

2026 Kentucky Water Resources Annual Symposium

September 18, 2026
Central Bank Center, Lexington, Kentucky

8:00 AM - 8:30 AM **Registration (Coffee Break)**

8:30 AM - 9:20 AM **Plenary Session**

Meeting Rooms 10 & 11

8:30 AM Welcome and Introductions

Jason Unrine, Director, KWRI

Dr. Ilhem Messaoudi, Acting Vice President for Research, University of Kentucky

8:40 AM USGS Priority Research in Aquatic Ecosystems: Invasive Threats, Endangered Species, and Emerging Contaminants

Jeff Steevens, Research Toxicologist and Director (Acting), U.S. Geological Survey, Columbia Environmental Research Center

9:10 AM Q & A

9:20 AM - 10:40 AM **Session 1**

Meeting Rooms 12, 13, & 14

Track 1A · Room 12

Flooding and Karst

Moderator: Moderator: TBD

9:20 AM Causes and Challenges of Karst Flooding

Charles (Chuck) Taylor, UK

9:40 AM Evaluating the Influence of Monitoring Well Density and Hydrologic Conditions on Potentiometric Surface Mapping in a Karst Aquifer

Quade Miles, WKU [Student]

10:00 AM Developing Partnerships and Monitoring Networks for Flooding, Water Quality, and Stormwater Management to Enhance Community Resilience

Jason Polk, WKU

10:20 AM Developing an Integrated Flood Modeling Approach for FEMA Floodplain Mapping in Karst Watersheds

Alex Sitz, WKU [Student, 104(b)]

Track 1B · Room 13

Drinking Water

Moderator: Moderator: TBD

9:20 AM Environmental Toxicity of Halogenated Cyclopentadienes: An Emerging Class of Water Disinfection-By-Products

Ryan St. Clair, UK [Student]

9:40 AM Extending Water Distribution Quality Models to the General Public Through the Use of Serious Gaming

Lindell Ormsbee, UK

10:00 AM Modeling the Formation of Trihalomethane Species in Water Distribution Systems

Hadley Burchett, UK [Student]

10:20 AM Source to Tap: Practical Tools for Understanding Source Water Data

Thalika Hollingsworth, Kentucky American Water

Track 1C · Room 14

Ecology and Restoration

Moderator: Moderator: TBD

9:20 AM Roots Over Reconstruction: Comparing Hydrologic Function in Urban Riparian Zones

Abigail Davidson, UK [Student]

9:40 AM Caddisflies (Insecta: Trichoptera) of the Kentucky River Palisades: a biological refugium in the Inner Bluegrass region of central Kentucky

Michael Floyd, US Fish and Wildlife Service
Michael Compton, Office of KY Nature Preserves

10:00 AM Validation of Gastric Lavage as a Non-Lethal Method for Diet Assessment in the Cumberland Arrow Darter (*Etheostoma sagitta*) with Implications for Imperiled Congeners

Travis Lowe, Appalachian Technical Services [Student]

10:20 AM Comparing a Regulatory Approach to Ecological Assessment-evaluating stream quality and function in a headwater watershed

Emma Bell, WKU [Student]

10:40 AM - 11:00 AM **Break**

Track 2A · Room 12**Climate and Land Use**

Moderator: Moderator: TBD

11:00 AM Political Winds and Climate Work: What Shapes Priorities of Public University Climate Entities

John McMaine, UK

11:20 AM Small Towns, Big Impacts: Impervious Cover Patterns Across Rural Kentucky

Myranda Hentges, UK

11:40 AM Assessing Kentucky River's Water Budget through Hydrological Modeling

Zayed Bin Saif, UK [Student]

Track 2B · Room 13**Soils and Groundwater**

Moderator: Moderator: TBD

11:00 AM Monitoring Water Infiltration in Shallow Karst Environments Using Time-Lapse 3D Electrical Resistivity Imaging

Bronson McQueen, UK [Student]
Junfeng Zhu, UK

11:20 AM Unraveling Long-term Soil Management Impacts on Soil Water Dynamics

Md Jiad Ur Rahaman, WKU [Student]

