. VanDerslice, M. Taddie, K. Malecki, J. Gregg, N. Faust, and W.P. Johnson. 2016. Contrasting regional and national mechanisms for predicting elevated arsenic in private wells across the United States using classification and regression trees. *Water Research* 91:295-304.



Johnson, W.P., L. Frederick, M. Millington, D. Valla, B. Reese, D. Freedman, C. Stenten, J. Trauscht, C. Tingey, D. Solomon, D. Fernandez, and G. Bowen. 2015. Potential impacts to perennial springs from tar sand mining, processing, and disposal on the Tavaputs Plateau, Utah, USA. *Science of the Total Environment* 532:20-30.

Invited Presentations/Panels/Peer Reviews

An Overview of the US Magnesium Superfund Site. Westminster College. Doyle Stephens Award Ceremony. May 2017.

Presentations/Posters

Frederick, L., A. Rasmuson, S. Yang, and W. Johnson. 2018. An overview of the US Magnesium Superfund site. Great Salt Lake Issues Forum. Salt Lake City, UT.

Frederick, L., W. Johnson, T. Cerling, and D. Fernandez. 2017. Source identification for particle-bound metals in the San Juan River system, USA. 129th Annual Meeting of the Geological Society of America, Seattle, WA.

Frederick, L., W. Johnson, E. Pazmino, J.M. Garcia, X. Diaz, and J. VanDerslice. 2016. Mobilization of mining sourced trace elements in the Rio Gala, Ecuador. 128th Annual Meeting of the Geological Society of America, Denver, CO.

Frederick, L., and W. Johnson. 2016. Role of Fe, Mn, and Al oxyhydroxides in mobilizing metals released during the Gold King Mine spill. 128th Annual Meeting of the Geological Society of America Conference, Denver, CO.

Frederick, L., K. Grace, M. Brown, L. Boukerrou, and L. Brent. 2015. The impacts of water quality and food availability on children's health in West Africa: A spatial analysis using remotely sensed data and small-scale water quality data and country-level health data. American Geophysical Union Conference, San Francisco, CA.

Frederick, L., A. Brunelle, M. Morrison, P. Crespo, and W. Johnson. 2015. Reconstruction of the páramo paleoclimate record in Tres Lagunas, Ecuador. American Geophysical Union Conference, San Francisco, CA.

Frederick, L., W.P. Johnson, M.R. Millington, C. Tingey, D. Solomon, D. Fernandez, and G. Bowen. 2015. Potential impact to perennial springs from tar sand mining, processing, and disposal on the Tavaputs Plateau, Utah, USA. Society for Environmental Toxicology and Chemistry, Salt Lake City, UT.

Frederick, L., J. VanDerslice, M. Taddie, K. Malecki, J. Gregg, N. Faust, and W.P. Johnson. 2014. The determination and estimation of arsenic and uranium in private wells throughout the United States. American Geophysical Union Conference, San Francisco, CA.



Frederick, L., and K. Nichols. 2013. HEC-RAS modeling of splash dam discharge in the Upper Hudson River watershed, New York. North East Geological Society of America Conference, Mount Washington, NH.

Frederick, L., C. Loehr, and V. Swartz. 2011. Mapping of Saratoga Springs surficial geology: Glacial lakes, rivers, and buried valley. North East Geological Society of America Conference, Pittsburgh, PA.

