

## 2019 WESTERN SOUTH DAKOTA HYDROLOGY CONFERENCE PROGRAM

**Thursday, April 11, 2019**

**Alpine/Ponderosa/Rushmore Rooms – Rushmore Plaza Civic Center**

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| 7:00 – 8:00 a.m.      | <b>REGISTRATION</b>  |   |
| 8:00 – 10:00 a.m.     | <b>Plenary Session 1 in Alpine and Ponderosa Rooms – Invited Speakers (2.0 PDH)</b><br><b>Moderator – Joyce Williamson, U.S. Geological Survey</b>   |   |
| 8:00 – 8:10 a.m.      | Welcome and general announcements  | <b>Joyce Williamson, U.S. Geological Survey</b>   |
| 8:10 – 8:50 a.m.      | Impacts of Sedimentation on Missouri River Reservoirs and Free-Flowing Segments  | <b>Tim Cowman, State Geologist, SD DENR Geological Survey</b>   |
| 8:50 – 9:20 a.m.      | An Overview of South Dakota’s Integrated Report  | <b>Shannon Minerich, SD DENR Surface Water Quality program</b>  |
| 9:20 – 10:00 a.m.     | Opportunities at the Sanford Underground Research Facility   | <b>Jaret Heise, Sanford Underground Research Facility</b>   |
| 10:00 – 10:30 a.m.    | <b>REFRESHMENT BREAK in Rushmore G – Sponsored by HDR Engineering</b>  |   |
| 10:30 a.m.–12:00 p.m. | <b>Concurrent Session 2A in Alpine Room –<br/>Underground Water (1.5 PDH)</b><br><b>Moderator – Foster Sawyer, SDSMT</b>   | <b>Concurrent Session 2P in Ponderosa Room –<br/>Water Management (1.5 PDH)</b><br><b>Moderator – Greg Delzer, USGS</b>   |
| 10:30 – 10:50 a.m.    | Dewatering and Water Quality at Sanford Laboratory – <b>Bryce Pietzyk</b> Underground Infrastructure Director (Sanford Laboratory) and <b>John Scheetz</b> , Environmental Manager (Sanford Laboratory)                                      | Development of the West Dakota Water Development District’s Future Use Permit for Water from the Missouri River – <b>Kurt Katzenstein, Scott Kenner, Arden Davis, Mark Anderson, Regan Wess, Haley Noteboom, and Kaleb Hedman</b> , South Dakota School of Mines & Technology |
| 10:50 – 11:10 a.m.    | Fracking and Stray Gas in Groundwater: It’s Complicated – <b>Daniel Soeder</b> , Energy Resources Initiative, South Dakota School of Mines & Technology  | The RESPEC Irrigation Management Assistant (IMA): a web-based, mobile-friendly, irrigation-scheduling application that reduces the environmental impact of irrigation while reaping multiple benefits – <b>Koby Dobler and Jared Oswald</b> , RESPEC                          |
| 11:10 – 11:30 a.m.    | Aquifer Testing Results for a Well Completed in the Madison Aquifer near Hot Springs, SD – <b>Mitch Kannenberg</b> and <b>Mike Plante</b> , WSP USA, Inc.  | A Decision Support Tool to Support Rangeland and Riparian Health Management in the Little Missouri Headwaters – <b>Corissa Busse</b> , The Nature Conservancy   |
| 11:30 – 12:00 p.m.    | Applying a Jewel Cave model of Speleogenesis to Wind Cave – <b>Michael Wiles</b> , Jewel Cave National Monument  | Conservation of Irrigation Water Through the Use of Compost as A Soil Amendment – <b>Jerry Wright</b> , South Dakota School of Mines and Technology   |
| 12:00 – 1:30 p.m.     | <b>LUNCH in Rushmore F Room (1.0 PDH) – with accompanying presentations</b><br><b>John T. Loucks Distinguished Lecture –</b><br>“Growing a Revolution: Bringing Our Soil Back to Life” by <b>David Montgomery</b> , University of Washington |   |

