Joel Sholtes, PhD, PE
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Colorado Mesa University
University of Colorado, Boulder
Civil Engineering Partnership Program
Grand Junction, CO

Education

Ph.D. Civil and Environmental Engineering, Colorado State University (2011-2015)
EPA STAR Fellow
NSF I-WATER IGERT Fellow
Dissertation Title: *On the magnitude and frequency of sediment transport in rivers*
Advisor: Brian Bledsoe, Ph.D., P.E.

M.A. Physical Geography, University of North Carolina, Chapel Hill (2007-2009)
Environmental Fellow, UNC Institute for the Environment
Thesis Title: *Hydraulic analysis of stream restoration on flood wave propagation*
Advisor: Martin Doyle, Ph.D.

B.S. Environmental Science, Duke University, North Carolina (2000-2004)
Graduated with distinction. Thesis Title: *Water supply watershed protection: The future of Durham, N.C.'s water supply*
Advisor: Melba (Sally) Schauman, Ph.D., R.L.A.

Professional Positions

2019 – *Present* Asst. Teaching Professor, Civil Engineering. Colorado Mesa University – University of Colorado Boulder Partnership Program. Grand Junction, CO.

2020 – *Present* Principal, Wash Water Science and Engineering, LLC

2016 – 2018 Hydraulic Engineer, Bureau of Reclamation, Lakewood, CO.

2015 – 2016 Post-Doctoral Researcher, Colorado State University, Fort Collins, CO

2015 – 2016 Special Advisor, Platte River Recovery Implementation Program, Kearney, NE

2014 – 2016 Hydraulic Engineer (part-time), Kleinschmidt and Associates, Inc.

2009 – 2011 Watershed Scientist II, Brown and Caldwell, Inc., Atlanta, Georgia

2006 – 2007 Conservation Specialist, Department of Water Management, City of Durham, North Carolina

2004 – 2005 Environmental Scientist, Ecosystems Strategies, Inc., Poughkeepsie, New York

Awards and Honors

2020 Association of State Floodplain Managers, Tom Lee State Award for Excellence in Floodplain Management – Colorado Water Conservation Board Fluvial Hazard Zone Program

2014 – 2015 EPA-STAR Fellow – Air, Climate & Energy: Global Change ($84,000)

2013 Rich Herbert Memorial Scholar Grant, American Water Resources Assoc., CO Chapter ($4,000)

2012 Edwin Eckel Memorial Fund Research Grant, Colorado Scientific Society ($1,500)

2011, 2013 Borland Hydraulics Chair Scholarship, CSU Dept. of Civil and Env. Engineering ($6,000)

2011 – 2014 National Science Foundation IGERT Fellowship: Integrated Water, Atmosphere Ecosystems Education and Research (I-WATER). ($96,000)

Funded Research

2023 – 2026	PI: Reservoir Sedimentation Management: Evaluation of nature-based solutions for distributed sediment detention and storage in water supply watersheds. Bureau of Reclamation Science and Technology Program. ($275,334)
2023 – 2026	PI: Evaluating the hydrological, geomorphological, and biological outcomes from riverscape restoration of Colorado headwaters streams. Walton Family Foundation. ($265,000)
2023	PI: Crossing the Divide – Fostering Dialogue on Upper Colorado River Basin Water Issues. Univ. of Colorado Community Outreach and Engagement Award ($11,000)
2021 – 2023	PI: Hydrologic Impacts of Stream Restoration, Badger Creek, CO. Colorado Parks and Wildlife – Wildlife Habitat Program. ($39,000)
2021 – 2025	Co-PI: Dolores River Adaptive Management Support – River Monitoring Program. Colorado Water Conservation Board ($241,000)
2021	PI: The potential for headwaters restoration as a tool for water supply resilience. Undergraduate Research Opportunity Program, University of Colorado, Boulder ($2,000)
2020 – 2023	Co-PI: The potential for restoring thermal refuges in rivers for cold-water salmonids. Bureau of Reclamation, Pacific Northwest Region, Science and Technology Program ($249,500)
2019 – 2020	PI: Spatial and Temporal Distribution of Snowmelt and Snow Persistence in the Upper Colorado River Basin. Student Water Research Grant. Ruth Powell Hutchins Water Center at Colorado Mesa University. ($5,000)
2019 – 2020	Co-PI: Streamflow estimation in Colorado ungauged basins. Colorado Water Institute / Colorado Water Conservation Board. ($50,000)
2018 – 2022	Co-PI: Side channel evolution and design: achieving sustainable habitat for aquatic species recovery. Bureau of Reclamation Science and Technology Program ($224,000)
2018 – 2019	PI: Restoring Thermal Refuges Scoping Grants. Bureau of Reclamation Science and Technology Program ($28,000)
2017 – 2020	Co-PI: State of Colorado Fluvial Hazard Mapping Program. Colorado Water Conservation Board ($700,000)
2015 – 2016	Co-PI: River Adjustment and Flood Hazards on the Colorado Front Range. U.S. Forest Service Challenge Cost Share Grant ($20,000)
2015 – 2016	Co-PI: River Adjustment and Flood Hazards on the Colorado Front Range. Colorado Water Institute / Colorado Water Conservation Board ($49,500)

