John Shelley, Ph.D., P.E.
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EDUCATION:
Ph.D. in Civil Engineering, 2012, University of Kansas, Lawrence, KS. Water Resources emphasis. Dissertation research in river restoration.

Self Graduate Fellowship, 2007 – 2011, University of Kansas, Lawrence, KS.

B.S. in Civil Engineering, 2007, Brigham Young University, Provo, UT. Water Resources emphasis.

LICENSURE: Professional Engineer Kansas License # 23464

PROFESSIONAL EXPERIENCE:

U.S. Army Corps of Engineers Kansas City, MO
Hydraulic Engineer and Sedimentation Specialist 2010 to 2025

-River and reservoir sedimentation research, design, planning, and education

TEACHING

University of Kansas
Adjunct Professor
- Open Channel Flow—Spring 2025
- River Engineering (Graduate Level Class) Spring 2024, Fall 2018, Fall 2015

William Jewell University
Adjunct Professor
- River Engineering (Senior Design Elective) Spring 2021, Spring 2020

US Army Corps of Engineers
Short Courses Instructor
- Taught multiple classes on river and reservoir sedimentation analysis, modeling, and management in Kansas, Missouri, Colorado, California, Oklahoma, Brazil, Laos, and Thailand

SELECTED PUBLICATIONS

● Shrestha, S., Hotchkiss, R., Minear, T., Shelley, J. 2025. Sediment Storage Behind Low-Head Dams: Assessing Potential Contribution to Reservoir Sedimentation in Kansas, USA. *River Research and Applications* 1-12. https://doi.org/10.1002/rra.70032

- Mansfield, M., Shelley, J., & Gibson, S. 2024. Total and sand floodplain deposition on an inside bend during the 2019 Missouri River flood. *Mid Continent Geoscience*. Vol (5). https://doi.org/10.17161/mg.v5i.21321
- Mansfield, M., Shelley, J., & Haring, C. 2024. Sediment contributions from a low-head dam failure on the Big Blue River near Marysville, KS. *River Research and Applications*, 1–7. https://doi.org/10.1002/rra.4327
- Shelley, J. and Haring, C. Lessons learned from bank failures. 2023. Proceedings of the 2023 Federal Interagency Sedimentation and Hydrologic Modeling Conference, St. Louis, MO.
- Shelley, J. 2023. An upcoming pilot project for reservoir sediment removal via water injection dredging. Proceedings of the 2023 Federal Interagency Sedimentation and Hydrologic Modeling Conference, St. Louis, MO.
- Chrisman, N., Pak, J., and Shelley, J. 2023. Case studies evaluating the new reservoir volume reduction tool in HEC-HMS. Proceedings of the 2023 Federal Interagency Sedimentation and Hydrologic Modeling Conference, St. Louis, MO.
- Mansfield, M., Shelley, J., Fall, K. 2023. Estimating gravel particle sizes based on field photographs using the Rock Observation Calculator. Proceedings of the 2023 Federal Interagency Sedimentation and Hydrologic Modeling Conference, St. Louis, MO.
- Shelley, J., Haring, C. and Chrisman, N. 2022. Failure modes in cedar tree revetments: Observations on rivers and streams in eastern Kansas, USA. *River Research and Applications* 38 (7), pp 1285-1295. https://doi.org/10.1002/rra.3997 .
- Shelley, J., Haring, C. and Chrisman, N. 2022. Evaluation of Cedar Tree Revetments for Bank Stabilization at the Locust Creek Conservation Area, Missouri: Quantifying Bank Erosion Volumes from Preproject to Postfailure. ERDC/CHL TR-22-22. November 2022. Engineering Research and Development Center Technical Report. Vicksburg, MS. https://hdl.handle.net/11681/46144
- Shelley, J., Haring, C. and Chrisman, N. 2022. Baseline data for a cedar tree revetment monitoring site near Wichita, KS. ERDC/TN RSM-22-5. Engineering Research and Development Center Engineering Technical Note. Vicksburg, MS. https://hdl.handle.net/11681/44763 .
- Shelley, J., Hotchkiss, R., Gibson, S. and Boyd, P. 2022. Discharging Sediment Downstream: Case Studies in Cost Effective, Environmentally Acceptable Reservoir Sediment Management in the United States. *Journal of Water Resources Planning and Management*. Vol 148, Issue 22. American Society of Civil Engineers. https://doi.org/10.1061/(ASCE)WR.1943-5452.0001494
- Shelley, J. 2021. Modeling the effects of increased sediment loading on the bed elevations of the Lower Missouri River. ERDC/TN RSM-21-2. Engineering Research and Development Center Engineering Technical Note. Vicksburg, MS. http://dx.doi.org/10.21079/11681/40360
- Shelley, J., Kenney, M., Layzell, A., Brown, T. 2020. Contribution of two eroding banks to multipurpose pool sedimentation at a Midwestern reservoir. ERDC/TN RSM-20-6. Engineering Research and Development Center Engineering Technical Note. Vicksburg, MS. https://hdl.handle.net/11681/37946
- Gibson, S. and Shelley, J. 2020. Flood disturbance, recovery, and inter-flood incision on a large sand-bed river. *Geomorphology*. Vol 351. https://doi.org/10.1016/j.geomorph.2019.106973