11:40 AM Strengthening Soil Hydraulic Function Through Sustainable Agricultural Management

Sandesh Kumar, WKU [Student]

Track 2C · Room 14**Pathogens and Sanitation**

Moderator: Moderator: TBD

11:00 AM Prevalence of Phenotypic Multidrug-Resistant E. coli in Kentucky Surface Waters and Evaluation of Potential Sentinel Antibiotics for One Health Surveillance

Jason Marion, ECU

11:20 AM Microbial Source Tracking in an Urban Watershed: The Utility of Long-Term MST Monitoring

Christopher Kephart, USGS

11:40 AM The Environmental Surveillance Center for Assessing Pathogen Emergence (ESCAPE): Enabling Wastewater Surveillance for All

Scott Berry, UK & Soroosh Torabi, UK

12:00 PM - 1:00 PM

Awards Luncheon

Meeting Rooms 10 & 11

1:00 PM - 2:20 PM

Session 3

Meeting Rooms 12, 13, & 14

Track 3A · Room 12**Flooding**

Moderator: Moderator: TBD

1:00 PM Flooding in Appalachian Streams and Headwaters (FLASH) Middle School Curriculum: Collaborative Development and Delivery of Community-Engaged, Place-Based, Hands-On Learning Experiences

Katherine Bullock, UK

1:20 PM Everybody Learns: A Scoping Review of Participatory Approaches to Flash-Flood Preparedness

Daniel Bullman, UL [Student]

1:40 PM Monitoring Headwater Streams in the Kentucky River Basin: Challenges, Opportunities, and Successes

Lindsey Barnes, UL

2:00 PM Geomorphological and Hydro-Climatic Drivers of Flow Regime Signatures in Appalachian Headwaters

Hasan Taylan, UL [Student]

Track 3B · Room 13**Toxic Contaminants**

Moderator: Moderator: TBD

1:00 PM Multi-Endpoint Characterization of PFOA and PFOS Toxicity in Caenorhabditis elegans

Lucca Madeo Cortarelli, UK [Student]

1:20 PM Assessment of Heavy Metals from Stormwater and Sedimentation in Class V Injection Wells in Urban Karst Groundwater Systems

Riley Summers, WKU [Student]

1:40 PM Coupled Hydrological Transport Dynamics of Microplastics and Heavy Metals in Karst Groundwater Systems

McKenzie Bertsch, WKU [Student]

2:00 PM Prevalence and Source Tracking of Perfluoroalkyl and Polyfluoroalkyl (PFAS) Substances In Kentucky Karst Groundwater Systems

Gracie Hendrickson, WKU [Student, 104(b)]
Jason Polk, WKU**Track 3C · Room 14****Sediment**

Moderator: Moderator: TBD

1:00 PM Sediment Fingerprinting in Maysville, KY

Jackson Clark, UL [Student, 104(b)]

1:20 PM Catchment Size and Urbanization Shape Sediment Concentration-Discharge Hysteresis Loop Concavity More Than Direction

Arlex Marin-Ramirez, UL [Student]
Tyler Mahoney, UK

1:40 PM Seasonal Storm Controls on Turbidity in an Urban Watershed: Implications for Sediment Best Management Practice (BMP) Design

Andrew Day & Angelina Rangel, UL

2:00 PM Landslide Susceptibility Mapping in Martin, Pike, and Floyd Counties Using an XGBoost Machine-Learning Model and GIS

Utkarsha Basnet, KYSU [Student]

2:20 PM - 3:30 PM

Poster Session

Meeting Room 9 & Hallway Corridor

- #1 Life Cycle Assessment and Life Cycle Costing of Kentucky Water Distribution Systems - Sophi Del Rey, UK [Student], Emma Zoeller, UK [Student]
- #2 A Retrospective Environmental Assessment of Metropolis Lake (Kentucky): Quantifying Industrial Contaminant Fluxes and Inventories Using Sedimentary Records - Mary Covell, UK [Student]
- #3 The Use of Generative AI in the Prediction of TTHM and HAA5 Prediction in Water Distribution Systems - Keren Keener, UK [Student]
- #4 Conceptual Model Displays Seasonality of Dissolved and Sedimentary Carbon Fluxes in South Elkhorn Creek, Lexington, Kentucky - Joseph Ammons, UK [Student]
- #5 Detecting Groundwater-Level Change in the Jackson Purchase Region Using Ambient-Noise Interferometry from the CLIMBS Seismic Array - Md Mohimanul Islam, UK [Student]
- #6 High-Resolution GIS-Based Delineation of Sinkhole Catchments and Karst Relic Streams in the Inner Bluegrass Karst Terrane - Matthew Carmichael, UK