Teaching and Mentoring

2019 – *Present* Instructor, Colorado Mesa University – Univ. of Colorado, Engineering Partnership Program

- CVEN 3227 – Probability and Statistics for Civil Engineers (2020 to Present)
    - Probability and Statistical Equations Exam Resource Booklet
    - Statistics and Data Analysis Lab Assignments (R and Python)
- CVEN 3323 – Hydraulic Engineering (2019 to Present)
    - Hydraulic Engineering Equations Exam Resource Booklet
- CVEN 4333 – Engineering Hydrology (2019 to Present)
    - Hydrologic Engineering Exam Resource Booklet
    - Hydrologic Modeling Class Project (HEC-HMS)
- CVEN 4837 – GIS for Civil & Environmental Engineering Systems (2020 to 2022)
- CVEN 4897 – Professionalism and Ethics for Civil Engineers (2020 to 2022)
- CVEN 4999 – Civil Engineering Senior Design (2020 to 2022)
- ESSL 290 – River Recreation and Management: A Pathway to Economic Prosperity and Community Health (Co-taught, CMU Milestone Course, 2021 - 2022)
- SOCI 396 – Colorado Water Issues and Policies (CMU/Water Center Seminar Series)

2024 – *Present* Graduate Research Co-Advisor, University of Colorado, Boulder

- Assessment of sedimentation of beaver dams at the watershed scale in Paonia, Colorado (2024-2025). Christina Thompson (CEAE).

2019 – *Present* Undergraduate Research Advisor, Colorado Mesa University, Grand Junction, CO

- Streamflow estimation in Colorado ungauged basins (2019-2020): *Advised three undergraduate students on hydrologic research project involving field data collection of hydrologic parameters (soil moisture, stream flow, rainfall, snow metrics) on Grand Mesa, Colorado as part of small watershed monitoring project led by Stephanie Kampf, Colorado State University.*
- Spatial and Temporal Distribution of Snowmelt and Snow Persistence in the Upper Colorado River Basin (2019-2020). Megan Kline. *Using of MODIS snow cover remotely-sensed data and digital elevation model of the Grand Mesa, Colorado to evaluate topographic controls of snow cover and inter-annual variability of snow cover and water yield.*
- Quantifying the Hydrologic Impacts of Natural Infrastructure: Evaporative Losses in Centralized vs Distributed Storage. (2021). Christian Mendez. *Comparing reservoir evaporation to distributed evaporation from hypothetical beaver ponds in a water supply watershed using WREVAP model.*

2015 – 2022 Instructor, Geomorphic and Ecologic Foundations of Stream Restoration
Johns Hopkins University, Whiting School of Engr., Engr. for Professionals Program
Co-taught this 3-credit master's level online course. Developed lectures, readings, and assignments. This course covers geomorphic, hydraulic, hydrologic, sediment transport, and ecological concepts along with decision making frameworks for stream restoration design and assessment.

Professional & Academic Leadership & Service

2021 – *Present* CMU-CU Partnership Program Peer Coaching program Co-lead
Have co-developed and co-lead a undergraduate peer mentoring program with (currently) 12 mentors connecting with some 300 first and second year students and conducting 1-1 meetings, providing advising and academic support, study groups, and exam review sessions.