- Williams, A. and Shelley, J. 2020. Effects of bank stabilization on Regional Sediment Management: Lessons learned from the Kansas River and Grand River Basins. ERDC/TN RSM-20-1. Engineering Research and Development Center Engineering Technical Note. Vicksburg, MS. http://dx.doi.org/10.21079/11681/35313
- Shelley, J. 2019. Analysis of Hydrosuction Sediment Removal System for Tuttle Creek Lake, Kansas. ERDC-TN RSM-19-5. Available at https://erdc-library.erdc.dren.mil/xmlui/handle/11681/33583 .
- Shelley, J. 2019. Projecting Floodplain Depositional Patterns using Long-term 1D Sediment Modeling Results and Short-term 2D Hydraulic Model Output. Proceedings of the 2019 Federal Interagency Sedimentation and Hydrologic Modeling Conference, Reno, Nevada.
- Shaughnessy, H. and Shelley, J. 2019. Tracking the Riverbed's Response to Channel Mining on the Lower Missouri River. Proceedings of the 2019 Federal Interagency Sedimentation and Hydrologic Modeling Conference, Reno, Nevada.
- Williams, A. and Shelley, J. 2019. Effects of Bank Stabilization and Regional Sediment Management. Proceedings of the 2019 Federal Interagency Sedimentation and Hydrologic Modeling Conference, Reno, Nevada.
- Williams, A. and Shelley, J. 2019. Kansas River HEC-RAS Sediment Transport Model. Proceedings of the 2019 Federal Interagency Sedimentation and Hydrologic Modeling Conference, Reno, Nevada.
- Shelley, J. and Wells, R. 2019. Erodibility Characteristics of Cohesive Sediment Deposits in a Large Midwestern Reservoir. Proceedings of the 2019 Federal Interagency Sedimentation and Hydrologic Modeling Conference, Reno, Nevada.
- Collins, K. Boyd, P., Shelley, J., Dombreski, D., and Greimann, B. 2019. Cherry Creek Pressure Flushing Analysis. Proceedings of the 2019 Federal Interagency Sedimentation and Hydrologic Modeling Conference, Reno, Nevada.
- Shelley, J., Boyd, P., and Gibson, S., Pridal, D., and Dahl, T. 2018. Building Reservoir Sediment Modeling Capabilities with the Lao PDR Ministry of Energy and Mines. *Hydrolink*, 2018. Publication of the International Association for Hydro-Environmental Engineering and Research.
- Hotchkiss, R., Boyd, P., Shelley, J., and Gibson, S. 2018. Reservoir Sediment Management: Case Studies from the United States. Word Environmental and Water Resources Congress 2018. Minneapolis, MN, June 3 – 7, 2018.
- Shelley, J. and Bailey, P., 2017. The Cross-section Viewer: A Tool for Automating Geomorphic Analysis Using Riverine Cross Section Data. ERDC/TN RSM-18-3. January 2018. Engineering Research and Development Center Engineering Technical Note. Vicksburg, MS.
- Shelley, J. and Bailey, P., 2017. Reservoir sediment management workshop for Milford Lake in the Kansas River basin. ERDC/TN RSM-17-3. March 2017. Technical Report. Vicksburg, MS.
- Abraham, D., Shelley, J., McAlpin, T., May, D., and Adenihun J., 2016. "Verification of Bed load Transport Formulae at the Sub-Cross-Section Scale." River Flow 2016: Iowa City, USA, July 11-14, 2016.
- Shelley J., Boyd, P., and Lilycrop, L., 2016, "Regional Sediment Management in Watersheds, Reservoirs, and Rivers." River Flow 2016: Iowa City, USA, July 11-14, 2016.