- #7 High-Resolution Sediment Modeling in Southeastern Kentucky Affected by Climate Variability - Nabil Al Aamery, UK [Student]
- #8 Water Quality Monitoring Through Metagenomics in Karst Agricultural Watersheds: Case Study of Camden Creek, Kentucky - Rose Mburu, UK [Student, 104(b)]
- #9 Hydrologic Modeling to Predict Flash Flood Events Under Future Rainfall Extremes and Scale Dependence in the Appalachian Region - Sarah Holt, UK [Student]
- #10 Investigating the Autogenic Diel Cycle of Sediment Transport for 84 Sites Across the Continental US - Melissa Beckman, UK [Student]
- #11 Investigating Velocity Distributions and Turbulence Structures in a Karst System - Matthew Lynch, UK [Student]
- #12 Streambank Aggradation and Degradation in a Karst Landscape - Quinn Rison, UK [Student]
- #13 Predicting Flash Flood Risk in Eastern Kentucky Using Headwater Stream Data - Evan Meyers, UK [Student]
- #14 Relationships Between Water Quality Indicators and Flooding in Southeastern Kentucky - Emelia Harris, UK [Student]
- #15 Quantifying the Hydraulic Performance of Aging Bioretention Cells - Patrick Faust, UK [Student]
- #16 Life Cycle Assessment of Urban Tree Soil Cells as Green Stormwater Infrastructure: Environmental Trade-offs and Long-Term Benefits - Kimia Khanlari, UK [Student]
- #17 The Effects of PFAS Loading on Biogeochemical Cycling, Fate, and Transport in Wetlands - Dylan McPeake, UK [Student] [104g]
- #18 Layered Flood Risk and Community Knowledge in Appalachian Kentucky and West Virginia: Using FEMA's National Risk Index to Inform Public Health Preparedness - Daniel Bullman, UL [Student]
- #19 A Numerical Investigation on the Rainfall-Induced Soil Saturation and Runoff Generation in the Appalachian Region - Shahriar Mardpour, UL [Student]
- #20 Quantifying Bias in Field Discharge Measurements and Stage-Discharge Hysteresis across CONUS - Franklin Kondum, UL [Student]
- #21 Evaluating Hybrid Differentiable Hydrologic Models for Sub-Daily Flash Flood Prediction - Arlex Marin-Ramirez, UL [Student]
- #22 Estimating Rating-Curve Parameters for Small Headwater Streams Using Watershed Attributes and Channel Geometry - Ridwan Nur, UL [Student]
- #23 Evaluating Gravity and Mechanical Filtration in Coupled Aquaponic Systems - Sandrine Umutesi, KYSU [Student]
- #24 Spatial Mapping of Soil Nutrient Distribution in Reclaimed Mine Sites - Seema Adhikari, KYSU [Student]
- #25 Fluviokarst Dissolved Carbon Concentrations and Isotopic Ratios show Seasonal Variations Evidenced by Empirical Mode Decomposition and Isotope-Aided Modeling - Brenden Riddle, MSU
- #26 Palustrine Wetland Soil Carbon and Nitrogen Content Post-Wetland Reserve Easement Enrollment in the Northern Mississippi Embayment, Kentucky - Kayla Dunaway, UK
- #27 eDNA Metabarcoding-Based Microbial Diversity Profiling of Urban Streams in the Inner Bluegrass - Ben Brammell, Asbury University [104(b)]
- #28 Edge-of-Field Monitoring of Nutrient and Sediment Loss from Wetland Watersheds: The First Conservation Effects Assessment Program Project in Kentucky - Glynn Beck, UK
- #29 The Kentucky Geological Survey's Kentucky Groundwater Observation Network - Bryce Fleck, UK, Glynn Beck, UK
- #30 Investigating the Use of a Lignin-Derived Deep Eutectic Solvent for Nonsolvent-Induced Polymeric Membrane Fabrication - Jake Childress, UK [Student]
- #31 Hydrogeologic Tracing to Improve Karst Watershed and Floodplain Planning for Jennings Creek, Kentucky - Noah Jennings, WKU [Student]
- #32 Impact of Habitat Parameters on Macroinvertebrates - Liam Barker, NKU [Student], Kristy Hopfensperger, NKU
- #33 Jennings Creek/Lost River Karst Watershed Plan Outcomes in Warren County, Kentucky - Olivia Orner, WKU [Student]
- #34 Modeling Chlorine Decay Dynamics in Water Distribution Systems - Martins Afolayan, UK [Student]
- #35 Links Between Stream Stability, Habitat and Watershed characteristics - Abigail Todd, NKU [Student], Kristy Hopfensperger, NKU
- #36 A Real-Time Flood Monitoring Dashboard for Kentucky Communities to Bridge Data Sources and Develop Flood Awareness - Jovana Hernandez, UL [Student], Duncan Howard, UL [Student]
- #37 Accuracy Assessment of Drone-Based Lidar Measurements in Edge-of-Field Monitored Agricultural Watersheds - Leighia Eggett, UK