2024 – *Present* CEAE JEDI Committee

2022 – 2023 SEDHYD Conference Sedimentation Technical Co-Chair

2022 – 2023 Interim Director, Ruth Powell-Hutchins Water Center at Colorado Mesa University.
Served as faculty director, facilitated monthly meetings with advisory committee, interfaced with CMU administration in our efforts to re-establish the Water Center on campus, put on water educational programming including:

- Colorado River Water Science and Policy Seminar Series
- Upper Colorado River Basin Water Forum
- Supervised an intern.
- Managed a $60,000 budget and student research grant program.
- Strategic planning, fundraising, and laying the groundwork to hire a Water Center Coordinator

2021 – *Present* Ruth Powell-Hutchins Water Center at Colorado Mesa University Advisory Committee

2021 – 2023 Curriculum Committee Member, Civil, Environmental and Architectural Engineering, University of Colorado, Boulder.

2020 – *Present* Grand Valley River Initiative Executive Committee. Mesa County, CO.
Technical Adviser and core team member. Our goal is to support collaboration and coordination of river corridor activities among land managers along the Colorado and Gunnison Rivers in Mesa County. Through private foundation, State, and Colorado River District Funding, we have raised over $300,000 to support stakeholder engagement, outreach, planning, and technical studies in support of this mission.

2020 – *Present* One Riverfront Commission Board Member. Mesa County, CO.

2016 – 2019 Member of Advisory Committee on Water Information, Subcommittee on Sedimentation: Infrastructure and Environment and Climate Change and Sediment Working Groups.

2010 – *Present* Manuscript reviewer: *Restoration Ecology*, *Environmental Management*, *Earth Surface Processes and Landforms*, *Journal of Hydraulic Engineering*, *Journal of the American Water Resources Association, Science of the Total Environment, Water, Water Resources Research*

Peer Reviewed Publications

Frye, J., Tranmer, A.W., Bertagnoli, A., Hurst, A., Ubing, C., **Sholtes, J.**, Tonina, D. (2025). Morphology-induced thermal refuge in a gravel-bed river. *Hydrological Processes.*

Tranmer, A.W., Bertagnoli, A., Hurst, A., Ubing, C., **Sholtes, J.**, Tonina, D. (2025). Fluvial pools as reach-scale thermal regulators. *Science of the Total Environment.*

Sholtes, J.S., Ubing, C., Randle, T. Fripp, J., and Cenderelli, D. (2018). Managing infrastructure in the stream environment. *Journal of the American Water Resources Association*. https://doi.org/10.1111/1752-1688.12692

Sholtes, J.S. Yochum, S.E., Bledsoe, B.P., Scott, J.A. (2018). Longitudinal variability in channel response to floods. *Earth Surface Processes and Landforms.* https://doi.org/10.1002/esp.4472

Yochum, S.E., **Sholtes, J.S.**, Scott, J.A., Bledsoe, B.P. (2017). Stream power framework for predicting geomorphic change: the 2013 Colorado Front Range flood. *Geomorphology*. 292, 178-192.

Rosburg, T.T., Nelson, P.A., **Sholtes, J.S.**, Bledsoe, B.P. (2016). Effect of flow data resolution on sediment yield estimation and channel design. *Journal of Hydrology.* 538, 429-439.

Schook, D., E. Carlson, **J.S. Sholtes**, and D.J. Cooper (2016). Effects of moderate and extreme flow regulation on Populus growth along the Green and Yampa Rivers, CO and UT. *River Res. & Applications.* 32(8), 1698-1708.

Sholtes, J.S. and B.P. Bledsoe (2016) Half-yield discharge: process-based metric for predicting bankfull discharge. *Journal of Hydraulic Engineering.* 04016017.

Sholtes, J.S., K. Werbylo, and B.P. Bledsoe (2014) A physical context for the theoretical approach of sediment transport magnitude-frequency analysis in alluvial channels. *Water Resources Research*. 50(10), 7900-7914.

Sholtes, J.S. and M.W. Doyle. (2010) Impact of channel restoration on flood wave attenuation. *Journal of Hydraulic Engineering.* 137(2), 196-208.

BenDor, T., **J.S. Sholtes**, and M.W. Doyle. (2009) Landscape characteristics of a stream and wetland mitigation banking program. *Ecological Applications*. 19(8), 2078-2092.

Book Chapters Technical Reports and other Publications

Sholtes, J. (2023). Badger Creek Restoration Hydrologic Monitoring Report. Central Colorado Conservancy. Salida, CO. 27p.