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| <b>1:30 – 3:10 p.m.</b> | <b>Concurrent Session 3A in Alpine Room – Water Modeling (1.5 PDH)</b><br>Moderator – <b>Scott Kenner</b> , SDSMT  | <b>Concurrent Session 3P in Ponderosa Room – Climate and Ecosystems (1.5 PDH)</b><br>Moderator – <b>Melissa Smith</b> , National Weather Service   | <b>Concurrent Session 3H in Rushmore H Room – Great Plains Tribal Water Alliance meeting (1.5 PDH)</b><br>Moderator – <b>Doug Crow Ghost</b> , Standing Rock Sioux Tribe                           |
| 1:30 – 1:50 p.m.        | The Big Sioux River Flood Information System: A one-stop web platform to access real-time stream conditions, flood forecasts, visualizations, inundation maps and flood-related data – <b>Jason Love, Seth Kenner, and Peter Rausch</b> , RESPEC | Integrated Watershed Management in the Kootenai River, Montana: A fisheries and food web perspective – <b>Lisa Kunza</b> and <b>Kurt Chowanski</b> , South Dakota School of Mines & Technology                                 | Session introduction: Climate Adaptation in Native American Communities – <b>Doug Crow Ghost</b> , Standing Rock Sioux Tribe   |
| 1:50 – 2:10 p.m.        | Deerfield, Pactola and Rapid Creek Systems Analysis Modeling – <b>Rosemary Squillace, David Waterman, and Scott Kenner</b> , South Dakota School of Mines & Technology   | Impacts of 21st Century Climate Change on Great Plains Extreme Events, Agriculture and other Climate-Related Hazards – <b>Bill Capehart</b> and <b>Heidi Sieverding</b> , South Dakota School of Mines & Technology            | Climate Impacts to Native American Lands – <b>Imtiaz Rangwala</b> , Climate Science Lead, North Central Climate Adaptation Science Center (NCCASC)   |
| 2:10 – 2:30 p.m.        | Water-Balance Modeling of Volumes of Selected Lakes for Evaluating Viability as Long-term Fisheries in Kidder, Logan, and Stutsman Counties, North Dakota – <b>Bob Lundgren</b> , U.S. Geological Survey   | An Investigation into Anomalously Wet and Dry Years across Western South Dakota – <b>Keith Sherburn</b> , National Weather Service   |  |
| 2:30 – 2:50 p.m.        | Site-scale integrated Decision Support Tool (i-DST) for Stormwater Management – <b>Ali Shojaeizadeh</b> and <b>Mengistu Geza</b> , South Dakota School of Mines and Technology   | Evaluation of USGS LCMAP Data Products to Assess Forest Condition in Western South Dakota – <b>Patrick Kozak, Heidi Sieverding, and James Stone</b> , South Dakota School of Mines & Technology                                | Opportunities and Actions for Climate Adaptation – <b>Stefan Tangen</b> , GPTWA and NCCASC, <b>Logan Gayton</b> , GPTWA/Louis Berger Intern, and <b>Chance Knutson</b> , GPTWA/Louis Berger Intern |
| 2:50 – 3:10 p.m.        | Well Placement Design Using Extremal Optimization for Aberdeen, SD – <b>Fleford Redoloza</b> and <b>Liangping Li</b> , South Dakota School of Mines & Technology   | Tree Cover and Topography Affect River Ecosystem Metabolism in the Black Hills, South Dakota – <b>Kurt Chowanski</b> and <b>Lisa Kunza</b> , South Dakota School of Mines & Technology   |  |
| <b>3:10–3:30 p.m.</b>   | <b>REFRESHMENT BREAK in Rushmore G – Sponsored by Mid Continent Testing Labs</b>   |  |  |
| <b>3:30 – 5:00 p.m.</b> | <b>Concurrent Session 4A in Alpine Room – Hydrology Potpourri (1.5 PDH)</b><br>Moderator – <b>Daniel Soeder</b> , Energy Resources Initiative, SDSMT   | <b>Concurrent Session 4P in Ponderosa Room – Dams and Geomorphology (1.5 PDH)</b><br>Moderator – <b>Joanne Noyes</b> , SD DENR   | <b>Concurrent Session 4H in Rushmore H Room – Great Plains Tribal Water Alliance meeting (1.5 PDH)</b><br>Moderator – <b>Doug Crow Ghost</b> , Standing Rock Sioux Tribe                           |
| 3:30 – 3:50 p.m.        | Nutrients, Pesticides, and Selenium in Agricultural Tile Discharges into Public Wetlands, Madison Wetland Management District, South Dakota – <b>Matt Schwarz</b> , U.S. Fish and Wildlife Service   | Evaluating Geomorphic Characteristics of Remotely Classified River Systems in the US Great Basin – <b>John Costello</b> and <b>Scott Kenner</b> , South Dakota School of Mines & Technology                                    | Drought Adaptation Planning – <b>James Rattling Leaf, Sr.</b> , Co-PI for the NCCASC Program and <b>Syed Huq</b> , Director, Water Resources for Rosebud Sioux Tribe                               |
| 3:50 – 4:10 p.m.        | Aquaponics: A Water Resources Project<br><b>Kelsey Murray</b> , Environmental Engineering Program Director, Western Dakota Tech  | Geology of Dam Spillways – <b>Perry Rahn</b> , Department of Geology & Geological Engineering, South Dakota School of Mines & Technology   | Climate Adaptation Workshop – <b>Stefan Tangen</b> , GPTWA and NCCASC, <b>James Rattling Leaf, Sr.</b> , Co-PI for the NCCASC Program, and <b>Imtiaz Rangwala</b> , Climate Science Lead, NCCASC   |
| 4:10 – 4:30 p.m.        | Using Green Stormwater Infrastructure to Create Urban Biodiversity Corridors – <b>Heidi Sieverding, Andrea Vargas Castano, and James Stone</b> , SDSMT, <b>Henning Nottebrock</b> and <b>Charles Fenster</b> , South Dakota State University     | Emergency Response Monitoring for Oroville Spillway – <b>Kayla Ranney, Jaime Lubeck, and Daniel Osmun</b> , HDR, and <b>Olivia Virgadamo</b> , California Department of Water Resources  |  |
| 4:30 – 4:50 p.m.        | The Science of Hydrology in the Courtroom – <b>Mark Anderson</b> , South Dakota School of Mines & Technology   | Little Missouri River Initiative: Cooperative streamflow and water chemistry data collection between the North and South Units of Theodore Roosevelt National Park – <b>Bryce Klasen</b> , North Dakota State Water Commission |  |
| <b>4:50 – 5:00 p.m.</b> | Poster session lightning talks – 1 minute for each poster presenter – in <b>Alpine Room</b>  |  |  |