- Gibson, S., Shelley, J., and Cai, C., 2016. "Downstream coarsening on the Missouri River." River Flow 2016: Iowa City, USA, July 11-14, 2016.
- Touzinsky, K., Boyd,P. and Shelley, J., 2016. Identification of challenges and opportunities for Regional Sediment Management (RSM) and Engineering With Nature (EWN) within inland USACE Districts. ERDC/CHL CHETN-XIV-53.
- Shelley, J., Boyer, M., Granet, J., and Williams, A., 2016. "Environmental Benefits of Restoring Sediment Continuity to the Kansas River." ERDC/CHL CHETN-XIV-50. June 2016. Engineering Research and Development Center Engineering Technical Note. Vicksburg, MS.
- Shelley, J. Gibson, S., and Williams, A., 2015. "Unsteady Flow and Sediment Modeling in a Large Reservoir Using HEC-RAS 5.0." Proceedings of the 3rd Joint Federal Interagency Conference on Sedimentation and Hydrologic Modeling, April 19-23, Reno, Nevada, USA.
- Abraham, D., McAlpin, T., May, D., Pratt, T., and Shelley, J., 2015. "Update on ISSDOTv2 Method of Measuring Bedload Transport Using Time Sequenced Bathymetric Data." Proceedings of the 3rd Joint Federal Interagency Conference on Sedimentation and Hydrologic Modeling, April 19-23, Reno, Nevada, USA.
- Gibson, S., Simon, A., Langendoen, E., Bankhead, N., and Shelley, J., 2015. "A Physically-Based Channel-Modeling Framework Integrating HEC-RAS Sediment Transport Capabilities and the USDA-ARS Bank Stability and Toe Erosion Model (BSTEM)." Proceedings of the 3rd Joint Federal Interagency Conference on Sedimentation and Hydrologic Modeling, April 19-23, Reno, Nevada, USA.
- Shelley, J. and Gibson, S., 2015. "Modeling Bed Degradation of a Large, Sand bed River with In-Channel Mining with HEC-RAS 5.0." Proceedings of the 3rd Joint Federal Interagency Conference on Sedimentation and Hydrologic Modeling, April 19-23, Reno, Nevada, USA.
- McEnroe, B.M., J. E. Shelley, 2014. "Scaling of Reference Reach for Desired Bankfull Discharge." *International Journal of Geosciences*. April 2014.
- Shelley, J., 2015. "Reservoir Sediment Management Workshop for Tuttle Creek Lake and Perry Lake Reservoirs in the Kansas River Basin." ERDC/CHL CHETN-XIV-43.
- Shelley, J., Abraham, D., and McAlpin, T., 2013. "Removing Systemic Bias in Bed-Load Transport Measurements in Large Sand-Bed Rivers." *J. Hydraul. Eng*., 139(10), 1107–1111.
- USACE, 2013. "Data Collection and Uses: Flood of 2011." Contributing authors: Colleen Roberts, Tracy Brown, Heather Hill, John Shelley, and Allen Tool.
- Shelley, J.E., 2012 "October 2012 Missouri River Jet Erosion Testing: RM 760 – 780," Technical Report to Omaha District, U.S. Army Corps of Engineers.
- Shelley, J.E., 2012. "Geomorphic Equations and Methods for Natural Channel Design", Doctoral Dissertation, University of Kansas, Lawrence, KS.
- Shelley, J.E., 2011. "Correlation between Water Surface Elevations and Bed Elevations for Degradation Analysis," Proceedings, World Environmental and Water Resources Congress 2011, American Society of Civil Engineers.
- USACE, 2010. "Hydrologic and Geomorphic Trends on the Kansas River," J. Shelley author. Kansas City, MO.