Sickles, J., Jagt, K., Sholtes, J., Blazewicz, M., Sturm, C. (2022). Colorado Wildfire Ready Watersheds Program Template Scope of Work and Fact Sheets. https://www.wildfirereadywatersheds.com/

Burnett, P., Sholtes, J., Mayfield, M., Hodge, B., Carey, J., Skidmore, P. Huhta, S., Kraus, N., McCulley, E., Donnelly, Q. (2022). Water Diversion Selection Tool User Manual and Reference. Trout Unlimited. 42p.

Jagt, K.F., Blazewicz, M., Sholtes, J.S., Sturm, C. (2020). Colorado fluvial hazard zone delineation protocol. Colorado Water Conservation Board. Department of Natural Resources. Denver, CO. 180p.

Sholtes, J.S., Ubing, C., Randle, T. Fripp, J., and Cenderelli, D. (2017). Managing infrastructure in the stream environment. Advisory Committee on Water Information, Subcommittee on Sedimentation, Environment and Infrastructure Working Group. Denver, CO. 54p.

Sholtes, J.S. and Beldsoe, B.P. (2016). River adjustment and flood hazards on the Colorado Front Range. Colorado Water Institute, Research Completion Report No. 238. Fort Collins, CO. 31p.

Bledsoe, B.P., Baker, D., Nelson, P., Rosburg, T., Sholtes, J., Stroth, T. (2016). Design hydrology for stream restoration and channel stability at stream crossings. National Cooperative Highway Research Program (NCHRP) Project 24-40. Transportation Research Board of the National Academies of Sciences, Engineering, and Medicine. Washington, DC. 320p.

Sholtes, J.S. and Werbylo, K. (2016). Platte River sediment transport analysis: Approach, Results & Path Forward. Platte River Recovery Implementation Program, Executive Directors Office. Kearney, NE. 13p.

Bledsoe, B.P., **Sholtes, J.S.**, Baker, D.W. (2016) Wetland and river restoration. In Ed. V.P Singh, *Handbook of Applied Hydrology.* McGraw-Hill. 136-1 – 136-10.

Jagt, K.F., Blazewicz, M., Sholtes, J.S. (2015). Fluvial hazard zone delineation: A framework for mapping channel migration and erosion hazard areas in Colorado. Technical Report for Colorado Water Conservation Board, Floodplain Management Program. Denver, CO. 62p.

Riggsbee J.A., Doyle, M.W., Julian, J.P., Manners, R.B., Muehlbauer, J., **Sholtes**, J.S., M.J. Small (2012) The influence of aquatic organisms on in-channel processes. In: Shroder, J., Jr. and E.E. Wohl (Eds.), *Treatise on Fluvial Geomorphology*. Elsevier. 189-202.

Selected Conference Papers & Invited Talks (*Invited)

Sholtes, J. (2024) From Second Snowpack to Stealing Flow: Unpacking and aligning community knowledge and the state of the science in hydrologic impacts from beaver wetland restoration in the Rocky Mountains, U.S.A. BeaverCon. Boulder, CO.

Sholtes, J., Harvey, J., Clutter, M., Dott, C., Kasprak, A., Unterreiner, R. (2024) Defining the New Normal for the Dolores River. RiversEdge West Riparian Conference. Grand Junction, CO.

Sholtes, J.S., Jagt, K., Blazewicz, M. (2023). Fluvial Geomorphic Hazards in Valley Margins: The Fluvial Hazard Buffer. Federal Interagency Sedimentation and Hydrologic Modeling (SEDHYD). St. Louis, MO.

Sholtes, J.S. Lenth, B., Rivers, L. (2022). The influence of stream corridor restoration on reach-scale water fluxes. American Geophysical Union Meeting. Chicago, IL.

*Jagt, K., Sholtes, J.S. (2022). Managing the Dynamic Yampa River Corridor. Yampa Basin Rendezvous. Steamboat Springs, CO.

*Sholtes, J.S. (2022). How does stream corridor restoration influence local water and thermal energy fluxes? Hydrologic Sciences Symposium, University of Colorado, Boulder.

Sholtes, J.S. Jesperson, K., Lloyd, R. Holme, H., and Ventling, C. (2022). River corridor collaborations-planning and implementing cross-jurisdictional river planning and management. Riparian Restoration Conference. Grand Junction, CO.