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| 5:00 – 6:30 p.m. | <b>EVENING SOCIAL and POSTER SESSION (with complimentary refreshments) in Rushmore G<br/>Sponsored by Energy Laboratories<br/>POSTER CONTEST WINNERS ANNOUNCED AT 6:00 PM</b>  |
|                  | Removal of Heavy Metals from Urban Stormwater using Biochar and Nanoscale Zerovalent Iron Modified Biochar – <b>Md Sazadul Hasan, Mengistu Geza, and Raul Vasquez</b> , South Dakota School of Mines & Technology                            |
|                  | Potential Influence of Climate Change on Stream Temperature in Regulated and Unregulated Streams in the Black Hills – <b>Lucas Graunke, Lisa Kunza and William Capehart</b> , South Dakota School of Mines & Technology                      |
|                  | Water Quality Trends in the Big Sioux River Basin – <b>Amber Ickes, Lisa Kunza, and Kurt Chowanski</b> , South Dakota School of Mines & Technology   |
|                  | Sensitivity Analysis of Frequency Storm Parameters in HEC-HMS – <b>Angelinah Rasoeu and Suzette Burckhard</b> , South Dakota State University  |
|                  | Aqua 3.0 – <b>Gabe Maruani, Cody Runge, Cameron Ault, Bryan Mitchell, and Kelsey Murray</b> , Western Dakota Tech  |
|                  | Hydrological Models for Rainfall-Runoff in Arid Regions: A Literature Review – <b>Ali Alsubei and Suzette Burckhard</b> , South Dakota State University  |
|                  | Characterizing Rangeland Salinization in Northwest South Dakota – <b>Patrick Kozak, Lisa Kunza, Kurt Chowanski, and Dan Heglund</b> , South Dakota School of Mines & Technology  |
|                  | Investigation into Needs and Future Use of Missouri River Water for Western Pennington County, South Dakota – <b>Kaleb Hedman, Haley Noteboom, and Regan Wess</b> , South Dakota School of Mines and Technology                              |
|                  | ParFlow Model of Pine Ridge Reservation in South Dakota – <b>Lilly Jones</b> , South Dakota School of Mines and Technology   |
|                  | Estimation of Best Treatment Conditions of Sugarbeet Wastewater Treatment using Response Surface Methodology – <b>Swati Sharma and Halis Simsek</b> , North Dakota State University  |
|                  | White Clay Creek Rehabilitation Assessment – <b>Chance Knutson, Michael Mansfield, and Sophie Brogdon</b> , South Dakota School of Mines and Technology  |
|                  | Electrochemical Impedance Spectroscopy as a tool for Monitoring the Microbial Contaminants – <b>Navanietha Krishnaraj Rathinam, David Salem, and Rajesh K. Sani</b> , BuG ReMeDEE consortium and South Dakota School of Mines and Technology |

### OPTIONAL FIELD SEMINARS/TRIPS – FRIDAY, APRIL 12, 2019

| Times                 | Field Seminar/Trip  |
|-----------------------|---|
| 8:00 a.m. – 4:00 p.m. | <b>Geology and Hydrology of the Northern Black Hills.</b> The field trip will discuss the sequence of Precambrian to Cretaceous age formations and major aquifer units in the northern Black Hills. Stops will be made at significant exposures of sedimentary, igneous and metamorphic rocks as time allows. (6.0 PDH) |
| 8:00 – 11:00 a.m.     | <b>The Past, Present, and Future: Progress Towards Better Stormwater Management in Rapid City.</b> Field trip highlighting the changes in Rapid City stormwater management over the last century from older conveyance and end-of-pipe solutions to modern multifunctional and upgradient solutions. (3.0 PDH)          |
| 9:00 – 11:00 a.m.     | <b>Overview and Details of Pactola Dam.</b> The field trip will discuss this U.S. Bureau of Reclamation facility that is operated and maintained by the City of Rapid City. The dam is located in a complex series of metamorphic rocks, it was constructed in 1952-56, and modified in 1987. (2.0 PDH)                 |