- McEnroe, B.M., J. E. Shelley and C. B. Young, "An Analytical Reference-Reach Method for Natural Channel Design," Proceedings, World Environmental and Water Resources Congress 2010, American Society of Civil Engineers.
- Shelley, J. E., C. B. Young and B. M. McEnroe, "The Rosgen Rosetta Stone: Translating Rosgen Terminology," Proceedings, World Environmental and Water Resources Congress 2010, American Society of Civil Engineers.
- McEnroe, B. M., C. B. Young and J. E. Shelley, "Stream Realignment Design Using a Reference Reach," Report No. K-TRAN: KU-09-4, Kansas Department of Transportation, 2010.
- Parr, A. D. and J. E. Shelley, "A Study of Fluvial Geomorphology Aspects of Hydraulic Design," Report No. K-TRAN: KU-08-5, Kansas Department of Transportation, 2010.
- Shelley, J. E., C. B. Young and B. M. McEnroe, "Bankfull Discharge for Kansas Natural Alluvial Channel Design," Proceedings, World Environmental and Water Resources Congress 2009, American Society of Civil Engineers.
- Shelley, J. E., and A. D. Parr, "Using HEC RAS for Geomorphic Channel Design," Proceedings, World Environmental and Water Resources Congress 2009, American Society of Civil Engineers.
- McEnroe, B.M., J. E. Shelley and C. B. Young, "A Simple Analytical Design Method for Small Alluvial Channels," Proceedings, World Environmental and Water Resources Congress 2009, American Society of Civil Engineers.
- McEnroe, B. M., C. B. Young and J. E. Shelley, "Guidelines for Stream Realignment Design," Report No. K-TRAN: KU-08-2, Kansas Department of Transportation, 2009.

SELECTED RESEARCH STUDIES

- "Maximizing sediment and water quality monitoring during Water Injection Dredging in Tuttle Creek Lake" (2025). $50k. Funded by the Kansas Water Office.
- "Hydraulic Agitation for Improving Sediment Flushing at Reservoir Gates" (2024-2025). Funded for $192k by USACE Regional Sediment Management Program.
- "Gasconade River Watershed Study" (2023-2025). Funded for $1M by the Missouri Department of Natural Resources and the USACE Public Assistance to States Program.
- "Water Sustainment Evaluation" (2023 to 2025). Funded for $1.3M by the Kansas Water Office and the USACE Public Assistance to States Program.
- "Wood Design Calculator for HEC-RAS" (2022-2024) Funded for $355k by the USACE Engineering With Nature Program.
- "Longevity and Effectiveness of Nature-based Bank Protection for Reducing Sediment Loading to Rivers" (2019-2020). Funded for $137k by the USACE Regional Sediment Management Program.
- "The Downstream Channel as a Beneficial Use for Reservoir Sediment" (2018-2019) Funded for $73k by the USACE Regional Sediment Management Program.
- "Regional Sediment Management Effects of Bank Stabilization" (2017-2018) Funded for $80k by the USACE Regional Sediment Management Program.
- "In reservoir and downstream channel effects of a low-cost sediment bypass option at Tuttle Creek Lake" (2016-2017). Funded for $88k by the USACE Regional Sediment Management Program.
- "Milford Lake Sediment Management Workshop" (2015-2016). Funded for $52k by the USACE Regional Sediment Management Program.

- "Environmental Benefits of Turbidity in the Kansas River and of Maintaining Depth in Tuttle Creek Lake and Milford Lake" (2014-2015). Funded for $65k by the USACE Regional Sediment Management Program.
- "Reservoir Sustainability/ Sediment Continuity Scoping" (2012-2013). Funded for $50k by the USACE Regional Sediment Management Program.

SELECTED USACE PLANNING STUDIES

- "Kansas River Reservoir Flood and Sediment Study" (2019-2024). Funded for $3M by the US Army Corps of Engineers. Role: Study Technical Lead and River Engineering Lead for sedimentation assessments on 17 reservoirs in Kansas and Nebraska.
- "Grand River Ecosystem Restoration Feasibility Study" (2017-2020). Funded for $3M by the Missouri Department of Natural Resources and USACE General Investigations Program. Role: River Engineering Technical Lead.
- "Missouri River Bed Degradation Feasibility Study" (2012-2017). Funded for $4M by the Mid America Regional Council and USACE General Investigations Program. Role: River engineering Technical Lead.

OTHER

- "Bedload transport methodology and method of use" US Patent #US 20170030800 A1. Issued Feb 2, 2017.
- US Army Corps of Engineers River Engineering Working Group—Education Chair (2022-2024)
- Member of National Reservoir Sediment Sustainability Team
- RSM River Mechanics Podcast Guest, Episode 2:3. https://sediment.buzzsprout.com/2068658/episodes/13466598-john-shelley-and-paul-boyd-on-reservoir-sediment-management-in-the-us

AWARDS

- Meritorious Civilian Service Award (2025) — U.S. Army Corps of Engineers
- Success Stories Award (2023) — Kansas Water Office

FOREIGN LANGUAGES

- Romanian (Advanced)
- Spanish (Intermediate)