*Sholtes, J. (2021). Longitudinal variability of unit stream power and geomorphic response to floods with applications for river corridor management. Hydrologic Sciences and Water Resources Engineering Seminar Series, University of Colorado, Boulder.

Sholtes, Jagt, K., Blazewicz, M., and Sturm C. (2020). The Colorado Fluvial Hazard Zone Mapping Program. Colorado Association of Stormwater and Floodplain Managers. (Online).

Sholtes, J. (2020). Colorado and Colorado Basin Hydrology. Water Course. Ruth Powell Hutchins Water Center. Colorado Mesa University, Grand Junction, CO.

Sholtes, J.S. Holste, N., Bradley, D.N., Ubing, C., Randle, T. (2020). Side channel evolution and design. 40th Annual Researchers Meeting of the Upper Colorado River Endangered Fish Recovery Program and the San Juan River Basin Recovery Implementation Program. Durango, CO.

Sholtes, J.S. (2019). Endangered Species Recovery in an Urbanizing River Corridor. Sustaining Colorado Watersheds Conference, Avon, CO.

Sholtes, J.S., Ubing, C., Knutson, M., Wilson, I. Nielsen, J. (2019). The potential for restoring thermal refuges in rivers for cold-water fishes. Federal Interagency Sedimentation and Hydrologic Modeling (SEDHYD) Conference. Reno, NV.

Sholtes, J.S., Jagt, K., Blazewicz, M. (2019). The geography of fluvial geomorphic hazards in river corridors. Federal Interagency Sedimentation and Hydrologic Modeling (SEDHYD) Conference. Reno, NV.

Sholtes, J.S. (2018). Managed Rivers and Native Fishes. Upper Colorado River Basin Forum. Colorado Mesa University. Grand Junction, Colorado.

*Sholtes, J.S. (2017). The geography of river management and restoration. Colorado School of Mines, Division of Economics and Business. Golden, CO.

Sholtes, J.S., Yochum, S.E., Scott, J.A. (2016). Longitudinal variability of channel response to floods. Geological Society of America. Denver, CO.

Organized Conference Sessions and Workshops

Sholtes, J. Padgett, C., Beaugh, S., Stanley, H. (2023). Re-Imagining the River: Upper Colorado River Basin Water Forum. Grand Junction, CO. (*Organized 2-day conference*)

Blazewicz, M., Sholtes, J., Jagt, K. (2022). Colorado Fluvial Hazard Zone Short Course. Colorado Association of Stormwater and Floodplain Professionals Conference. Steamboat Springs, CO.

Sholtes, J. (2022). Stream corridor processes and science. In: Jagt, K., Kline, M., Blazewicz, M., Sholtes, J., Boyd, K. Beyond the Line: Understanding Streams as Corridors. River Restoration Northwest Workshop.

Sholtes, J., Ash, J., Bywater-Reyes, S, Shanahan, J. (2020). Practical Resiliency in Urban Stream Corridors Panel. CO Riparian Assoc. and CO Stream Restoration Network. aftertheflames.com/urban-stream-speakers/

Jagt, K.F., Blazewicz, M., Sholtes, J.S., Sturm, C. (2019). Fluvial hazard zone mapping technical training workshop. Colorado Water Conservation Board and The Colorado Watershed Assembly. Avon, CO.

Sholtes, J. and Bountry, J. (2019). The Science and Practice of River Restoration. U.S. Bureau of Reclamation. Sacramento, CA.

Wickert, A., Sutfin, N.A., Sholtes, J.S., Clubb, F. (2017). Changing the Channel: Fluvial System Response to Climate and Land-Use Change. American Geophysical Union, New Orleans, LA.

Sholtes, J.S., Sutfin, N.A., Pitlick, J. (2016). Quantifying Geomorphic Response to Floods: from geochronologic methods to high-resolution data and state-of-the-art models. Geological Society of America. Denver, CO.

Sholtes, J.S., Martin, D.M., Sutfin, N.A. (2014). Front Range River Retreat. Environmental Variability: Historical Range, and the (changing?) Role of Extremes. Bellevue, CO.

Sholtes, J.S., Sutfin, N.A., Martin, D.M. (2013). Interdisciplinary research, education, and management. Front Range River Retreat. Estes Park, CO.

Sholtes, J.S., Martin, D.M., Beckman, N. (2012). Science, Policy and River Management. Front Range River Retreat. Bellevue, CO.