Track 4A · Room 12**Flooding**

Moderator: Moderator: TBD

3:30 PM Modeling Rainfall-Driven Infiltration and Runoff Generation Using a Validated Coupled TCA-Philip Framework

Mir Ali Hosseini, UL [Student]

3:50 PM Beyond Streamflow Accuracy: Constraining Baseflow to Improve Process Representation in Differentiable Hydrologic Models

Salil Sharma, UL [Student]

4:10 PM What Matters Most for Predicting Streamflow Regimes in Headwater Systems: Model Structure, Calibration, or Machine Learning?

Franklin Kondum, UL [Student]

4:30 PM Quantifying Headwater Contributions to Downstream Discharge Across Dynamic Stream Networks: Insights From a Process-Based Hydrologic Model

Ridwan Nur, UL [Student]

Track 4B · Room 13**Nutrients**

Moderator: Moderator: TBD

3:30 PM From CONUS to Kentucky: USGS Models for Streamflow Drought, Stream Temperature, and Watershed Nutrients

Jeremy Diaz, USGS

3:50 PM Protecting the Source: Monitoring and Modeling Source Lake Water Quality for Central Kentucky Distilleries

Katherine Ristola, UK [Student]

Tiffany Messer, UK

4:10 PM Nutrient Recovery Rates from Low-Cost Mineralization Methods

Ilerioluwase Rhema Oyedele, KYSU [Student]

4:30 PM Insights into Sustainable Nitrogen Waste Management through Biological Denitrification

Sagun Chhetri, KYSU

Leo Fleckenstein, KYSU

Track 4C · Room 14**Mining**

Moderator: Moderator: TBD

3:30 PM Depth-Wise Assessment of Soil Health in a Recently Reclaimed Mine Site in Eastern Kentucky using statistical and spatial analysis.

Seema Adhikari, KYSU [Student]

3:50 PM Rare Earth Element Enrichment in Acid Mine Drainage Precipitate Across a Watershed Treatment and Reclamation Gradient: Insights from Wolf Creek, Eastern Kentucky.

Amos Akwemoh, KYSU [Student]

4:10 PM Flood Susceptibility & Predictability: FEMA Benchmarking in a Mountaintop Mining Watershed, Eastern Kentucky using Machine Learning Approach

Asmita Satyal, KYSU [Student]

4:30 PM Evaluating Ecohydrological Recovery and Water-Use Efficiency of Replanted Native Trees on Geologically Ripped Mine Lands: A Combined EC and NISAR Inversion Approach

Ife Familusi, KYSU

4:50 PM - 5:00 PM

Student Awards

Meeting Room 9

5:00 PM

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